



# UNDERGRADUATE ACADEMIC CATALOG

## 2022-2023

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# UNDERGRADUATE ACADEMIC CATALOG

*The Academic Catalog is intended to provide general information about the University of New Hampshire and is accurate at the time of publishing. The University reserves the right to change, modify, or correct any information contained herein without prior notice, at any time.*

## UNH Affirmative Action and Equity Statement

We are a public institution with a long-standing commitment to equal employment and educational opportunity for all qualified persons. We do not discriminate on the basis of race, color, religion, sex, age, national origin, sexual orientation, gender identity or expression, disability, veteran status, marital status, genetic information, pregnancy, or political orientation. This applies to admission to, access to, treatment within, or employment in UNH programs or activities. Sexual harassment and sexual violence are types of sex discrimination. Inquiries regarding discriminatory harassment (including sexual harassment or violence) should be directed to Laura Buchs, Director & Title IX Coordinator, Affirmative Action and Equity, Room 305, Thompson Hall, 105 Main Street, Durham, N.H. 03824, [laura.buchs@unh.edu](mailto:laura.buchs@unh.edu), phone (603) 862-2930 (voice), 7-1-1 (Relay NH), (603) 862-2936 (fax); or to the Office for Civil Rights, U.S. Department of Education, 8th Floor, 5 Post Office Square, Boston, MA 02109-3921, phone (617) 289-0111, fax (617) 289-0150, e-mail [OCR.Boston@ed.gov](mailto:OCR.Boston@ed.gov).

See the [UNH Discrimination and Discriminatory Harassment Policy](https://www.unh.edu/main/student-life) and [Grievance and Complaint Procedures](https://www.unh.edu/main/student-life) (<https://www.unh.edu/main/student-life>) in [UNH Student Rights, Rules, and Responsibilities](https://www.unh.edu/main/student-life) for information about the resolution of complaints under UNH policy. Further information may be obtained at the Affirmative Action and Equity Office or via e-mail [affirmaction.equity@unh.edu](mailto:affirmaction.equity@unh.edu).

## About the Catalog

The University provides information pertaining to the Family Educational Rights and Privacy Act of 1974 (the "Buckley Amendment") in the annual student handbook. Information is also available from the office of the Senior Vice Provost for Student Life and Dean of Students. The annual student publication, [Student Rights, Rules, and Responsibilities](https://www.unh.edu/main/student-life), also contains University regulations and policies regarding student conduct.

The University will supply information about the employment of its graduates who have graduated from our degree and/or certificate programs. This information may be obtained upon request from the University's office of Career and Professional Success and is available by university, college, or school to current and prospective students. Information on employment outcomes depends on student self-reporting. The University does not guarantee employment to its graduates. Chances for employment are enhanced if students have begun career planning early in their degree programs.

Program descriptions may vary from the actual content or requirements because of advancements in the discipline or the active nature of academic planning and decision making. Accordingly, the University reserves the right to make whatever changes are deemed necessary in schedules, course content, requirements, academic programs (including their termination), calendar, tuition and fees, services, or any other aspect of the University's operations, giving whatever notice thereof

is reasonable under the circumstances. Therefore, the provisions of this catalog are not an irrevocable contract between the students and the University. The University is also not responsible for failure to provide or for delay in providing expected services and/or facilities when such failure arises from causes beyond the reasonable control of the University.

## Academic Calendar 2022/2023

### Fall

Classes Begin	August 29
Labor Day, University Holiday	September 5
Mid-Semester Break; no classes	October 10
Mid-Semester	October 14
Election Day - no exams scheduled	November 8
Classes follow Friday schedule	November 8
Veteran's Day, University holiday	November 11
Thanksgiving holiday	November 23-25
Classes resume	November 28
Last day of classes	December 12
Reading day, final exams begin at 6:00 p.m.	December 13
Final Exams end	December 20

### January Term

Online classes begin	December 28
New Year's Day holiday observed	January 2
On campus classes begin	January 3
Martin Luther King, Jr. Day; University Holiday	January 16
Last day of classes	January 20

### Spring

Classes Begin	January 24
Mid-Semester	March 10
Spring recess	March 13-17
Classes resume	March 20
Last day of classes	May 8

Reading Day or Curtailed Operation Make up Day	May 9
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Reading Day	May 10
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Final exams begin	May 11
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Final exams end	May 17
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Commencement	May 20
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## Summer Session

Summer Session May 22 - August 11



## General Information

### The University

UNH offers 200-plus degree programs across 11 schools and colleges to some 15,000 undergraduate and graduate students. There are thousands of courses to choose from, and 84 percent of them enroll no more than 50 students, meaning experiential learning and thoughtful classroom discussions reign. What's more, with an 16:1 student-to-faculty ratio, UNH students have direct access to award-winning faculty.

The core academic experience for every UNH student is the Discovery program. It starts with an Inquiry course (analysis, writing, questioning), expands into an exploration across disciplines and ends with a senior capstone experience. The goal is to help each student become the kind of person the world most needs. And it's working: Despite graduating into a challenging environment, the UNH Class of 2020 boasts a 92 percent success rate, with 75 percent of students employed six months after graduation and another 17 percent seeking further education. And the good news isn't limited to UNH's youngest alumni; a Gallup study found that UNH graduates thrive in their professional and personal lives to a greater degree than their peers from other large public universities, and they're employed at a rate much higher than the national average.

UNH students and faculty have been collaborating to make the world a better place for more than 150 years, and not just in the classroom — from the uncharted ocean depths to the edge of our solar system to the Earth we call home, our research transforms lives and delivers solutions to global problems. Powered by nearly \$130 million in competitive external support, UNH is just one of 130 doctoral-granting universities in the country — and one of only 43 without a medical school — to earn the "very high research activity," or R1, designation from the Carnegie Classification of Institutions of Higher Education. Undergraduates in every academic discipline enjoy broad access to research experiences and can even get funding to pursue them through the university's Hamel Center for Undergraduate Research. Many conduct independent inquiries, an experience that gives them a leg up on graduate school and employment applications.

We know that students who graduate with hands-on, real-world experience are more likely to have successful careers, so in addition to all the classroom learning and research, UNH offers 500+ study abroad programs, a dedicated career and internship center and a dedicated fellowships office, all of which help students find opportunities that bolster their academic and career goals. Our entrepreneurship center helps aspiring business owners make their dreams reality.

Ready to dive in? We'll supply the world-class academics, the outstanding faculty and an atmosphere of limitless opportunity. You bring the burning desire to bend your mind on some of society's most pressing problems.

#### More information

[Highest sustainability ranking in U.S., safest college town, and other rankings](#)

[Why UNH is the sweet spot of the East](#)

[Why New Hampshire students choose UNH](#)

[Research](#)

[Visit campus](#)

[Virtual tour](#)

### Mission

UNH offers a broad array of undergraduate, graduate, professional and research programs. Nearly 90 percent of the full-time faculty hold doctoral or terminal degrees and many have earned national and international reputations.

The University of New Hampshire has a threefold mission of teaching, research and public service.

**Teaching.** All undergraduate programs of instruction at the university are built on a specialized program of general education known as Discovery. The objectives of the Discovery Program carry through the undergraduate subject major as students refine and apply their skills and discover the relationships among fields of study. At every level, students enjoy close contact with individual faculty members who are dedicated to research and scholarship; this is an advantage for students because active scholars and researchers teach by sharing their own learning.

**Research.** The activity of research embraces all the arts and sciences at the university, and it is an integral part of both undergraduate and graduate programs. In doctoral study and in many master's programs, thesis research is a primary mode of learning. As a land-, sea-, and space-grant institution, the University of New Hampshire has a particular obligation to conduct applied research in the areas of agriculture, marine sciences and engineering, and to disseminate the findings to the state and nation.

**Public Service.** The university fulfills its special responsibility for the welfare of the state through UNH Cooperative Extension, and through research and consultation on the particular needs of New Hampshire citizens. The university is dedicated to collaborative learning in and outside the classroom.

### University System of New Hampshire Trustees and Administrative Officers

<https://www.usnh.edu/trustees>

The University System of New Hampshire is governed by a 29-member board of trustees that includes the Governor of the State, the President of the Senate, the Speaker of the House, 10 members appointed by the Governor and Executive Council, 7 alumni-elected members, 2 student-elected members, the Commissioner of Education, the Commissioner of Agriculture, the presidents of the University System's four colleges and universities, and the Chancellor. The Chancellor is the chief executive officer of the University System.

### Accreditation

The University of New Hampshire is accredited by the New England Commission of Higher Education (formerly the Commission on Institutions of Higher Education of the New England Association of Schools and Colleges, Inc.).

Accreditation of an institution of higher education by the Commission indicates that it meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer review process. An accredited college or university is one which has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that

it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by the Commission is not partial but applies to the institution as a whole. As such, it is not a guarantee of every course or program offered, or the competence of individual graduates. Rather, it provides reasonable assurance about the quality of opportunities available to students who attend the institution.

Inquiries regarding the accreditation status by the Commission should be directed to the administrative staff of the institution. Individuals may also contact:

New England Commission of Higher Education  
3 Burlington Woods Drive, Suite 100, Burlington, MA 01803-4514  
(781) 425 7785  
E-Mail: [info@neche.org](mailto:info@neche.org)

Specialized programs of study are also accredited by various professional organizations.

Veterans and their eligible dependents may apply for educational benefits before the start of each semester. For information, contact the UNH veterans coordinator at [UNH.Veterans@unh.edu](mailto:UNH.Veterans@unh.edu) or by phone at (603) 862-0643.

The University supports the efforts of secondary school officials and governing bodies to have their schools achieve regional accredited status to provide reliable assurance of the quality of the educational preparation of their applicants for admission.

## Admission

UNH welcomes campus visitors year-round. In-person campus tours are led by student admissions representatives who provide a general overview of academic programs and campus life opportunities. Professional staff members are available to provide information about the criteria used by the admissions committee in reviewing candidates and to address specific concerns. For further information or to schedule a campus and/or group information session, visit the Admissions website at <http://admissions.unh.edu/visit-campus>. Prior registration is required for all in-person visits and students are limited to two guests. More information about COVID-19 safety protocols can be on our [website](#). Complete information and instructions regarding the application process to UNH can be found on the following website <http://admissions.unh.edu/apply>.

## Admission Criteria

Admission to a bachelor's degree program is based upon successful completion of a strong secondary school program of college preparatory coursework. Primary consideration is given to the academic record, as demonstrated by the quality of the candidate's secondary school course selections, achievement in their secondary school courses and recommendation. Consideration is also given to character, initiative, leadership, and special talents. In fall 2020, UNH adopted a test-optional policy. Applicants are not be required to submit their SAT and/or ACT exam for consideration as part of their admissions application. Due to COVID-19, NCAA Eligibility Center also implemented the test-optional policy to students recruited by our intercollegiate athletic programs.

Candidates must, at a minimum, present at least four years of English, three years of mathematics (algebra I, geometry, and algebra II), two years of laboratory sciences (3 years preferred), two years of history or

social science, two years of a single world language is preferred and 2 additional full-year college preparatory courses to total 15 units. Some programs may have additional requirements for admission.

Students who plan to pursue a major in engineering, biological/physical sciences, mathematics, or forestry should present at least four years of mathematics including trigonometry, as well as laboratory coursework in chemistry and/or physics. Note that students are required to have a math and laboratory science in their senior year to be competitive for admission to a major in our College of Engineering & Physical Sciences and College of Life Sciences & Agriculture. Students pursuing business-related studies should complete four years of mathematics through their senior year, including trigonometry. For students planning to major in health-related disciplines, four years of math, as well as laboratory courses in biology and chemistry, are strongly recommended. Students interested in nursing must complete high school chemistry.

Applicants may indicate their first and second choice majors on the application for admission. An undecided applicant may apply for admission into a bachelor's program as an "undeclared" student to any one of the University's five college divisions in Durham or at UNH Manchester. For information concerning bachelor and associate degree programs offered through UNH Manchester, visit <http://manchester.unh.edu>; for information concerning the associate degree programs at the Thompson School of Applied Science, visit <https://colsa.unh.edu/tsas>.

UNH students may request a change in major during their undergraduate years. While most are approved, some majors are more restrictive than others and require the completion of specific coursework and an additional application. Change of major requests are considered after a student has been at the University for at least one semester and has permission from the appropriate college dean and department chairperson.

## Admission Test Requirements

Beginning fall 2020, first-year applicants have the option to submit SAT or ACT scores to be considered as a part of their admission application. It is not required to submit SAT or ACT scores for the application process at the University of New Hampshire. When submitting the admissions application, you will be asked "Would you like us to consider your standardized test scores in the admissions decision?" Please note, that once an admissions decision has been made on your application, you may not change your test score preference.

*\*If you enroll as a member of UNH's Class of 2026, you will be asked to submit your test scores after the May 1 deposit deadline for university research purposes only.*

International students whose primary language is not English must provide evidence of English proficiency by submitting the results of a Test of English as a Foreign Language (TOEFL), IELTS or Duolingo. The recommended minimum TOEFL score is 213 (computer version) or 550 (paper version) or 80 (Internet version). UNH also accepts the International English Language Testing System (IELTS) English Language proficiency examination in lieu of TOEFL; the minimum acceptable proficiency grade is 6.5; recommended Duolingo score is 105 or higher. International students who earn a 500 or higher on their ERBW (Evidence-Based Reading and Writing) section of the SAT will be waived the English proficiency test requirement.

## Music Candidates

Candidates applying for programs in the Department of Music must make arrangements with the department chairperson for an audition. Details regarding audition requirements may be obtained from the department, or may be found on the Department of Music website at <http://cola.unh.edu/music>.

## Admission Deadlines

The Office of Admissions welcomes high school students who are interested in being considered for admission to UNH as a first-year student in the fall to apply any time after August 1 at the start of their senior year. The application deadline for Early Action is November 15 and Regular Decision is February 1. Admission notifications are provided on a rolling basis as decisions become finalized through April 15.

Accepted candidates are required to confirm their intention to enroll with the payment of an enrollment deposit fee by May 1, National College Decision Day. An additional deposit to reserve on-campus housing is also required by May 1.

The review of first-year candidates begins in November for those applications that are complete. A complete application includes official transcript or grade reports through the end of junior year and a confirmed senior course schedule, the results of the SAT or ACT (for students who indicate on their admissions application that they would like have their test scores included in the application review process), and a letter of recommendation. To apply as an Early Action applicant, candidates must submit an admission application and supporting documents by November 15. In some cases, the admission committee will request senior mid-year grade reports in order to make a final admission decision. Students accepted to UNH through the Early Action program are not obligated to enroll at UNH and have until May 1 to submit their enrollment deposit to reserve their space at UNH.

All offers of admission are considered conditional and are subject to the verification of satisfactory senior year achievement when final high school transcripts with a confirmed date of graduation are reviewed by the admissions committee.

## Deferred Admission

The University considers applicants for deferred admission, which enables students to reserve their space at the University while taking a semester or academic year away from school for work or travel. With few exceptions, UNH will not approve deferral requests in which the student will be taking college coursework elsewhere. Requests for deferrals must be put in writing and sent to the Admissions Office ([admissions@unh.edu](mailto:admissions@unh.edu)). The University may not be able to offer deferred admission in certain program areas.

## Advanced Standing

The University recognizes outstanding secondary school work by means of advanced placement and credit for those who have taken enriched or accelerated courses before entering college. Applicants may qualify for such credit by successfully completing coursework for college credit and satisfactory achievement on University-approved placement examinations, including the College Board Advanced Placement (AP) Tests, International Baccalaureate (IB) Higher Level Examination Test Results, or through the College Level Examination Program (CLEP). Students should have official results sent directly to the Office of Admissions from the testing agency.

The University accepts AP Tests in many subject areas, with credit and course equivalency based on the score achieved. Visit [https://admissions.unh.edu/apply/first-year#collapse\\_4374](https://admissions.unh.edu/apply/first-year#collapse_4374) for further information.

The University awards 8 semester credits for each IB Higher Level Examination Test Result of 5, 6, or 7. The University recognizes up to 32 semester credits of CLEP General Examination tests, which may be applied as elective credit only. Scores must be 500 or better in the humanities, natural sciences, and social sciences-history exams. The minimum score for mathematics is 500 and for the English exam with essay, 500. Subject exams, when applicable, may be used to satisfy either departmental or general education requirements. UNH does not accept all CLEP subject exams.

Maximum credit accepted toward a bachelor's degree for all credit by exam and advanced placement testing is 64 semester hours.

## Associate Degree Candidacy

The University accepts candidates who have demonstrated ability and motivation for learning through academic achievement, work experience, and/or military service for associate in applied science degree programs.

Students may be considered for admission to associate in applied science degree programs offered by the University's Thompson School of Applied Science in Durham as well as associate in arts or science degrees at the Manchester campus. Candidates applying as high school seniors must submit the application and secondary school record. The submission of SAT and/or ACT exams are optional. Students granted first-year admission to the Thompson School are eligible to live in a University residence hall.

## Eligibility for Degree Candidacy

Applicants may be candidates for any undergraduate degree offered by the University. However, applicants having a bachelor of arts (B.A.) degree will not be admitted into a program of study that awards the same degree (e.g., B.A. History and B.A. Zoology). Applicants can earn more than one bachelor of science (B.S.) degree, provided that each degree is in a different field. Applicants may also be admitted into a program awarding a different degree (e.g., B.A. History and B.S. Biology; or B.A. History and A.A.S. Applied Animal Science).

## Readmission

An undergraduate who withdraws, does not register for UNH coursework in a given semester, or is suspended or dismissed from the University thereby terminates degree candidacy and must apply for readmission by the following deadlines: fall semester, June 1; spring semester, November 1. Readmission applications are processed in the Office of Admissions; however, decisions regarding readmission are made in consultation with the Division of Student and Academic Services and the dean's office of the University college division to which the student is applying.

Before seeking readmission, students on academic suspension must remain away from school for at least one semester. Suspended students should include a statement about their readiness to resume University work with their application.

Only under extraordinary circumstances will students be readmitted after dismissal for academic reasons. Applications submitted by dismissed students are reviewed by the University's Academic Standards and Advising Committee.

It may not be possible for readmission applicants to enroll in programs with established enrollment limitations.

## Transfer Students

UNH encourages applications from transfer students. Admission consideration includes review of course selection, academic achievement, and the extent to which that selection addresses the University's general education requirements. Transfer credit is awarded for completed courses taken at an institution that is fully accredited by one of the regional accrediting associations with a grade of C or better, provided those courses are comparable to courses offered at UNH. Each course must carry at least 3 semester credits and receive a letter grade to qualify for general education consideration.

The application deadline for fall semester admission is April 1; October 15 is the application deadline for spring semester. Some programs have enrollment limitations and may not be open to transfer students. Students enrolled in one of the University's associate degree programs who desire admission to a bachelor's degree program at UNH must apply as transfer students through the Office of Admissions.

Transfer students may contact the Department of Housing at (603) 862-2120 to determine the availability of on-campus housing. Please note that on-campus housing is not guaranteed to transfer students.

## New England Regional Student Program

The University participates in the New England Regional Student Program, in which each state college and university in New England offers certain undergraduate majors to students from other New England states. Under this program, admitted students from other New England states pay a reduced tuition rate. Students must indicate on their admissions application the specific major for which they are applying. Information about the curricula may be obtained from:

The New England Board of Higher Education  
45 Temple Place  
Boston, MA 02111  
[www.nebhe.org](http://www.nebhe.org), or (617) 357-9620.

Visit <http://admissions.unh.edu/tuitionfees/new-england-regional-student-program/> for available UNH majors through this program.

## Full-Time Special Student Status

UNH offers a special student classification for persons who wish to participate in University coursework on a full-time basis without entering a degree program. In evaluating requests for special full-time status, the Office of Admissions generally applies the same criteria used in the review of applicants for admission to degree candidacy. Full-time special students have full access to academic support services but are not eligible for University-based financial aid. Students must maintain satisfactory achievement to continue with University coursework. Full-time special (non-degree) students register for coursework through the Registrar's Office.

## Resident Status

All students attending any division of UNH in any capacity shall be charged tuition at a rate to be determined by their primary, legal domicile. Those domiciled within the state of New Hampshire pay the in-state rate. Those domiciled elsewhere pay the out-of-state rate.

Students are classified as residents or nonresidents for tuition purposes at the time of admission to the University. The decisions, made by the Office of Admissions, are based upon information furnished in students' applications and any other relevant information.

All enrolling students living in New Hampshire are required to submit an electronic NH residency statement to the effect that they, if financially independent, or their parents/guardians, if financially dependent, have been legally domiciled in New Hampshire continuously for a period of at least twelve months immediately prior to registering for the term for which the student is claiming in-state status. The electronic NH residency form will be emailed to students shortly after they confirm their enrollment at UNH. Should you need a copy of the NH residency form, please contact the Office of Admissions via email at [admissions@unh.edu](mailto:admissions@unh.edu). Students admitted from states other than New Hampshire or from foreign countries are considered nonresident throughout their attendance at the University unless they have acquired bona fide domicile in New Hampshire.

If students maintain residency apart from that of their parents/guardians, they must clearly establish that they are financially independent and that their residence in New Hampshire is for some purpose other than the temporary one of obtaining an education at the University. To qualify for in-state status, students must have been legally domiciled in New Hampshire continuously for a period of at least twelve months prior to registering for the term for which in-state status is claimed.

The burden of proof in all cases is upon the applicant. The University reserves the right to make the final decision concerning resident status for tuition purposes.

A copy of the rules governing residency may be obtained from the Office of Admissions and on the following website: <https://www.unh.edu/policy/bot/iv-financial-policies/e-classification-students-tuition-purposes-residency-rules>

## Campus Life, Programs and Services for Students

The University offers programs and services to help every student get the most out of their college experience.

## Advising Services

Every UNH student is assigned an academic advisor, who provides help in choosing courses and planning a program of study. Other sources of help, for academic or personal problems, are described below.

## Career and Professional Success (CaPS)

With an uncommon commitment to personal and professional development, Career and Professional Success (CaPS) empowers all UNH students to proactively build the knowledge and skills they need to adapt and succeed in an ever-changing future. We are coaches, connectors, and champions for students and alumni in the Wildcat community. In partnership with faculty, staff, employers, and our global alumni network, we orchestrate opportunities for students to build personal and career awareness, build a personal brand, build professional experiences, and build professional relationships, equipping all with the tools to thrive throughout their lives.

For more information about programs, services and opportunities, call (603) 862-2070, email [caps@unh.edu](mailto:caps@unh.edu), visit [www.unh.edu/career](http://www.unh.edu/career), or



follow UNH Career and Professional Success on all major social media platforms.

## Internships

Career and Professional Success supports students in locating pre-professional internships in settings ranging from traditional business and research facilities, to more uniquely tailored environments that reflect academic and career interests. Students who wish to engage in career-oriented work experiences for university credit should consult with an appropriate faculty sponsor in their department regarding established programs and the possibility of receiving academic credit. Many academic departments list internship opportunities and programs on the department website.

Additional paid and unpaid internship postings can be found through UNH's job and internship board, [Handshake](#).

For more information on internships at UNH, call (603) 862-2070 and/or visit [www.unh.edu/career](http://www.unh.edu/career).

## Center for Academic Resources (CFAR)

The Center for Academic Resources (CFAR) offers a holistic approach to our academic-related services for undergraduate students. Our dedicated team of professional educational counselors and student academic mentors are committed to enhancing students' educational experience and academic success. We coach students on how to study smarter in their classes focusing on note taking and reading strategies, exam preparation and taking skills, approaches to problem-solving and language learning, organizational skills, time management, and ability to access and utilize online portals. Using an individualized approach, we bring our valuable academic experiences and specialized training to our student meetings. Our services are easy to access. Students can drop-in Monday through Thursday from 11 to 3 and meet with an academic mentor or educational counselor. Appointments are available Monday through Friday from 9 to 5 through <https://unh.mywconline.com/>. Study tools and STEM resources can also be found on our website. For more information call (603) 862-3698, e-mail [cfar.sss@unh.edu](mailto:cfar.sss@unh.edu) or visit <http://www.unh.edu/cfar>

## TRIO Scholars - Student Support Services (SSS)

The TRIO Scholars (SSS) program is federally funded by the United States Department of Education to increase the retention and graduation rates of program participants. Students are eligible for TRIO Scholars (SSS) if they will be the first in their family to earn a bachelor's degree, if their family income is within program guidelines, or if they have a documented disability.

TRIO Scholars (SSS) participants work with a TRIO Educational Counselor to create individualized success plans focusing on academic development, financial literacy, personal development, and professional development to help translate personal goals into action. The TRIO Scholars (SSS) program also includes educational workshops, cultural events, and leadership development opportunities, as well as the opportunity to have access to free tutoring.

The [TRIO Scholars \(SSS\)](#) program is located in Smith Hall.

*\*UNH TRIO Student Support Services is funded by the US Department of Education and the University of New Hampshire. In 2021-22 federal funding totals \$379,979. The University of New Hampshire contributes an additional*

*\$85,897 in matching funds. The project is funded to serve 200 students in 2021-22.*

## Honor Societies

The University of New Hampshire has a long and strong/valued tradition of recognizing outstanding student academic achievement through election to a variety of honor societies. Some of these national societies recognize performance in any academic field while others are limited to specific disciplines.

Honor societies are most prevalent in colleges and universities. Based on varying criteria of high academic achievement and leadership, students are invited to join most commonly in their junior or senior year. Although initiated into the campus chapter, students become members of the national society for life. For more information visit <https://www.unh.edu/honors-program/national-honor-societies>.

### Discipline Society Name and Sash/Stole/Cord Color UNH Contact

#### Athletics

Chi Alpha Sigma, Black and Gold Cord, [Joanne.Maldari@unh.edu](mailto:Joanne.Maldari@unh.edu) ([joanne.maldari@unh.edu](mailto:joanne.maldari@unh.edu))

#### Band

Kappa Kappa Psi, Blue and White Cord, [Casey.Goodwin@unh.edu](mailto:Casey.Goodwin@unh.edu) ([casey.goodwin@unh.edu](mailto:casey.goodwin@unh.edu))

#### Biological Sciences

Phi Sigma, Yellow, Green and White Cord, Dr. [Estelle.Hrabak@unh.edu](mailto:Estelle.Hrabak@unh.edu) ([estelle.hrabak@unh.edu](mailto:estelle.hrabak@unh.edu))

#### Business

Beta Gamma Sigma, Gold and Blue Cord, [Sherri.Cannon@unh.edu](mailto:Sherri.Cannon@unh.edu)

#### Campus-Wide

Golden Key, Blue and Gold Sash, TBA

#### Classics

Eta Sigma Phi, Gold and Purple Cord, Dr. [Richard.Clairmont@unh.edu](mailto:Richard.Clairmont@unh.edu) ([richard.clairmont@unh.edu](mailto:richard.clairmont@unh.edu)) and Dr. [Scott.Smith@unh.edu](mailto:Scott.Smith@unh.edu) ([scott.smith@unh.edu](mailto:scott.smith@unh.edu))

#### Communications

Lambda Pi Eta, Red, White and Gold Cord, Professor [Michelle.Gibbons@unh.edu](mailto:Michelle.Gibbons@unh.edu)

#### Computer Science

Upsilon Pi Epsilon, Maroon and White Cord Dr. [Radim.Bartos](mailto:Radim.Bartos@unh.edu), [rbartos@cs.unh.edu](mailto:rbartos@cs.unh.edu)

#### Economics

Omicron Delta Epsilon, Gold and Blue Cord, Dr. [Marc.Herold@unh.edu](mailto:Marc.Herold@unh.edu)

#### Engineering

Tau Beta Pi, Orange and White Cord, Dr. [Erin.Bell@unh.edu](mailto:Erin.Bell@unh.edu) ([erin.bell@unh.edu](mailto:erin.bell@unh.edu))

#### Engineering

UNH Society of Women Engineers, Green and Yellow Stole, Dr. [May-Win.Thein@unh.edu](mailto:May-Win.Thein@unh.edu) ([may-win.thein@unh.edu](mailto:may-win.thein@unh.edu))

## English

Sigma Tau Delta, Cardinal and Black Cord, Carla Cannizzaro, [Carla.C@unh.edu](mailto:Carla.C@unh.edu) ([carla.c@unh.edu](mailto:carla.c@unh.edu))

## Fraternity/Sorority

Order of Omega, Gold and Ivory, [Jamie.Silverstein@unh.edu](mailto:Jamie.Silverstein@unh.edu)

## Health Pre-Profession

Alpha Epsilon Delta, Purple and Red Cord, Dr. Mary K. Lockwood, [mkk1@unh.edu](mailto:mkk1@unh.edu)

## History

Phi Alpha Theta, Red and Blue Cord, [Elizabeth.Mellyn@unh.edu](mailto:Elizabeth.Mellyn@unh.edu)

## Hospitality and Management

Eta Sigma Delta, Yellow, [Dan.Innis@unh.edu](mailto:Dan.Innis@unh.edu)

## Justice Studies

Alpha Phi Sigma, Blue and Gold, [Marion.Girard.Dorsey@unh.edu](mailto:Marion.Girard.Dorsey@unh.edu) and [Deborah.Briand@unh.edu](mailto:Deborah.Briand@unh.edu)

## Liberal Arts

Phi Beta Kappa, Pink and Blue Cord, Dr. [Susan.Siggelakis@unh.edu](mailto:Susan.Siggelakis@unh.edu) ([susan.siggelakis@unh.edu](mailto:susan.siggelakis@unh.edu))

## Mathematics

Pi Mu Epsilon, Gold, Purple and Lilac Cord, Ellen O'Keefe, [emo@cisunix.unh.edu](mailto:emo@cisunix.unh.edu)

## Natural Resources

Xi Sigma Pi, Green and White Cord, Dr. [Mark.Ducey@unh.edu](mailto:Mark.Ducey@unh.edu) ([mark.ducey@unh.edu](mailto:mark.ducey@unh.edu))

## Nursing

Sigma Theta Tau, Orchid and White, [Kelly.Grady@unh.edu](mailto:Kelly.Grady@unh.edu) and [Angela.Braswell@unh.edu](mailto:Angela.Braswell@unh.edu)

## Political Science

Pi Sigma Alpha, Red, White and Black Cord, Dr. [Susan.Siggelakis@unh.edu](mailto:Susan.Siggelakis@unh.edu) ([susan.siggelakis@unh.edu](mailto:susan.siggelakis@unh.edu))

## Psychology

Psi Chi, Platinum and Dark Blue, [Kelly.Peracchi@unh.edu](mailto:Kelly.Peracchi@unh.edu)

## Social Work

Phi Alpha, Gold Cord, [Gretchen.Bean@unh.edu](mailto:Gretchen.Bean@unh.edu) ([gretchen.bean@unh.edu](mailto:gretchen.bean@unh.edu))

## Sociology

Alpha Kappa Delta, Teal Cord, [Catherine.Moran@unh.edu](mailto:Catherine.Moran@unh.edu)

# International Students and Scholars

The Office of International Students and Scholars (OISS) provides a wide range of services to international students, faculty, staff and exchange scholars. These services begin before the international visitors arrive on campus and often continue past the completion of their programs. OISS services include: Preparation of eligibility documents for visa issuance along with pre-arrival instructions and information; Preparation of applications to U.S. immigration offices to secure appropriate work authorization for international faculty and staff; In-depth and engaging orientation programs for new students and scholars covering a variety of issues such as immigration rights and responsibilities, adjusting to life in another culture, working in the U.S., adapting to the U.S. educational system, area attractions and services, and much more; A variety of workshops and seminars covering topics such as immigration and employment and career orientation seminars; Programming and events

such as International Education Week, international student and scholar lunches, presentation series, graduation receptions, trips, and much more.

All international students are encouraged to maintain contact with the OISS and are required by law to report changes of address, academic program, or source of educational funds.

OISS also serves as a key liaison between international students, faculty and staff and various other UNH offices and departments. For more information visit [www.unh.edu/global](http://www.unh.edu/global) or call (603) 862-1288.

# Military & Veteran Services

The mission of the Military & Veteran Services Office is to provide the highest quality service and support to Student Veterans, Service Members, and other military-affiliated students such as dependents, as outlined in the Veteran Administration's **Principles of Excellence** and **8 Keys of Success**. Furthermore, we strive every day to ensure that we exceed the University's inclusivity standards as laid out by the University Commission on Community, Equity, and Diversity.

**In order to achieve our mission, our services include:**

- **Processing** military educational benefits in an accurate, efficient, and timely manner in accordance with federal and state law, VA regulations, and USNH Board of Trustees policy
- **Providing** a comfortable space for student Veterans, Service Members, and other military-affiliated students to study and socialize, to include Veteran-only on-campus housing
- **Supporting** the UNH Student Armed Forces Association, the primary student organization for student Veterans, Service Members, and other military-affiliated students
- **Coordinating** a wide range of events for our students, including:
  - On-campus appointments with VA representatives
  - Veteran-specific informational sessions for opportunities such as the Fulbright program
  - Veteran-specific orientation for incoming Veterans and members of the National Guard or Reserves
  - Ice cream, hot chocolate, and pizza socials
- **Advising** students on how to use their military educational benefits, make the most of their time at UNH, transition from military to civilian employment, and plan for life after college
- **Ensuring** student Veterans achieve their academic and professional goals by providing priority course registration, meaning student Veteran register during the initial registration period of their class

We subscribe to and follow PL 113-146 Section 702, The Veterans Access, Choice and Accountability ACT of 2014. A summary of this act can be found here <https://www.va.gov/opa/choiceact/documents/Choice-Act-Summary.pdf>.

Veterans have priority registration. This means that Veteran students register during the initial registration period of their class.

For more information call (603) 862-0643, visit our website at [www.unh.edu/veterans](http://www.unh.edu/veterans), or email us at [UNH.Veterans@unh.edu](mailto:UNH.Veterans@unh.edu).

# Psychological and Counseling Services

Psychological and Counseling Services (PACS) is the primary mental health facility on campus. We are fully funded by student fees. Our

confidential services are designed to help students who are enrolled in full-time study to achieve their personal and academic goals. PACS utilizes a brief, solution-focused counseling model. We provide online interactive self-help therapy via WellTrack, individual and group therapy in person and via telehealth, workshops, and consultation with a psychiatrist. We offer crisis counseling in person, during business hours, and after hours, through ProtoCall. Students needing longer term service are offered referrals to other university and community agencies.

We also aim to serve the community while being part of the community. As community members with specialized training in working with the university population, we are knowledgeable about the special needs of students, faculty, staff. A large part of our community work focuses on prevention; we believe that increased awareness of healthy ways to cope with stress can help the UNH community and its individual members achieve their professional and personal goals.

All information about a student's visits to PACS is confidential and cannot be released without the written permission of the student. The University of New Hampshire Psychological and Counseling Services has been accredited by the International Association of Counseling Services since 1978.

For more information, call (603) 862-2090 or visit <http://www.unh.edu/pacs>.

## Student Accessibility Services

Student Accessibility Services (SAS) is committed to establishing a community that ensures full participation for students with disabilities by providing assistance that facilitates independence and academic progress. The office is responsible for determining a range of student supports, including but not limited to academic, housing and dining accommodations. In addition, we are a source of information and referral; a resource and collaborative partner for the campus community; and a point of support and advocacy regarding access issues in general.

All accommodation requests are considered through an interactive accommodations process. This consists of three important steps: (1) register with SAS, (2) submit documentation, and (3) meet with SAS. To learn more about our documentation requirements for both general and housing-only requests, please see our Documentation Guidelines pages on our website. There is no deadline to make contact, complete an intake, or provide documentation, but accommodations cannot be applied retroactively so timeliness of the request is important. Accommodations can also be reconsidered at any time. Should a student have the need to change their accommodations, students should contact SAS to discuss the request.

If you would like to request accommodations or would like to learn more about the services offered within SAS, please contact: For more information call (603) 862-2607 (voice), 711 (TTY) or 800-735-2964 (Relay NH); (603) 862-4043 (fax); e-mail [SAS.office@unh.edu](mailto:SAS.office@unh.edu); or visit <http://www.unh.edu/studentaccessibility>. Student Accessibility Services is located in Smith Hall, Room 201.

## General Information for Students with Disabilities

Students seeking academic or housing accommodations, services, and accessibility should contact Student Accessibility Services (SAS): voice (603) 862-2607; TTY Users: 711 or 800-735-2964 (Relay NH); e-mail [SAS.office@unh.edu](mailto:SAS.office@unh.edu).

Students with disabilities who need accessible UNH housing should contact SAS as early as possible to allow for identification of appropriate accommodation(s) and notification from SAS to Housing.

For information about dietary restrictions, visit <http://www.unh.edu/dining/nutrition>.

Most major buildings have ramps and many have elevators and adapted restroom facilities. Contact SAS, (603) 862-2607, or Affirmative Action, (603) 862-2930, with questions about building facilities.

No otherwise qualified individual may be excluded from or denied access to any program, course of study, or any other offering of the University solely on the basis of a disability. Concerns regarding the institution's compliance with the Americans with Disabilities Amendments Act (ADAA) of 2008, or Section 504 of the Rehabilitation Act of 1973 should be addressed to the ADA/504 Compliance Officer in the Affirmative Action Office at (603) 862-2930 (Voice/TTY).

## University Advising Center

The University Advising Center provides academic advising to undeclared students in the College of Liberal Arts. The center's professional staff provides assistance to students in clarifying their interests and skills as they relate to developing a program of study at the University and declaring a major, offering opportunities to explore career possibilities.

The center is the primary academic advising resource for non-degree students and assists all students in identifying and connecting with other resources across campus.

For more information call (603) 862-2064 or visit [www.unh.edu/uac](http://www.unh.edu/uac).

## University Writing Programs

The University Writing Programs (UWPs) were created to promote, support and assess writing at the University of New Hampshire. The UWPs are housed in Academic Affairs and report to the Senior Vice Provost for Academic Affairs. The UWPs are contained in a single unit that includes responsibility for the Writing Committee, Writing Across the Curriculum (WAC), the Connors Writing Center (CWC), and the Online Writing Lab (OWL). The curricular component of WAC, consisting of the writing-intensive (WI) courses, is situated within academic departments.

We work with academic units, departments, allied programs, individual faculty, and students to advance the culture of writing at UNH. This approach values and encourages writing as an "activity and subject of study,"<sup>1</sup> not only in writing intensive (WI) classes but wherever writing occurs. Through frequent guided practice, UNH students become accustomed to negotiating the writing process, are more self aware and able to transfer positive writing habits, and can adjust to differing genre conventions. We offer a wide array of services and resources to support students and faculty with their writing-based endeavors in the curriculum.

For more information call (603) 862-3272 or visit [www.unh.edu/writing](http://www.unh.edu/writing).

<sup>1</sup> Adler-Kassner, Linda, and Elizabeth Wardle, *Naming What We Know: Threshold Concepts of Writing Studies*. Boulder: UP Colorado. 2015. 15. Print.

## Connors Writing Center

The Connors Writing Center offers free, one-on-one writing conferences to members of the UNH community: students, faculty and staff. We work with writers from all disciplines on many different kinds of writing. Our

50 minute conferences are conducted by trained writing assistants, who are UNH undergraduate and graduate students.

We work with writers on all types of writing, from analysis essays to lab reports, conference proposals to dissertations. Our conferences are not limited to one specific type of writing or a single academic field—we collaborate with writers from across the university on a large range of academic writing.

Typically, the writers who visit are working on projects for courses. But we also see writers who are working on personal projects, statements of purpose and personal statements for graduate school, and so on.

For more information about resources and services available call (603) 862-3272 or visit [www.unh.edu/writing](http://www.unh.edu/writing).

## Cross Campus Registration

Students at the University of New Hampshire and the University of New Hampshire at Manchester may take courses on a space available basis at either campus. Students from either campus should consult with their advisor regarding which courses are appropriate for registration. Please note: students will need special approval to register for cross-campus courses which have campus, college or major restrictions or require special permission. Students can view a full listing of courses at each campus, including restrictions online at [courses.unh.edu](http://courses.unh.edu).

## Fees and Expenses

The expected cost for 2022-2023 at the University will average about \$32,000 for residents of New Hampshire and about \$51,000 for nonresidents. See the UNH Student Accounts (formerly known as Business Services) [website](#) for the most up-to-date listing of rates.

UNH bills are sent electronically only. Bills are posted to student [Webcat](#) accounts. Students are notified through UNH assigned e-mail addresses when new bills are posted.

## Tuition

Students are permitted to enroll for more than 20 credits only with the approval of their college or school dean. Persons carrying more than 20 credits will be billed a per-credit fee for each credit above 20 credits, whether or not a student has obtained the dean's approval. Courses taken for audit are charged at the same rates as for-credit registrations.

Undergraduates registering for fewer than 12 credits pay the per-credit hour charge, plus a registration fee of \$20 per semester. Undergraduates registered for fewer than 12 credits are charged 50 percent of the usual mandatory fees. Students registered for fewer than 5 credits pay the technology and registration fee but are not charged for the other mandatory fees. The minimum charge for any recorded course is the per-credit charge of 1 credit hour.

Tuition differential charges apply to some majors. Students in the College of Engineering and Physical Sciences (CEPS), including engineering and computer science, and the Peter T. Paul College of Business and Economics (PAUL) will be charged a tuition differential. The differential is the same rate for both N.H. residents and nonresident students. CEPS and PAUL students who register for fewer than 12 credits pay a differential per-credit hour. Music majors are charged an applied music fee of \$450 each semester.

All admitted students must pay an enrollment fee. The fee is \$400 for residents and nonresidents. If a student decides not to attend the

University, these payments may be refunded on a prorated basis until August 15, according to the guidelines set by the Office of Admissions.

Tuition and mandatory fee charges will be refunded to students withdrawing or dropping courses by the second Friday of the semester; one-half after the second Friday and until the fifth Friday; and none thereafter (see the University Calendar). Students receiving federal financial aid will have their return of unearned aid calculated in accordance with the U.S. Department of Education regulations in effect at the time of their withdrawal. For more information concerning withdrawal, call Student Accounts, (603) 862-2230. A degree candidate who withdraws from UNH and subsequently enrolls as a special student within the following year will be billed for tuition and fees on the same basis as degree candidates. Students with outstanding financial obligations to the University must clear their accounts before their registration will be confirmed.

## Fees

Expected mandatory fees for 2022-2023 include a Memorial Union fee for the use and administration of the student union; a recreational fee for support of recreational facilities; a student activity fee for support of the undergraduate newspaper, yearbook, student government, student radio station, and other student organizations; a technology fee; a student athletic fee to provide support for athletic programs; a health and counseling fee to provide general health care through University Health & Wellness; a career and professional success fee; and a transportation fee to provide student transportation services.

There are no waivers of these fees. The services and facilities are available to all—the extent to which each student uses them cannot be the factor by which assessment is determined. Students who withdraw or drop to part-time after classes begin are eligible for refund of fees at the same rate as tuition refunds listed previously.

As a condition of enrollment, all full-time UNH students will be required to carry health insurance. Students may elect coverage under the University's student health benefits plan, or may waive the requirement by providing proof of adequate coverage through another plan. International students with F1 or J1 visas are required to purchase the UNH-sponsored coverage. There are no exceptions to this policy.

## Mandatory Fees Include

### Recreation Fee

- Use of indoor pool at the field house
- Use of athletic facilities at the Whittemore Center, which includes:
  - Aerobics
  - Saunas
  - Locker rooms
- With an additional fee:
  - CPR/first aid course
  - Ballroom dancing
  - Lifeguard instruction

### Health & Wellness Fee

For information, see [Health & Wellness](#).

### Memorial Union Fee

For information, see [Memorial Union](#).



### Athletic Fee

- Admittance to all home games of organized sports at UNH
- Financial support for athletes and athletic teams

### Activity Fee

Support for the following organizations:

- The undergraduate newspaper
- Yearbook
- Student government
- Student radio station
- Movies at reduced rates

For more information, check the "Get Involved" guide available at the Memorial Union Building.

### Career and Professional Success

Helps prepare students for successful lives after graduation.

- internships
- career advising and resources
- assessments
- employer relations
- interview preparation
- mentoring

### Technology Fee

Support for the following:

- Student computing clusters
- Walk-in Help Desk services
- Technology-enhanced classroom infrastructure
- Academic technology liaisons
- Technology-enhanced learning

### Transportation Fee

Student transportation services:

- Campus Connector
- Wildcat Transit
- Safe Rides
- Amtrak Quik Ticket trip
- Non-emergency rides

## Room and Board

New first-year students accepting a space on campus must include a \$200 housing deposit with their housing application. If by Friday of the first week of fall class the student fails to occupy the assigned room or cancels the agreement by mutual consent, or if for disciplinary or nonrenewal actions the agreement is canceled, the student will receive a 75 percent refund of the semester's housing fee. Cancellation after the first Friday of fall classes and before 30 days after registration will result in a 50 percent refund of the semester's housing fee. Cancellation 30 days after registration will result in no refund of the housing fee. Students who check in or move into a hall or apartment, move out, and do not withdraw from the University are charged the full housing fee. If the agreement is canceled, any refund of the housing deposit will first be applied against any unpaid University charges.

For returning students, no deposit is required; instead, a cancellation fee will apply if the housing agreement is cancelled. Written notification of

cancellation of the assignment received by Housing before June 1 will result in a \$500 cancellation fee applied to the student's account. Written notification of cancellation received by Housing after June 1 will result in a cancellation fee of 100% of the fall semester housing rate.

## Rebates

Any amount owed to the University will be deducted from any rebate due to a student.

## Deposits and Course Fees

Refundable deposits may be required to cover locker keys or loss or breakage in certain departments. A semester charge will be made for individual lessons in music, as noted in the description of applied music courses. (Non-music majors taking music courses or sections will be charged an applied music fee). A charge will be made for riding lessons and SCUBA, as noted in the sections on animal sciences and physical education. Some courses carry special fees to cover the costs of special equipment, field trips, etc.; these are noted in the course descriptions.

Students will be charged a computer-use fee for courses requiring computer access and/or common access accounts. For certain courses, there are also lab fees.

## Other Expenses

Books and classroom supplies cost approximately \$800 to \$1,000 annually. These may be purchased at the University Bookstore.

Personal expenses vary considerably with individual students and include clothing, laundry, recreation, incidentals, and travel.

## Payment

All bills for tuition, fees, room and board, and other semester charges are due in full on the payment due date for each semester. A late fee may be assessed to student accounts not paid in full by the payment due date. Student accounts not paid in full within 30 days after the payment due date may be assessed additional late fees, default charges, interest and/or collection costs, and the student may be subject to deregistration from classes.

Parents and students who wish to make periodic payments for tuition, fees, room and board, and other semester charges should contact UNH Student Accounts well in advance of the semester payment due date for information on approved payment plans.

Undergraduate bills are sent electronically through posting to students' Webcat accounts. University bills are posted monthly starting on July 10th for the fall semester and December 10th for the spring semester. Monthly statements continue to be posted on the 10th of each month. E-mails are sent to students' UNH-assigned e-mail addresses notifying students when new bills have been posted. Students may set up Parent Portal accounts to allow parents or others to access their student accounts and receive billing notifications.

Through the online system, students can view a history of electronic bills and payments and access a real-time view of their accounts. Payment may be made online, or the bill may be printed and mailed with payment. Credit card transactions will be charged a non-refundable 2.75 percent service fee.

## VA Educational Benefit

In accordance with 38 USC §3679(e), students using VA Chapter 33 Post-9/11 GI Bill® or VA Chapter 31 Vocational Rehabilitation will not accrue late fees for unpaid bill items covered by their VA educational benefit while waiting for disbursement of the aforementioned funds to UNH. Furthermore, students certified as using these VA benefits will not be precluded from attending classes, utilizing library or other institutional facilities, or be required to borrow additional funds because of their inability to meet their financial obligations to UNH due to delayed disbursement of funds from VA under Chapters 31 or 33. However, students may accrue late fees as applicable to unpaid bill items other than tuition and fees covered by Chapters 31 or 33. Moreover, UNH reserves the right to impose a late fee if the difference between the amount of the student's financial obligation and the amount of the VA education benefit disbursement remains unpaid after student bills are due. Differences may be a result of, but not limited to, charges for housing, meal plans, parking permits, or if the student is not entitled to 100% of Chapter 33. GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government Web site at <https://www.benefits.va.gov/gibill>.

## Financial Aid

The [University Financial Aid Office](#) assists students who are unable to meet educational expenses entirely from their own family resources. Aid is available in the form of grants and scholarships, loans, and part-time employment. The financial aid website gives program information, application procedures, and deadlines.

In many communities, scholarships and loans are available locally. School principals and guidance counselors have information about these sources of assistance, which are available to both high school seniors and adult students.

Before applicants may be considered for assistance by the University, they must submit the [Free Application for Federal Student Aid \(FAFSA\)](#).

The financial aid application priority consideration deadline for aid awarded by the University is March 1. In order to receive a timely award this is the date by which your fully completed FAFSA should be received by the federal processor.

It is the University's position that the student applicant is accountable for the accuracy and timely submission of the FAFSA. We realize that in most cases a student's parent(s) also participates in completing the form. However, it is the student who is ultimately responsible for monitoring the application process. Students should not wait until being admitted to the University before applying for financial aid.

In order to be considered for need-based assistance, students must submit a FAFSA each year.

Note: There is reference on the FAFSA to a "deadline" of June 30. Do not be misled by this date. It is not the financial aid deadline at UNH or most other colleges.

## Grants and Scholarships

Admitted undergraduate degree candidates who will attend UNH on a full- or part-time basis may be considered for tuition grants and University scholarships. The basic consideration is financial need, although some scholarships are awarded on the basis of scholastic attainment,

participation in extracurricular activities, or meeting specific requirements of a donor.

The University participates in the federally sponsored Federal Supplemental Educational Opportunity Grant Program, which is designed to assist needy students who are admitted degree candidates.

## Federal Pell Grant Program

Students may apply directly to the federal government for a Pell Grant using the FAFSA.

## Loan Programs

Matriculated students enrolled on a full- or part-time basis who have completed the financial aid process will be reviewed for the federal government's Direct Student Loan Program.

## Part-Time Employment

The Federal Work-Study Program, both academic year and summer, assists students who, as determined by the Financial Aid Office, need financial assistance for their educational expenses. Admitted undergraduate and graduate degree candidates attending at least half time are eligible for consideration.

Students who do not qualify for the Work-Study Program may find part-time employment on or near campus.

## ROTC Scholarships

Reserve Officer Training Corps scholarships are offered on a competitive basis by both the Army and the Air Force. Entering freshmen may compete for four-year scholarships during the last year of high school. A variety of scholarships are also available to students already attending the University.

Scholarships pay up to full tuition, all mandatory fees, and for required textbooks. In addition, all scholarship recipients receive a tax-free monthly subsistence allowance. Finally, students with a four-year or three-year ROTC scholarship compete for a room and board grant for the entire time they are on the scholarship.

For more information, contact the Admission Officer: Army ROTC at (603) 862-7075, or Air Force ROTC at (603) 862-1480.

## Health & Wellness

The University has a [nationally accredited](#) health and wellness program.

## Our Mission

[Health & Wellness](#) provides whole person-centered care and services, illness prevention and health promotion, co-curricular learning opportunities, and public health leadership and expertise. All are tailored to support our students' health, well-being, and personal development, the health of the campus community and the mission of our University. Health & Wellness is accredited by the Accreditation Association for Ambulatory Health Care (AAAH).

## Health & Wellness Fee

All UNH students who take five or more credit hours/semester are required to pay the [UNH Health & Wellness fee](#). This fee allows students to access services at Health & Wellness on campus, and covers many services at no or reduced cost. When combined with a student's health

insurance coverage, the Health & Wellness fee provides for a complete health care package. A student's health insurance is never billed for services covered by the UNH Health & Wellness fee.

## Health Insurance

UNH requires health insurance as a condition of enrollment for full-time degree students at its Durham, Manchester, and Concord campuses. Some students have the option of waiving this requirement if they present proof of adequate coverage; alternatively, students can acquire an affordable health benefits plan sponsored by the University. International students with F-1 and J-1 visas are required to purchase the UNH Student Health Benefits Plan (SHBP). [Learn more about the SHBP and the waiver process here.](#)

## Health Record Requirement

Undergraduate students who have been formally accepted to a degree program are required to have health information on file with UNH Health & Wellness. The three requirements to be completed and submitted by the student online are:

1. a physical assessment,
2. immunization form, and
3. a health history form.

Prior to matriculation at a member institution within the University System of New Hampshire (USNH), all undergraduate and graduate students are required to provide proof of immunization or demonstrate their immunity to specific vaccine-preventable diseases as outlined below.

Required\*:

- Measles, Mumps, Rubella (MMR): 2 doses at least 28 days apart, initiated after 12 months of age, or immune titers
- Meningococcal (ACWY): 1 dose required within 5 years of enrollment; a booster dose required if initial dose administered prior to age 16
- Tetanus, Diphtheria, Pertussis (Tdap): within 10 years, after completion of primary series
- Chicken Pox (Varicella): two doses of vaccine, separated by four to eight weeks, or immune titer

Strongly Recommended:

- Staying up-to-date on COVID-19 vaccination recommendations
- Influenza: annually
- Hepatitis B: series of 3 doses

Documentation of proof of vaccination or immunity (detailed below) is required ([UNH Academic Policy 02.14](#)) and is typically shown on the immunization form. It is the responsibility of students to provide the documentation before attending any classes. Any student failing to complete these requirements may be prevented from registering for future classes.

*These health forms are required before moving into residence halls and starting classes. Failure to submit forms may prohibit students from moving into their residence halls until they are compliant.*

[Learn more about incoming student health record requirements here.](#)

## Medical Services

UNH Health & Wellness provides comprehensive, student-focused, primary medical care through a team approach. The clinical staff consists of board-certified physicians, nurse practitioners, nurses, and medical assistants who are committed to prevention and holistic care. Primary medical care is provided for a variety of common concerns. Examples include respiratory illnesses (including asthma), infections, injuries, skin concerns, digestive disorders, allergy/immunization services and travel health consultation, mental health, and gender-affirming care. Sexual/reproductive health services include family planning/contraceptive services, cervical cancer (Pap smears) screening/prevention, testing and treatment for sexually transmitted infections, pregnancy testing and counseling, limited sexual assault services, and more. Health resource nurses provide chronic illness support and assist with problems arising from hospitalization.

Students may speak by telephone with a health resource nurse for advice at any time, and after-hours nurse consultation is available when UNH Health & Wellness is closed. On-site clinical support services include laboratory services, radiology, and pharmacy. Not all services are available during the summer or breaks. Read more [about medical services](#).

For [emergencies and after-hours care](#), well-staffed and well-equipped urgent care centers and community hospitals are nearby, and an emergency ambulance service is available in Durham at all times.

## Living Well Services

Living Well Services coordinates health promotion activities on campus. Services provided include educational programs, workshops, and classes; individual wellness counseling and coaching to promote healthy lifestyle choices, including alcohol and other drug counseling, nicotine cessation services, nutritional counseling, wellness coaching (e.g., stress, sleep, behavior change, etc.); and integrative mind-body services, including biofeedback, light therapy, and massage therapy. Read more about [Living Well Services](#).

## Library

The UNH Library supports the educational and research activities of the students, faculty, and staff of the University of New Hampshire as a research-level library. Experienced research assistance along with group and individual instruction helps students learn how to efficiently research and critically evaluate information. The Library provides access to an extensive collection of electronic resources (e-books, digital collections, an institutional repository, indexes in many subject areas, statistical data sets, and databases supplying full-text journal and newspaper articles) 24/7 at [library.unh.edu](http://library.unh.edu).

The Library has approximately 2.7 million print and electronic items and more than 140,000 print and electronic serial subscriptions and is active in digitizing, preserving, and making accessible materials in its collections. Dimond Library houses collections in the social sciences, humanities, business, health and human services, education, and earth sciences and is the regional depository for federal government publications (including maps). It is also home to the Connors Writing Center, the Academic Technology Support Center, and Zeke's Cafe. Special Collections and Archives collects rare books, manuscripts, and University publications and papers. In addition to the main Dimond Library, there are three branch libraries for physical sciences and

engineering that offer customized services for the UNH scientific and engineering communities.

The library's holdings are supplemented by access to the collections of Boston Library Consortium member libraries as well as library collections around the globe through interlibrary loan. The UNH Library shares resources with the campus library at the University of New Hampshire at Manchester and collaborates with the UNH School of Law library. All library locations offer wireless Internet access, computer workstations, individual study areas, and collaborative group work spaces. Dimond Library offers seating for more than 1,200 in a variety of settings.

For additional information about UNH Library resources, services, and expertise, please visit <https://www.library.unh.edu> and for the latest Library information and news, follow us on Instagram, Facebook or Twitter @unhlibrary.

# University Academic Requirements

## Degree Requirements

### Degree Requirements for Undergraduates

Requirements in this catalog apply to students who enter the University between July 1, 2022 and June 30, 2023. Students who entered the University at an earlier time but who wish to change to the requirements of this catalog must apply to the appropriate office for the change. Students will be held responsible for all work required for graduation and for the scheduling of all necessary courses.

## Credit Requirement

To be eligible for graduation from the University of New Hampshire, a student must obtain a passing grade in a minimum of 128 semester hours; for associate degree graduation, 64 semester hours. The student must also meet the curricular, departmental, scholastic, and other requirements that have been sanctioned by the proper authorities.

To be eligible for graduation, all baccalaureate, associate in applied science and associate in art students enrolling for academic year 2022/23 must fulfill four types of University requirements: Writing, Discovery (or General Education for associate degree students), degree, and major.

## Minimum Graduation Average

A cumulative grade-point average of 2.0 in University of New Hampshire courses is the minimum acceptable level for undergraduate work in the University and for graduation. In addition, some majors require a grade-point average greater than 2.0 in certain courses or combinations of courses. The Academic Standards and Advising Committee examines the records of students periodically and may place academically deficient or potentially deficient students on warning, or may exclude, suspend, or dismiss those who are academically deficient.

## Residence

"Residence" is being enrolled in University of New Hampshire courses after admission to and matriculation in a degree program. Students who are candidates for bachelor's and associate degrees must attain the last one-fourth of their credits toward the degree in residence unless granted permission by the Academic Standards and Advising Committee to transfer part of this work from other accredited institutions.

## Certification of candidate for graduation

Degrees are awarded three times a year: December, May and September. Candidates for graduation shall be certified as to their college requirements by the several college faculties to the Registrar, who shall recommend them to the president for their appropriate degrees provided they have satisfied all University requirements for graduation.

Modifications tend to occur in major programs during the period of students' undergraduate careers. Students are expected to conform to these changes insofar as they do not represent substantive alterations in their course of study.

Note: Although the University will try to provide sufficient facilities so that students may pursue any major or curriculum for which they meet the requirements, such a privilege cannot be guaranteed, since rapidly increasing enrollment sometimes results in the overcrowding of required specialized courses. On occasion, students may remain in a crowded

curriculum if they are willing to take certain courses during the summer session.

## Quota of Semester Credits

Students registering for more than 20 credits must receive the approval of the college dean. Additionally, students taking more than 20 credits in a single term will pay a per-credit surcharge.

Baccalaureate and associate in arts undergraduates are assigned class standing on the basis of semester credits of academic work completed with a passing grade, as follows: to be a sophomore, 26 credits; to be a junior, 58 credits; to be a senior, 90 credits. Associate in applied science undergraduates: to be a senior, 26 credits.

## Grades

Grading and honors policies as stated in this catalog apply to all undergraduate students.

Instructors assign grades as listed below; grade points per credit are indicated in parentheses. For all undergraduate courses, grading standards established by the Academic Senate are that a C indicates competent, acceptable performance and learning; B indicates superior performance and learning; and A indicates excellent performance and learning. These standards apply to all undergraduate courses, instructors, departments, subjects, and colleges. The University reserves the right to modify grading and honors practices.

- A (4.0) Excellent
- A- (3.67) Intermediate grade
- B+ (3.33) Intermediate grade
- B (3.0) Superior
- B- (2.67) Intermediate grade
- C+ (2.33) Intermediate grade
- C (2.0) Satisfactory, competent
- C- (1.67) Intermediate grade
- D+ (1.33) Intermediate grade
- D (1.0) Marginal grade
- D- (0.67) Intermediate grade
- F (0.0) Failure, academic performance so deficient in quality as to be unacceptable for credit
- AF (0.00) Administrative F (usually indicates student stopped attending without dropping the course); is included in grade-point average
- CR—Credit, given in specific courses having no letter grades, designated credit/fail
- P—Passing grade in a course taken under the student pass/fail grading alternative
- W—Withdrawal, assigned if withdrawal is later than fifth Friday of classes (but not after midsemester); is not included in grade-point average
- WP—Withdrawal, assigned if withdrawal is after mid-semester and if student is passing; is not included in grade-point average
- WF—Withdrawal, assigned if withdrawal is after mid-semester and if student is failing; is included in grade-point average
- AU—Audit, no credit earned
- IC—Grade report notation for student's incomplete coursework



- IA—Indicates "incomplete" in a thesis or continuing course of more than one semester; the grade earned will replace "IA" assigned in previous semesters
- IX—Grade not reported by instructor

Students earning a semester or cumulative grade-point average less than 2.00 are placed on "academic warning."

## Pass/Fail

While earning a bachelor's degree, students may choose the pass/fail grading alternative for a maximum of 4 credits per semester up to a total of 16 credits toward the degree.

Pass/fail cannot be used for Discovery requirements, for writing-intensive courses, for courses required by a student's major or second major, for option or minor requirements, for ENGL 401 First-Year Writing, or for repeated courses. In addition, B.A., B.F.A., and B.M. degree candidates may not use pass/fail for courses taken to meet the foreign language requirement, and no Paul College course may be taken on a pass/fail basis by a student majoring in administration, economics, or hospitality management.

The minimum passing grade for credit is a D- (0.67); any grade below this minimum is a fail. All grades will be recorded on the grade roster as A, B, C, D, F, or intermediate grades. The pass/fail marks will be placed on students' transcripts and grade reports by the Registrar's Office. The course will not be included in the grade-point calculation, but the pass or fail will be recorded, and in the case of a pass, the course credits will be counted toward degree requirements. Associate in arts students, see the University of New Hampshire at Manchester.

## Honors

An undergraduate degree student, after completion of at least 12 graded (not CR or P) credits in University of New Hampshire courses, is designated as an honor student for a given semester if the student has

1. completed at least 12 graded credits for that semester and earned at least a 3.50 semester grade-point average; or
2. earned at least a 3.50 cumulative grade-point average and at least a 3.50 semester grade-point average regardless of the number of graded credits that semester.

Bachelor's degree candidates who have earned honors for their entire work at the University will be graduated with honors based on the final cumulative grade-point average, provided that a minimum of 64 graded credits have been completed in University of New Hampshire courses. The Latin equivalent of the honors classification will appear on the student's academic record and diploma. The student's honors classification will be noted in the commencement program.

## UNH Credit Hour Policy

The University of New Hampshire is in compliance with the federal definition of credit hour. For each credit hour, the university requires, at a minimum, the equivalent of three hours of student academic work each week assuming a 15-week semester (student workload for shorter length terms must be increased proportionally per week to maintain required approximately 45 hours of work per credit per term) Student work reflects intended learning outcomes and is verified through evidence of student achievement.

## Academic Honesty

Academic honesty is a core value at the University of New Hampshire. The members of its academic community both require and expect one another to conduct themselves with integrity. This means that each member will adhere to the principles and rules of the University and pursue academic work in a straightforward and truthful manner, free from deception or fraud. The academic policy can be found in the annual publication, [Student Rights, Rules, and Responsibilities](#).

## Course Descriptions

### Credits

The University of New Hampshire is in compliance with the federal definition of a credit hour. For each credit hour, the university requires, at minimum, the equivalent of three hours of student academic work each week. Academic work includes, but is not limited to, direct faculty instruction, e-learning, recitation, laboratory work, studio work, field work, performance, internships and practica. Additional academic activities include, but are not limited to, readings, reflections, essays, reports, inquiry, problem solving, rehearsal, collaborations, theses, and electronic interactions. Student work reflects intended learning outcomes and is verified through evidence of student achievement.

The number of credits listed is the number of semester credits each course number will count toward graduation (except in the case of variable credit courses). Students must register for the number of credits shown or, if the course is variable credit, within the range of credits shown.

"Cr/F" following the course description indicates that no letter grade is given but that the course is graded Credit or Fail.

## Course Offerings

The pound sign "#" denotes any course which has not been offered in the past three academic years.

For up-to-date information about when a course is offered; who teaches the course; the number of recitations, lectures, labs, and such, students are referred to each semester's [Time and Room Schedule](#).

## Equivalent(s)

Courses are equivalent when the same course content is taught under different course subject prefixes and/or course numbers. Equivalent courses may be applied interchangeably to satisfy degree requirements, unless otherwise prohibited by program (major, minor, program) specific rules. The repeated course rule is applicable if a student takes two equivalent courses. Equivalent courses also include courses in the past taught under different subject prefixes, numbers, titles, or a writing intensive or honors course section.

## Labs

In courses that are not designated by title as laboratory courses, the notation "Lab" or "Course has a lab component" in the course description indicates that laboratory sessions are a part of the course. For example, CHEM 403 General Chemistry I.

## Mutual Exclusion

Courses are mutually exclusive when course content is too similar to earn credit for both. Students may not enroll if they have completed any mutually exclusive courses with a passing grade.

## Numeric System

The University of New Hampshire's system of numeric designation is as follows:

- 200–299 Courses in Thompson School of Applied Science.
- 300–399 Associate in arts /associate in science courses. Courses may be taken for credit only by associate's degree or nondegree students. Credits may not be applied to baccalaureate degrees.
- 400–499 Introductory courses generally not carrying prerequisites and courses generally falling within University and college requirements.
- 500–599 Intermediate-level courses for undergraduate credit only.
- 600–699 Advanced-level undergraduate courses. Entrance to courses numbered 600 and above normally requires junior standing.
- 700–799 Advanced-level undergraduate courses. Ordinarily not open to freshmen and sophomores.
- 800–999 Courses that carry graduate credit only and therefore are open only to admitted or special graduate students.

## Prerequisites and Corequisites

Prerequisites are courses that must be taken before another course. For example, SUST 401 Exploring Sustainability is a prerequisite of SUST 501 Sustainability in Action.

Corequisites are courses that must be taken in the same semester. For example, BMCB 658 General Biochemistry and BMCB 659 General Biochemistry Lab are corequisites.

## Degrees

### Bachelor of Arts

At least 128 credits in courses numbered 200-799, with a cumulative grade-point average of 2.0 for all courses taken at the University in which a grade is given.

Completion of [Discovery Program \(University core curriculum\) requirements](#) (p. 27).

Completion of the [University writing requirement](#) (p. 31).

Proficiency in a foreign language. This requirement may be fulfilled by completing the equivalent of a full-year elementary-level course in a language not previously studied, or by completing the equivalent of a semester of a course in a foreign language at the intermediate or higher level, or by earning credit through an approved Advanced Placement or College Board foreign language achievement test (minimum scores vary). The proficiency in a foreign language requirement must be satisfied by the end of the sophomore year. No credit is awarded for elementary year college coursework if the student has had two or more years of that language in high school. It is strongly advised that students check with academic departments to identify department-advised specific foreign language proficiency options.

Note: A student with a documented disability who wishes accommodation on the basis that the disability will prevent him or her

from successfully mastering a foreign language requirement, or whose foreign language requirement was waived in high school because of a documented disability, must contact Student Accessibility Services, Smith Hall, (603) 862-2607 (Voice/TDD).

An approved major.

For specific major requirements, check individual departmental or program listings.

### Bachelor of Fine Arts, Bachelor of Music

Requirements for the B.F.A. degree are outlined in the [Department of Art and Art History](#) (p. 40), College of Liberal Arts; for the B.M. degree, go to the [Department of Music](#) (p. 103), College of Liberal Arts.

### Bachelor of Science

At least 128 credits in courses numbered 200-799, with a cumulative grade-point average of 2.0 for all courses taken at the University in which a grade is given.

Completion of [Discovery Program \(University core curriculum\) requirements](#) (p. 27).

Completion of the [University writing requirement](#) (p. 31).

An approved major.

For specific major requirements, check individual departmental or program listings.

### Associate in Arts

For degree requirements, see the [University of New Hampshire at Manchester](#) (p. 403).

### Associate in Applied Science

For degree requirements, see the [Thompson School of Applied Science](#) (p. 395).

## Dual Degrees

The opportunity to pursue two undergraduate degrees simultaneously enhances and broadens the education of certain students. The program is only for those students who can adequately handle the requirements for two different degrees and who can reasonably allocate the additional time and effort needed for the program.

Except for specific five-year degree programs, a student may not pursue two different degree levels simultaneously.

### Requirements

Students desiring dual degrees must petition the college dean or deans involved for permission. Students must have a minimum 2.5 cumulative grade-point average. Students planning to take one degree in a highly prescribed curriculum should register as freshmen in the appropriate school or college for that curriculum. It is expected that candidates for two degrees will complete 32 credits beyond those required for the first degree. Students can earn more than one bachelor of science (B.S.) degree, provided that each degree is in a different field. Students cannot earn more than one bachelor of arts (B.A.) degree. Transfer students already holding a baccalaureate degree from another accredited institution may pursue an additional baccalaureate degree at the University of New Hampshire provided they fulfill the previously listed

requirements. The degree received at the first institution will be accepted by UNH as awarded by that institution.

## Supervision

As soon as a student is accepted as a candidate for two degrees, the appropriate dean(s) will appoint supervisors for each of the proposed majors. The supervisors and the student will work out a basic course plan for the two degrees and inform the appropriate dual degree dean(s) of the plan. The supervisors will maintain joint control over the student's academic program. The college offices and the supervisors will receive copies of grade reports and other records for students pursuing two degrees.

## Accelerated Master's Eligible Programs - Undergraduate Seniors

Qualified senior students at the University of New Hampshire may be admitted to the Graduate School provided they have followed normal application procedures. Students in the accelerated master's program must be admitted to the Graduate School before they may enroll in courses for graduate or dual credit. A 3.20 cumulative grade-point average is normally required to be considered for admission to the accelerated master's program.

Such seniors are normally admitted prior to the start of their last undergraduate semester, but may be eligible to apply for admission the first semester of their senior year. Seniors who have been admitted under early admission may register for a maximum of 12 credits of graduate-level courses prior to completing their bachelor's degree. Such courses may upon recommendation of the department and approval of the Graduate School count toward both a bachelor's and master's degree.

When seniors admitted to the accelerated master's program have registered for graduate courses, they must maintain a grade-point average of 3.20, complete their undergraduate degree as planned, and pass graduate courses taken for credit with a grade of B- or better. If these conditions are not met, admission is withdrawn.

Not all graduate programs participate; each program's faculty retain discretion regarding whether their program admits students under the accelerated master's program, as well as the maximum number of graduate credits permitted (not exceeding 12; e.g., some programs will accept one course, others two). Applicants are strongly encouraged to meet with the graduate coordinator in the program's faculty to discuss specifics. Dual-credit forms must be completed and approved by the dean of the Graduate School at the beginning of the semester for which dual credit is sought.

## Discovery Program

### Discovery Program (Core Curriculum Requirement)

The Discovery Program provides the intellectual framework for students in any major. It represents the faculty's collective belief in what constitutes and contributes to essential knowledge of the world. Together, students and faculty attempt to understand fully and use ethically that knowledge, both in the present and as a reservoir from which to draw in the future. These intellectual skills, knowledge, and ethical grounding will help prepare students to contribute to the creation of a more sustainable, healthy, just, and prosperous world.

*"He who learns but does not think is lost. He who thinks but does not learn is in great danger." Confucius.*

## Discovery Program Student Learning Outcomes

After completing the Discovery Program at UNH, students should be able to:

1. Communicate effectively by applying skills in reading, writing, speaking, and listening.
2. Acquire and use information appropriately and effectively to research, organize, and present knowledge.
3. Apply mathematical concepts and/or statistical models to understand phenomena and/or solve problems in multiple contexts.
4. Formulate and evaluate open-ended questions that lead to empirical/researchable investigations of complex problems and issues.
5. Analyze and synthesize ideas and perspectives from diverse traditions from around the world.
6. Analyze and synthesize ideas and perspectives from more than one academic or intellectual discipline.
7. Clarify connections between their academic learning and their own ethical values.
8. Demonstrate the integration of learning they have achieved in their major field of study.
9. Exercise imagination in grappling with complex problems of both the natural and human created worlds, and understand the centrality of imagination to all human endeavors.
10. Make connections among the various branches of human knowledge and endeavor.

## Discovery Program Requirements

### Discovery Foundation Skills

**Inquiry course.** This course may fulfill a Discovery category and/or a departmental requirement. It should be taken during a student's first or second year or prior to completion of 57 credits. For students who transfer in with 26 or more credits, the Inquiry requirement is waived automatically.

**One course in writing skills.** Most students will satisfy the first-year writing requirement with ENGL 401 First-Year Writing. This course should be taken during a student's first year or prior to completion of 32 credits.

**One course in quantitative reasoning.** This course is normally completed by the end of the first year or 32 credits.

### Discovery in the Disciplines

Students must take one course from each Discovery category at the 400-600 levels. Inquiry courses that carry Discovery category designations may be used to satisfy this requirement.

- One course in Biological Science (BS);<sup>1</sup>
- One course in Physical Science (PS);<sup>1</sup>
- One course in Environment, Technology, and Society (ETS);
- One course in Fine and Performing Arts (FPA);
- One course in Historical Perspectives (HP);
- One course in Humanities (HUMA);
- One course in Social Science (SS); and
- One course in World Cultures (WC) (also may be satisfied by approved study abroad programs).



<sup>1</sup> One of these courses must have a Discovery lab component (DLab).

## Discovery and Integrative Understanding

One senior capstone experience, supervised and approved within the major.

The capstone experience is typically completed by senior students within the major and is designed to elicit opportunities for educational reflection and synthesis of knowledge and skills; however, students who have completed 90 credits at the end of their junior year may complete their capstone during the summer prior to their senior year. The capstone may be met with an approved experience (as described below). It is not necessarily a course.

Suggested ways of meeting capstone may include: McNair research theses, Hamel Center Programs (IROP, SURF USA, SURF Abroad, URA, INCO 790 Advanced Research Experience), and senior honors theses. Examples of capstone experiences include courses, projects, independent research, internships, artistic expression, or community and service learning opportunities.

### The senior capstone experience must meet one or more of the following criteria:

The capstone synthesizes and applies disciplinary knowledge and skills. The capstone fosters reflection on undergraduate learning and experience. The capstone demonstrates emerging professional competencies. The capstone applies, analyzes, and/or interprets research or data or artistic expression. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement will vary across departments and colleges and may be satisfied through a course, thesis, created work or product, mentored research project, or some form of experiential learning (e.g., fieldwork). The capstone should occur during the student's senior year. Departments designate capstones as appropriate to their respective disciplines following the usual administrative procedures for their college or school. Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors.

### Additional Information

Discovery Program requirements shall not be waived on the basis of special examinations or placement tests, except for the College Board Advanced Placement tests and the College Level Examination Program (CLEP) tests. All students transferring to UNH in academic year 2019-20 will come in under Discovery Program requirements. For students who transfer in with 26 or more credits, the Inquiry requirement is waived automatically.

*Note to Faculty: Students may petition the Discovery Committee to replace a requirement. The student's petition must be approved by the student's major adviser and forwarded to the Dean of the student's college.*

The required courses cannot be taken on a pass/fail basis. No single course may be counted in more than one Discovery discipline category. Academic departments may or may not permit Discovery courses to count toward requirements for a major. TSAS courses may not be used for general-education (1984-2009), writing-intensive, or foreign language requirements. TSAS courses that are 400-600 level and Discovery-approved may count for Discovery requirements. All Discovery courses carry 3-4 credits.

The most current list of Discovery courses may be found on the Registrar's Office website.

## Discovery Foundations Inquiry

All Inquiry courses must contain four individually necessary and collectively sufficient features:

Inspire curiosity: an Inquiry student will compose open-ended questions that lead to further investigation into increasingly focused problems and issues. Develop understanding and perspective: an Inquiry student will explain a central issue or question of the course using at least two unique perspectives. Clarify standards of thinking: an Inquiry student will be able to identify, compare, and evaluate different interpretations (hypotheses, explanations) of a given phenomenon. Create effective communicators: an Inquiry student will present in clearly organized form the results of the investigation into questions or problems the student has posed.

A complete list of Inquiry courses can be found on the Registrar's Office homepage.

### Writing Skills

Please refer to the [University Writing Requirement](#) section for complete information about this Discovery Foundation.

### Quantitative Reasoning

Quantitative reasoning refers to the ability to think critically and analytically using abstract formal methods with broad application. Mathematics is the foundation for the physical sciences and, increasingly, for the biological sciences. Its principles and processes illuminate significant aspects of the social sciences as well. In its most precise forms, it enables the design of bridges and the orbiting of satellites. Mathematics discloses invisible truths about the world, makes sense of patterns of which we may or may not be aware, and introduces some order to chaos. In its purest form, it creates its own world of beauty and logic. In its more applied forms, it attempts to make sense of individual and collective human behaviors and complex systems. Many courses listed under this category will help students appreciate the principles of mathematics and gain some skill in its applications to realistic situations, while other courses will introduce kindred subjects including symbolic logic, information theory, statistics, and computer science.

#### Student Learning Outcomes - Quantitative Reasoning

- Demonstrate proficiency in carrying out college-level mathematical procedures.
- Use college-level mathematical thinking to analyze situations and data and to solve

## Discovery in the Disciplines Biological Science

Biology is a branch of science that investigates the structure and function of living organisms. Scientists investigate ideas and observations that solidify our understanding of the diversity of life from single cells to complex organisms. Biology has deep relations with agriculture, chemistry, psychology, and many other fields of study, and it is the foundation of our knowledge of health and disease. Courses under this category deal with the basic structure and function of organisms, the interaction of organisms with their environment, human health, biotechnology, and the concepts and mechanisms of evolution as a fundamental biological paradigm. All courses will provide some

understanding of the methods of scientific inquiry and seek knowledge about the living world.

### Student Learning Outcomes - Biological Science (BS)

- Learn about aspects of the living world as described in the course description.
- Demonstrate an understanding of fundamental concepts in biological science.
  - [Additional Student Learning Outcomes for BS Discovery Lab \(DLAB\) courses](#)
- Communicate scientific material effectively in written and oral formats.
- Summarize, analyze, and evaluate scientific data.
- Explain how scientific hypotheses are tested or rejected.
- Master appropriate laboratory and field techniques commonly used in biology.

## Environment, Technology, and Society

The exponential growth of the sciences and engineering has bred an equally dramatic growth in technological advances. From the flint arrowhead to the latest communication device or weapon, human beings have been inventing things and transforming their lives, their societies, and their environments as they do. But they seldom foresee all the transformations and consequences their inventions bring about. This category stresses the interplay between at least two of these three realms: environment, technology, and society. Topics might include, but are not limited to, the history of a particular kind of technology (such as transport, fuel, writing, or weaponry), how technological change comes about in general, the scientific and/or social bases for a given technology, its impact for good or ill on human society and the natural environment, the effects of a changing environment on the arts and literature, and/or the ethical questions these topics raise.

### Student Learning Outcomes - Environment, Technology, and Society (ETS)

One or more of the following:

- Explore the social consequences of technological and/or environmental change.
- Master a technology described in the course description and evaluate its human impact.
- Consider the impact of various technologies on the environment.
- Understand the way the environmental challenges shape the development of technology.

## Fine and Performing Arts

The arts communicate through the intellect, the emotions, and the body, sometimes all at once, in ways simple and subtle, direct and subliminal, gentle and soul shaking. Understanding and appreciating the arts enriches our lives and preserves our cultural heritage for the future. Through its performances, publications, and exhibits, UNH offers many artistic experiences for students and the larger community, some of which are linked to courses under this category. Such courses, which may be about painting, sculpture, architecture, music, dance, theater, or film, will often include learning through practical experience.

### Student Learning Outcomes - Fine and Performing Arts (FPA)

One or more of the following:

- Develop an understanding and appreciation of differing forms of art expression such as music, visual art, theatre, or architecture.
- Develop skills in creative writing.
- Produce art in the studio, workshop, or theatre.

## Historical Perspectives

Even though we are faced daily with evidence of change in our social world and technology, we easily forget that how we live, where we live, and what we see around us are transient states of affairs. It is important to be able to look on one's own world with an imaginative grasp of its history and the forces behind that history. Courses under this category will give students the opportunity to learn about major historical developments and how these developments have shaped contemporary life in all its complexity. Through the study of particular periods and places, students will gain both "historical perspective" and some skill at the methods of historical inquiry. Common to all courses in historical analysis is the presumption that the categories of social analysis are themselves historical and historically contingent, and that to understand the past requires entering imaginatively into languages, institutions, and worldviews quite different from those of the present day.

### Student Learning Outcomes - Historical Perspectives (HP)

- Study the signature events that occurred within the time and geographical expanse specified in the course description.
- Explore the way primary sources reveal the ideas and values of people living in a different time and place.
- Appreciate human diversity through examination of class, race, and/or gender hierarchies of the past.
- Interpret the way past events and belief systems have contributed to and differed from the values and intuitions of the present.

## Humanities

The humanities arose in Renaissance universities as an alternative to theology and consisted mainly of Greek and Latin literature, which dealt with any and every aspect of human life; they became central to the liberal arts. Since the nineteenth century, the humanities also have embraced modern literature, the creative arts, philosophy, and history. They focus on questions about meaning, ethics, aesthetics, and the foundations of knowledge; they are as concerned with form as with content. Courses under this category explore major works, ideas, and traditions that have shaped our understandings of the world and our sense of self at different times and places while examining the distinctive methods of humanistic inquiry.

### Student Learning Outcomes - Humanities (HUMA)

- Engage with literary, philosophical, artistic and/or cinematic works that explore some aspect of the human condition.
- Pose questions about the nature of being, ethical imperatives, aesthetics, or epistemology.

- Write a critical essay investigating a focused question raised by a literary, philosophical, or artistic work.

## Physical Science

The physical sciences seek to discover the components, structures, properties, and laws of the material world from subatomic particles to the entire universe. Through them, we appreciate both the wondrous complexity of the world and its order. The traditional domains of chemistry, physics, astronomy, cosmology, and Earth sciences are the foundations of knowledge in numberless arenas of human activity, while the intersections between these domains and the biological sciences yield astonishing discoveries about living organisms. All courses will provide some understanding of the methods of scientific inquiry, seek knowledge about the physical universe, and evaluate claims in both technical literature and popular media.

### Student Learning Outcomes - Physical Science

- Learn about aspects of the physical world specified in the course description.
- Demonstrate an understanding of fundamental concepts in the physical sciences.
- Use mathematical models and computational thinking to understand the physical world.
- [Additional Student Learning Outcomes for PS DLAB courses](#)
- Communicate scientific information effectively in written and oral formats.
- Summarize, analyze, and evaluate scientific data.
- Explain how hypotheses are tested or rejected.
- Master appropriate laboratory and field techniques commonly used in physical science.

## Social Science

The social sciences investigate human beings and their societies from the smallest bands of hunter gatherers to huge nations and global institutions. Everything from marriage and kinship to law and crime, from ceremonial gift giving to mortgage derivatives, from witchcraft to health insurance, from ancient ritual to modern communication, is a subject of a social science. Courses under this category will explore different theories, methods, and data-gathering techniques as they apply to different social issues. They also will examine how individuals create, interact with, and are shaped by social groups and institutions, including those associated with politics, economics, religion, family, the arts, health, and education.

### Student Learning Outcomes - Social Science (SS)

- Apply quantitative and/or qualitative data to investigate the dynamics of social interactions.
- Develop testable hypotheses regarding the social and cultural world they examine.

## World Cultures

Living in a world of many cultures has created both cooperation and conflict across borders, between and within nations. This category, which includes intermediate language courses and approved study abroad programs, encourages students to become cosmopolitan citizens by gaining knowledge and understanding of cultures other than those of the United States. Students will learn to recognize others' values and, ultimately, accept the many ways in which we all are human. They are thus encouraged to see their own culture with fresh eyes and know the sheer diversity of human outlooks.

### Student Learning Outcomes - World Cultures (WC)

- Explore human diversity by studying societies and cultures outside the United States.
- Recognize the diversity and validity of unfamiliar cultural values.

## Discovery Lab (DLAB)

A course that fulfills the laboratory requirement in the Discovery Program should provide students with hands-on experience that reinforces, supports, and/or augments the material presented in other formats throughout the course. It should teach them how the discipline uncovers and validates knowledge; how phenomena are understood through observation, experimentation, and quantitative analysis; how data are collected and interpreted; and how hypotheses are created, tested, modified, confirmed, or invalidated. These experiences also are likely to provide insights into how scientific theories and models are constructed. A significant portion of specified course time must be devoted to laboratory and laboratory-related activities. For example, a conventional model for a 4-credit laboratory course consists of three 50-minute (or two 75-minute) weekly lecture periods plus one 80-minute weekly laboratory period. However, courses may include different and/or innovative laboratory experiences provided the total amount of course and laboratory time is comparable.

### Student Learning Outcomes - Discovery Lab (DLAB)

- Explain phenomena through observation, experimentation, and quantitative analysis.
- Collect and interpret data.
- Create, test, modify, confirm or invalidate hypotheses.
- Master appropriate laboratory and field techniques used in the biological and physical sciences.
- Communicate scientific material effectively in written and oral formats.

## Discovery Program courses

The complete list of Discovery courses can be found on the [Registrar's Office](#) website.

## Majors, Minors, and Options

Majors and interdisciplinary minors are described at the college and department locations in this catalog.

## Student-Designed Majors

Under special circumstances, students may design their own majors. This option is offered for highly motivated and self-disciplined students who seek a course of study that is not available through existing programs at the University. It allows students, with the close supervision of faculty members, to cross department and college lines and to create educational experiences on and off campus as part of individual programs of study.

Student-designed majors are administered by a committee of elected faculty that operates through the Office of the Provost and Vice President for Academic Affairs. Students who want to design their own majors are required to give the committee evidence of careful thought and planning in a proposal.

Fall submissions are due by October 15 of the student's junior year. Proposals are only reviewed once a semester. Spring submissions are due by February 25. The committee will convene soon after the deadline to review the proposals. Under no circumstances will the committee consider a senior year proposal.

Proposal guidelines are available in the Office of the Provost and Vice President for Academic Affairs and on the Academic Affairs website, <https://www.unh.edu/provost/student-designed-majors-sdm>.

## Second Majors

Bachelor's degree students may choose to fulfill the requirements of two dissimilar major programs, provided they obtain the approval of the second major department and the dean of the college in which the second major is offered, and comply as follows:

If the two majors are offered in different schools or colleges within the University, the admissions requirements of each must be satisfied.

If the two majors have two distinct degrees; e.g., B.A., B.S., or some other designated degree, students must choose which of the two degrees is to be awarded and fulfill all requirements for that degree.

No more than 8 credits used to satisfy requirements for one major may be used as requirements for the other major.

## Minors

Bachelor's degree students may earn a minor in any undergraduate discipline designated by the University. A list of minors is available from the advising coordinator in each college or school (or see the program descriptions for each college or school in this catalog). Students must consult with their major adviser and also the minor supervisor. A minor typically consists of 20 credits with C- or better and a 2.0 grade-point average in courses that the minor department approves. Courses taken on a pass/fail basis may not be used for a minor. No more than 8 credits used to satisfy major requirements may be used for the minor. During the student's final term, an application should be made to the dean to have the minor shown on the academic record.

## Options

Some degree programs offer a selection of options (e.g., Arts: Art History or Arts: Studio Art through the Department of Art and Art History). These options allow students to specialize within a discipline. The choice of option is recorded on the student's transcript.

## University Writing Requirement

In 1995, the Academic Senate established the Writing Program as an expression of the following fundamental values and goals for writing at UNH: *As the cornerstone of any higher education, academic and disciplinary literacy is the concern of the entire faculty and the whole University curriculum. Understanding that literacy is a long-term development process, the University community is committed to the following goals for student writing and learning:*

- *Students should use writing as an intellectual process to learn material and to discover, construct, and order meaning.*
- *Students should learn to write effectively in various academic and disciplinary genres for professional and lay audiences.*
- *Students should learn to display competence with the generic features and conventions of academic language.*

In order to help realize the above goals, writing intensive (WI) courses were established as well as the University Writing Requirement (UWR).

## Writing-Intensive (WI) Courses

WI courses are identified by "Writing Intensive Course" in the "Attributes" section of the course descriptions.

See CEP 795W below for an example:

### CEP 795W (01) - Investigations

**Credits:** 2.0 to 4.0

**Term:** Fall 2017 - Full Term (08/28/2017 - 12/08/2017)

**Class Size:** 5

**CRN:** 12453

Special assignments in readings, investigations, or field problems, or teaching experience. May be repeated. Prereq: permission. Writing intensive.

See instructor for permission then sign up in the dept office before registering through WEBCAT.

**Attributes:** Writing Intensive Course

**Instructors:** STAFF

Some courses have both writing-intensive and nonwriting-intensive versions, such as HIST 405 History of Early America and HIST 405W History of Early America. In these cases, only the sections with the "W" in the course number are writing intensive.

A periodically updated [master list of WI courses](#) is available. Course attributes can change, so students should make sure to consult the course description for real-time information on WI status when they enroll. Not all courses are offered every semester, so for advance course planning students should consult with their advisors or the owning department.

## University Writing Requirement (UWR)

All bachelor's degree candidates are required to complete four writing-intensive courses, which must include ENGL 401 First-Year Writing and three additional writing-intensive courses, one of which must be in the student's major, and one of which must be at the 600 level or above.

**Frequently Asked Question:** "Can the same course satisfy the course-in-the-major requirement and the 600-level or above requirement?"

**Answer:** Yes, one course can satisfy both of these requirements (see pattern B below), but the course would only count as one of the three WI courses needed. In this case, the student would need to take two other

WI courses (in addition to ENGL 401) to satisfy the requirement. Thus, a complete WI sequence would conform to one of the two generic patterns below:

**A) Separate Courses for the 600+ Level and in the Major Requirements**

1. ENGL 401
2. WI in the Major (any level)
3. WI @600+ level (any)
4. WI (any)

**B) The Same Course for the 600+ Level and in the Major Requirements**

1. ENGL 401
2. WI in the Major @600+ level
3. WI (any)
4. WI (any)

Note: the numbers in the above examples are for reference and don't reflect a required sequence. A particular major may have more specific requirements that may depart from the above models.

The Rationale for Writing and Learning at UNH acknowledges that the WI course structure provides a minimum framework for writing in the curriculum and that there will be writing in non WI-designated courses.

The Writing Committee's position is that WI Course Attributes are definitive and that only courses bearing the WI Attribute will count for the WI requirement. In short, students are expected to enroll in UNH WI-designated courses to satisfy the WI requirement.

<https://www.unh.edu/writing/>



# College of Liberal Arts

Michele Dillon, Dean

Jenni Cook, Associate Dean

Scott Weintraub, Faculty Fellow

It is the purpose of the College of Liberal Arts, as a center of learning and scholarship, to help students achieve an understanding of the heritage of civilization and to educate them in the tradition of the past and realities of the present so they may recognize and act upon their obligations to the future.

The college seeks to meet the educational needs of each student through the development of interests and skills, which, combined with the individual's potential, make possible a richer, more useful life.

## Degrees

### Bachelor of Arts

These programs primarily provide a broad liberal education along with depth in a major. Requirements for the bachelor of arts degree and information regarding the majors that lead to a bachelor of arts are presented under [Degrees](#) (p. 26) and [Programs of Study](#) (p. 36).

### Bachelor of Fine Arts

This curriculum provides training for students who plan to enter a professional graduate school. Requirements for the bachelor of fine arts degree are outlined under [Programs of Study/Art and Art History](#) (p. 44).

### Bachelor of Music

This curriculum provides professional training in performance, composition, music education, and music pre-teaching and allows students to develop their talent to a standard equivalent to the one achieved at conservatories of music. Requirements for the bachelor of music degree and information regarding the curriculum are presented in [Programs of Study/Music](#) (p. 103). Degrees include Music Education, Pre-Teaching, Performance and Composition.

### Bachelor of Science

This curriculum provides strong preparation for entry into graduate programs in neuroscience, behavior, pharmacology and medicine. Requirements for the bachelor of science degree and information regarding this major are presented under [Degrees](#) (p. 26) and [Programs of Study/Neuroscience and Behavior](#) (p. 114).

The [homeland security major](#) (p. 448), offered on both the Durham and Manchester campuses, also leads to a bachelor of science degree.

## Combined Programs of Study

In addition to pursuing a single major, students may combine programs of study as follows (See [University Academic Requirements](#) (p. 24) for details):

**Minors:** Students may pursue one or more minors, each typically comprised of 5 courses. Minors are available in nearly every discipline within the College of Liberal Arts.

**Cognates:** Students may pursue one or more cognates, each typically comprised of 3 courses and intended to develop career-oriented skills. The list of cognates and their requirements are found under [Cognates](#) (p. 52).

**Second majors:** Students may choose to fulfill the requirements of two dissimilar major programs.

**Dual majors:** Students may choose to fulfill the requirements of a dual major, typically comprised of 8 courses. Dual majors are designated programs that must be paired with another major of any discipline. Dual majors in the College of Liberal Arts are [educational studies](#) (p. 61), [humanities](#) (p. 91), [international affairs](#) (p. 92) and [justice studies](#) (p. 97).

See [Special University Programs](#) (p. 392) for information about the Sustainability dual major.

**Student-designed majors:** Under special circumstances, students may design their own majors.

**Dual-degree programs:** Students may choose to fulfill the requirements of two separate degrees, such as a B.A. and a B.S.

**Interdisciplinary opportunities:** See the [Interdisciplinary Studies](#) web page for the complete list of interdisciplinary programs within the College of Liberal Arts.

## Proficiency in a Foreign Language

Please see the explanation of this University requirement under [Degrees](#) (p. 26): Bachelor of Arts.

Within the College of Liberal Arts, only those students majoring in linguistics, psychology, sociology, theatre and dance, or women's and gender studies may use American Sign Language (ASL) to fulfill their foreign language proficiency requirement. English teaching majors who plan to pursue deaf studies may petition the English department to use ASL to fulfill their foreign language proficiency requirement.

## COLA Study Abroad

[cola.unh.edu/cola-study-abroad](http://cola.unh.edu/cola-study-abroad)

The College of Liberal Arts offers a number of managed study abroad programs that are administered by college faculty and the College of Liberal Arts. These programs provide opportunities for liberal arts students as well as students in other colleges to experience and learn about different cultures and, in non-English-speaking countries, to increase proficiency in a foreign language.

Because the college administers these programs, registration, finances, and other logistics are streamlined and simple. Students pay UNH tuition and a single program fee, which covers housing, excursions, and, in some cases, board. Most UNH student fees are waived with the exception of the technology fee, a study abroad administration fee, and an international travel insurance fee. Students are eligible for federal financial aid for the semester-long programs.

Please see the list of eligibility requirements under [Study Abroad Programs](#) (p. 385).

To learn more about any of the programs, contact the program director listed on the website for each program or Mike Merrill, the study abroad advisor at [michael.merrill@unh.edu](mailto:michael.merrill@unh.edu).

## Career and Professional Success

[cola.unh.edu/careers](http://cola.unh.edu/careers)



The College of Liberal Arts is committed to helping students achieve success in their career and professional endeavors. From one-on-one career counseling appointments to internship placements and employer visits to campus, the Career and Professional Success office supports students with the tools and resources to secure meaningful, impactful, and rewarding careers.

The Career and Professional Success office is located at 102 McConnell Hall.

## Research Centers

### Center for the Humanities

[cola.unh.edu/center-humanities](http://cola.unh.edu/center-humanities)

The Center for the Humanities fosters excellence in the humanities, broadly conceived, at the University of New Hampshire. Center resources and programs support faculty research, encourage reflection and inquiry across the University community and beyond, create interdisciplinary initiatives in many forms, and undertake special projects to raise the visibility of the humanities. To accomplish this, the center endeavors to support the highest quality work by UNH humanities faculty, to build productive collaboration among faculty, to create singular projects that advance its goals, and to be a center of innovation, planning and inspiration for the humanities at the University of New Hampshire. By pursuing its goals, the center supports the University's research mission in particular, as well as its academic plan.

The center is the sponsor of the Saul O Sidore Memorial Lectures and the James H. and Claire Short Hayes Chair in the Humanities.

### Crimes Against Children Research Center

[www.unh.edu/ccrc](http://www.unh.edu/ccrc)

The Crimes Against Children Research Center (CCRC) is concerned with all forms of crimes against children and adolescents, from birth through age 17, both within and outside the family, both known and unknown to law enforcement. These include criminal acts as defined by law, such as sexual assault, abduction, theft, robbery and aggravated assault against children. But it also includes child abuse in all its forms—physical, sexual, emotional—and child neglect, as well as child-to-child violence, such as peer and sibling assaults and bullying. It also includes indirect victimization, where children witness or are affected by the crime victimization of a family member or friend.

The CCRC, created in 1998, grew out of and expands upon the work of the UNH Family Research Laboratory, which has been devoted to the study of family violence and related topics since 1975. Associated with the center is an internationally recognized group of experts who have published numerous books and articles concerning the incidence and impact of violence against children.

CCRC staff has contributed to many pioneering national crime studies, including National Incidence Study of Missing, Abducted, Runaway and Thrownaway Children; National Family Violence Survey; National Youth Victimization Prevention Survey; National Survey of Sexual Abuse in Day Care; Developmental Victimization Survey; Youth Internet Safety Surveys; and Multisite Evaluation of Children's Advocacy Centers.

The CCRC is directed by David Finkelhor, who is also the director of the Family Research Laboratory and professor of sociology at the University of New Hampshire. Finkelhor has been researching criminal violence

against children since 1978 and is the author and editor of 12 books and more than 100 articles on the subject.

### Family Research Laboratory

[cola.unh.edu/family-research-laboratory](http://cola.unh.edu/family-research-laboratory)

Since 1975, the Family Research Laboratory (FRL) has devoted itself primarily to understanding family violence and the impact of violence in families. As public and professional interest in family violence has grown, so has the need for more reliable knowledge. The FRL seeks to fill that need through comprehensive literature reviews, new theories and methodologically sound studies. Researchers at the FRL pioneered many of the techniques that have enabled social scientists to estimate directly the scope of family violence. These efforts have brought international recognition to the FRL.

The FRL is unusual among research centers in the field because it addresses all aspects of the family, violence and abuse. Topics undertaken by the FRL include physical abuse of children, corporal punishment of children, sexual abuse of children, physical abuse of spouses, dating violence, abuse of the elderly, intra-family homicide, rape and marital rape, violence between siblings, peer victimization of children, pornography, and missing and abducted children. This variety of topics is a result of beliefs that have guided FRL research: that various forms of family problems are interrelated, that conflict is as basic to family life as are love and cooperation, and that much of the conflict and violence in the world outside the family can be traced to roots within the family. This holistic view of family violence has contributed both diversity and richness to the FRL's work.

The FRL's prominence in the field is in part a result of the large number, variety and scope of its publications. In a span of 10 years, FRL staff members have published more than 45 books and more than 740 articles on family violence.

The FRL is housed in a suite of offices in McConnell Hall. The FRL is directed by David Finkelhor, professor of sociology and director of the Crimes Against Children Research Center.

### The Survey Center

[cola.unh.edu/survey-center](http://cola.unh.edu/survey-center)

The UNH Survey Center is a full-scale, non-partisan academic survey research center, committed to providing university researchers, government and business leaders, and private organizations with reliable information about public attitudes concerning important policy matters. It is nationally known for its public opinion and political polling for CNN, Fox News and WMUR-TV.

The UNH Survey Center has conducted survey research projects at the University of New Hampshire since 1986: state, regional and national general population surveys based on probability sampling; surveys that target specific populations; surveys that utilize complex stratified sampling techniques; and panel studies. The Survey Center conducts telephone, mail and web surveys, as well as focus groups and other qualitative research projects.

The UNH Survey Center is located at 9 Madbury Road, Suite 401 and features a 41-station Computer-Assisted Telephone Interviewing (CATI) system. The Survey Center is directed by Andrew E. Smith, who is also associate professor of practice in political science.

## Related Research Centers

### Carsey School of Public Policy

[carsey.unh.edu](http://carsey.unh.edu)

The Carsey School of Public Policy at the University of New Hampshire is a nationally acclaimed resource for research, leadership development and engaged scholarship relevant to public policy. The school's activities address the most pressing challenges of the twenty-first century, striving for innovative, responsive and equitable solutions at all levels of government and in the for-profit and nonprofit sectors. Faculty and students throughout the College of Liberal Arts serve as staff, fellows, researchers and assistants in the school.

### Prevention Innovations Research Center

Prevention Innovations Research Center is a research center at the University of New Hampshire made up of researchers and practitioners who work collaboratively to develop and evaluate prevention strategies, evidence-based measures to document the problems of sexual and relationship violence, stalking and harassment, and comprehensive community tools to effectively address the causes of violence. The Prevention Innovations Research Center (PIRC) assists high schools, colleges and universities, the United States Military and federal, state and local researchers and practitioners to develop, evaluate and implement model policies, procedures and programs to end sexual and relationship violence, stalking and harassment. PIRC plays a prominent role in working with New Hampshire criminal justice, advocacy and crisis organizations and state offices.

The Prevention Innovations Research Center is recognized for its groundbreaking research in the field of sexual violence prevention and response. PIRC has conducted first-of-its-kind research on campus violence, LGBTQ+ victimization, the economic cost of sexual violence and community responsibility in violence prevention. The center's staff and fellows are nationally and internationally recognized leaders in prevention and response who design and provide cutting-edge contributions to evidence-based practices in prevention and make significant contributions to scholarship, programming and policy making in the field. Their efforts emphasize the importance of using a community bystander focus while examining the continuum of violence.

A cornerstone of PIRC's mission is to mentor the next generation of researchers and practitioners. The Susan Schechter Domestic and Sexual Violence Social Justice Laboratory (Schechter Lab) is an interdisciplinary research laboratory within the Prevention Innovations Research Center where undergraduate and graduate students earn academic credit for their role as research assistants and work with members of the staff on their research, report writing and publications. The Sharon B. Murphy Scholarship supports undergraduate and graduate student scholarship in the fields of domestic and sexual violence and stalking for work within the Schechter Lab.

PIRC works with practitioners and community partners to implement and refine approaches to prevention and response. This collaborative approach has contributed significantly to scholarly research, practice literature, institutional responses to sexual and relationship violence, sexual harassment and stalking, and technology transfer. PIRC provides effective, research-informed solutions to create safe, equitable environments.

## Academic and Cultural Centers

### Global Racial and Social inequality lab

[cola.unh.edu/global-racial-social-inequality-lab](http://cola.unh.edu/global-racial-social-inequality-lab)

The Global Racial and Social inequality lab (GRSIL) is a dynamic site of research, pedagogical and community engaged activity. Faculty and students (undergraduate and graduate) already working on or interested in projects that variously engage with racial and social inequality are invited and encouraged to participate in the GRSIL. Additionally, the Lab encourages faculty and student engagement on these thematic areas by incentivizing new and continuing research on such topics and with the intention to apply for external funding to support this research. The Lab provides pedagogical workshops on evolving best practices in creating inclusive syllabi and inclusive classrooms, as well as provides a venue for open discussion of complex issues. Additionally, the GRSIL serves as the administrative home of COLA's many interdisciplinary minors focused on inequality. The Lab uses its analytical expertise to facilitate community partnerships, develop internships and expand our collaborative relationships with community colleges and non-profit community organizations in the region.

### Museum of Art

[cola.unh.edu/museum-art](http://cola.unh.edu/museum-art)

The Museum of Art serves as the New Hampshire Seacoast's premier public art museum and, for more than 50 years, has remained a vital resource for the visual arts, serving the University, local, and regional communities. Visitors and members gather to enjoy a wide variety of changing exhibitions, as well as annual exhibitions featuring UNH studio faculty and student work. Exhibitions of outdoor sculpture by regional artists are shown regularly in the Mills Courtyard. Accompanying programs include gallery talks, lectures, concerts, family programs and special events. The museum's summer Art Camp provides K-12 students with quality hands-on visual arts and instruction.

The museum's diverse permanent collection includes more than 1,800 works of art, from prehistoric to contemporary. The works are exhibited in the galleries and the Collection Study Area on a regular basis and are also used by faculty, students and scholars for teaching, research and interdisciplinary study.

Located in the Paul Creative Arts Center, the museum is open to students, faculty, museum members and the general public free of charge. For more information, call (603) 862-3712 or visit [cola.unh.edu/museum-art](http://cola.unh.edu/museum-art).

<https://cola.unh.edu/>

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## Africana and African American Studies (AFAM)

### Programs

- [Africana and African American Studies Minor](#) (p. 36)

## Africana and African American Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/africana-african-american-studies>

### Description

The Africana and African American studies minor (AFAM) encompasses the multidisciplinary, comparative and global study of peoples and cultures of Africa and its Diasporas. Diaspora is defined by dispersals and mobilities of populations, the result of exploration, migration and or coercion. African Diaspora communities exist everywhere, from Europe, the Middle East and Asia, to South and North America. We consider how Africana heritage and culture is shaped by these long-standing, long-range networks and connections between diverse places, making our focus importantly geographic and our content intrinsically cosmopolitan.

We foreground the experiences of African, African Diaspora and African American communities in our research, teaching and engagement. We consider how understanding exceptional experiences and histories of exclusion and communion can inform work for building a more sustainable, equitable and just world.

Blackness is a primary root for study and practice in the AFAM minor at UNH. Notwithstanding complex historic antecedents of race and racism, we consider how Blackness (/blackness) first consolidated as racial phenomena in the fifteenth century through global commodity capitalism. In this process, the modern enslavement and worldwide dispersal of African peoples arguably made up the first historic articulations of Blackness, the first major instance of globalization and one of the worst tragedies of human history with which we still reckon today. Throughout this history, the meanings and operations of race and racism in local contexts have not been altogether uniform but nonetheless reveal common dynamics of Black peoples' marginalization and structural dispossession of sociocultural, political and material resources.

In this root, AFAM students learn about varieties of historic and contemporary Blackness and what it means to be Black (/black): as lived experience, categorical attribution and aspect of intersecting identities; as creatively spiritual, aesthetic, and discursive expression and media; as antiracist reclamation and foundation for agency, activism and sociopolitical mobilization; and as a fount for queerness, love, joy and liberation. Our students and faculty consider how Blackness and or Black experiences are multidimensional and multivalent, subject to ongoing clarification within and among diverse communities worldwide, and differently and lyrically voiced and performed for multiple means and

ends. We consider how Blackness entails an existential and practical quest for freedom from oppressive orders and boundary-making.

The AFAM program has a strong focus on coursework and research on African American and or Black peoples in the United States, as their cultures and history have been integral to the development of the nation-state and also highlight the country's problems and promises. The program also offers many courses on the cultures and history of Africa and its other Diaspora communities. Our courses range from the humanities to the social and natural sciences, and our approaches and methods are applicable to virtually all areas of study at UNH. Students are encouraged to take courses from a variety of disciplines. The minor therefore is designed to serve the needs of all students, regardless of their background, and to complement their work in their major fields of study.

Our program faculty's interests lie in: histories and dynamics of enslavement; socioeconomic inequalities implicating class, race, ethnicity, gender, sexuality and age; Black women's livelihoods and social movements; critical and liberatory approaches to education and pedagogy; intertextual and sociohistorical approaches to Africana poetry and literature; kinship, family and human development studies in cultural and historic context; Africana spirituality and religions; and geographies and politics of African and Diaspora communities and nation-states.

We maintain close intellectual and practical solidarities with UNH's Center for the Humanities, Department of Women's and Gender Studies, and other interdisciplinary minor programs in American studies, Native American and Indigenous studies, queer studies, and race and ethnic studies. Our program faculty also maintain ties with Black educational and community organizations, such as the Seacoast African American Cultural Center, Black Heritage Trail of New Hampshire and others in the region.

AFAM consists of five, 4-credit courses (or any course combination for 20 credits total). These include (1) one 400 or 500 level introductory course taught by a program faculty member, (2) other approved elective courses related to the student's choice of concentration, and (3) one course at the 600 or 700 level, also taught by a program faculty member. Students must earn a C- or better in each course, and maintain a 2.0 grade-point average in courses taken for the minor.

The introductory course is meant to provide students with a general understanding of subjects and areas within the broader and related fields African, African Diaspora, African American and Black studies. Electives enable students to explore their interests and or develop greater understanding and synthesis of these subjects and areas. The program keeps a list of approved and consistently offered elective courses. Each semester the program coordinator and program assistant compiles and posts all courses that can count toward the minor on our webpage. Study abroad credits may also count with permission from the coordinator or other program faculty.

The upper-level course requirement is meant to be a culmination of a student's work in the minor and a key conversation point with program faculty about future research and graduate study, community engagement and career options. Students should arrange to meet with the faculty teaching this course early in the semester to establish goals for this culminating experience.

Students can also pursue independent study and internship options as well for their elective or upper-level course requirement, with on-campus or community organizations such as the UNH Bearegard Center or Black Students Union, Seacoast African American Cultural Center,

Black Heritage Trail of New Hampshire or local chapters of national organizations. These options are supervised by program faculty and may be taken under the AFAM or other departmental codes.

## Requirements

Code	Title	Credits
<b>Introductory Course</b>		<b>4</b>
Select from the following		
ANTH #450	Introduction to Race, Culture, and Power	
ANTH 500	Peoples and Cultures of the World (Only topic D: Sub-Saharan Africa)	
ENGL #517	Black Creative Expression	
ENGL 549	In the Groove: African American Music as Literature	
GEOG 550	Sub-Saharan Africa: Environmental Politics and Development	
HIST 444D	Slavery and Society in Pre-Colonial Africa	
HIST 505	African American History	
HIST #506	African American History	
HIST 588	History of Modern Africa: 1870 to the Present	
<b>Pre-Approved Elective Courses</b>		<b>12</b>
Select from the following		
CLAS 550B	Identities and Difference in the Ancient World: Slaves and Masters	
CLAS 551	Race, Ethnicity, Class & Classics	
CMN 567	Gender, Race, and Class in the Media	
EDUC 797	Special Topics in Education (Only topic: Teaching Race)	
ENGL 440A	On Race in Culture and Society	
or ENGL #441	On Race and Culture in Society	
ENGL 550	Introduction to the Literature and Culture of Race	
ENGL 581	Reading the Postcolonial Experience	
ENGL 681	Contemporary African Literature	
ENGL 693	Special Topics in Literature (Only topic: African American Writers)	
ENGL 774R	Modern & Contemporary British Literature: New Departures (Only topic: Black British Writing)	
ENGL 778	Race and Gender in Film and Popular Culture	
ENGL 787	English Major Seminar (Only topic: Slavery and Culture)	
FREN 765	Rebellion and Upheaval in 18th-Century Literature and Culture	
GEOG 402	World Regions: Asia and Africa	
HIST 440A	Martin Luther King, Jr., and the Struggle for Racial Justice	
HIST 440D	Honors/Citizens and Persons	
HIST 587	History of Africa from the Earliest Times to 1870	
HIST #611	Civil War Era	
HIST 690	Seminar: Historical Expl (Only topic: Race in 20th Century America)	
HDFS 757	Race, Class, Gender, and Families	
MUSI 460	Jazz Band <sup>1</sup>	
MUSI 463	Jazz Combo <sup>1</sup>	
MUSI 562	Jazz Piano <sup>1</sup>	
MUSI 563	Jazz Guitar <sup>1</sup>	
MUSI 762	Jazz Piano <sup>1</sup>	
MUSI 763	Jazz Guitar <sup>1</sup>	
PHIL 780	Special Topics (Only topic: Race, Gender and Social Justice)	
PSYC 791	Special Topics (Only topic: Race, Power and Culture)	
SOC 530	Race and Racism	
WS 401	Introduction to Women's Studies	
WS 405	Gender, Power and Privilege	
WS 444A	Race Matters	
WS 505	Survey in Women's Studies	
WS 798	Colloquium	
<b>One Upper-Level Course with Program Faculty <sup>2</sup></b>		<b>4</b>
Select from the following		
ANTH 680	Africana Religions: Mobility, Power, and Material Culture	
ANTH 685	Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa	
ANTH 695	Globalization and Global Population Health	
ENGL 650	I Hear America Singing: Studying American Literature and Culture	
ENGL 787	English Major Seminar (Only topic: Black New England)	
GEOG 685	Population and Development	
HIST 600	Explorations (Only topic: Black and Indigenous NH)	
HIST 797	Colloquium (Only topic: Slavery, War and Emancipation)	
SOC 645	Class, Status and Power	



SOC 745	Race, Ethnicity, and Inequality
<b>Total Credits</b>	<b>20</b>

<sup>1</sup> May require audition with the Music Department

<sup>2</sup> Internship and other courses with program faculty may also apply here

## American Studies (AMST)

### Programs

- [American Studies Minor](#) (p. 38)

## American Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/american-studies>

### Description

American studies is the interdisciplinary examination of American life and culture at regional, national, and international scales. It integrates perspectives from a wide variety of disciplines, including history, English, communications, political science, geography, sociology and the arts.

At UNH, the American studies minor is an individualized program of study that allows each student to choose from a broad range of courses offered by several different departments that best match their interests and needs. It is intended to encourage students with particular interests in the United States to develop those interests and learn more about the country from a variety of perspectives.

### Requirements

To earn a minor in American studies, students must complete five courses approved to satisfy minor requirements. At least one of those courses must concentrate on issues of race, gender, or ethnicity. No more than three courses may be at the 400 or 500 level, and no more than two courses may be taken in the same department. Students must earn a C-minus or better for a course to count toward minor requirements and must maintain a 2.0 grade point average in all courses taken for the minor.

## Courses

Code	Title	Credits
ANTH 697	Special Topics	4
ARTH 693	American Art	4
CMN 505	Analysis of Popular Culture	4
CMN 607	Persuasion in American Politics	4
CMN #757	Public Address and the American Experience	4
EDUC #717	Growing up Male in America	4
ENGL #517	Black Creative Expression	4
ENGL 738	Asian American Studies	4
ENGL 739	American Indian Literature	4
HIST 405	History of Early America	4
HIST 406	History of the Modern United States	4
HIST 410	Historic Survey of American Civilization	4
HIST #506	African American History	4
HIST 600	Explorations	4
HIST 603	European Conquest of North America	4
HIST #611	Civil War Era	4

HIST 613	American Ways of War	4
HIST 618	American Environmental History	4
HIST #622	History of American Thought	4
HIST 620	Foreign Relations of the United States	4
ITAL 444A	Italians Come to America: Representing Emigration and Immigration on Both Sides of the Atlantic	4
MUSI 405	Survey of Music in America	4
NR #701	Ecological Sustainability and Values	4
POLT 402	American Politics and Government	4
POLT 403	United States in World Affairs	4
POLT 500	American Public Policy	4
POLT 508	Supreme Court and the Constitution	4
POLT 523	American Political Thought	4
RMP 511	Issues of Wilderness and Nature in American Society	4
THDA 450	History of Musical Theatre in America	4
WS 405	Gender, Power and Privilege	4

## Anthropology (ANTH)

Anthropology is a field of visionaries, makers and collaborators, taking a critical, creative and holistic approach to the study of humankind. Our faculty teach hands-on courses in archaeology and socio-cultural, applied, biological and forensic anthropology, reflecting our faculty members' research in the Americas, Europe, Africa, and Central and Southeast Asia. Through coursework, fieldwork and study-abroad experiences, students gain life-long learning skills that prepare them for success in cross-cultural understanding and communication, working for diverse organizations and tackling complex social issues in today's global world. Our students are employed in a range of areas such as public health, business, international development, museums and education.

<https://cola.unh.edu/anthropology>

### Programs

- [Anthropology Major \(B.A.\)](#) (p. 38)
- [Anthropology Minor](#) (p. 40)

### Faculty

<https://cola.unh.edu/anthropology/faculty-staff-directory>

## Anthropology Major (B.A.)

<https://cola.unh.edu/anthropology/program/ba/anthropology-major>

### Description

Anthropology asks the question: What does it mean to be human? We answer this fundamental query with a global perspective on the human condition as students explore both the similarity and diversity of human experience. Through courses that cover a wide range of societies throughout the world, we investigate the human condition, past and present. Introductory courses provide an overview of the fields of anthropology: social and cultural anthropology, archeology, physical anthropology and linguistics. More advanced courses provide the opportunity for students to pursue intensive study of particular topics in cross-cultural perspective. The department emphasizes critical thinking and writing skills and encourages close faculty/student contact in seminar courses and at the upper level. Students, in consultation with



their academic adviser, have the opportunity to take courses in other departments that complement specific foci in anthropology.

At this time of increasing globalization, anthropology provides students with a broad overview of diverse peoples and cultures. Majors are therefore well prepared to live in a rapidly changing world. The major both prepares students for graduate-level studies and serves as a foundation for a wide range of careers. With backgrounds in anthropology, our students become teachers, social workers, public policy experts, forensic investigators, health practitioners, primatologists, international business executives, and community and economic development specialists, as well as pursuing various other careers.

To declare a major in anthropology, students must have completed at least one introductory level anthropology course at the 400 or 500 level with a grade of C or better.

## Requirements

Majors must complete a minimum of 40 credits in anthropology with grades of C or better and in accordance with the following requirements:

Code	Title	Credits
<b>Required Courses</b>		
ANTH 411	Global Perspectives on the Human Condition: An Introduction to Anthropology	4
or ANTH 412	Broken Pots and Buried Cities: Introduction to World Archaeology	
or ANTH 415	The Human Story: Evolution, Fossils and DNA	
ANTH 500	Peoples and Cultures of the World	4
or ANTH 501	World Archaeological Cultures	
ANTH 511	Core Concepts in Anthropology	4
ANTH 513	Ethnographic Methods	4
or ANTH 514	Method and Theory in Archaeology	
ANTH 611	History of Anthropological Theory	4
<b>Electives</b>		
One additional course numbered 500 or above		4
Three additional courses numbered 600 or above		12
<b>Capstone Requirement</b>		
ANTH 750	Islam and Gender: Gendered Lives of Muslims	4
or ANTH 785	The Anthropology of Dreams and Dreaming	
or ANTH 797	Advanced Topics	
<b>Total Credits</b>		<b>40</b>

(Note: While 8 credits, ANTH 699 Senior Thesis and ANTH 699H Honors Senior Thesis count only as one ANTH 600-level course requirement.)

The Discovery Program capstone requirement may be fulfilled by completing one 700-level course (seminar format).

Other courses, internships, or experiences may be substituted with the permission of the student's adviser and anthropology department chair.

The required minimum overall GPA in major coursework is 2.0.

Anthropology majors may use one major-required course to satisfy one Discovery category requirement. Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement. American Sign Language may not be applied toward the foreign language requirement.

Honors-in-major and senior thesis options are available.

Students who declare a major in anthropology are expected to make steady progress toward fulfillment of major requirements. Normally, this

means taking at least one anthropology course per semester until all of the requirements have been met. A student who has fulfilled most of the major requirements may request an exception to this policy from his or her adviser.

Students wishing to major in anthropology should consult with the anthropology chairperson.

## Degree Plan

Below is a general degree plan that we recommend anthropology majors follow as they plan their course schedules for their major course requirements over their four years at UNH. This general plan provides a recommended pace and appropriate order for the core courses offered in the major.

Course	Title	Credits
<b>First Year</b>		
ANTH 411	Global Perspectives on the Human Condition: An Introduction to Anthropology	4
or ANTH 412	Broken Pots and Buried Cities: Introduction to World Archaeology	
or ANTH 415	The Human Story: Evolution, Fossils and DNA	
ANTH 500	Peoples and Cultures of the World	4
or ANTH 501	World Archaeological Cultures	
ANTH 511	Core Concepts in Anthropology	4
<b>Credits</b>		<b>12</b>
<b>Second Year</b>		
ANTH 513	Ethnographic Methods	4
or ANTH 514	Method and Theory in Archaeology	
One ANTH 500-level or above course		4
One ANTH 600-level course		4
<b>Credits</b>		<b>12</b>
<b>Third Year</b>		
ANTH 611	History of Anthropological Theory	4
One ANTH 600-level or above course		4
One ANTH 600-level or above course		4
<b>Credits</b>		<b>12</b>
<b>Fourth Year</b>		
ANTH 699	Senior Thesis (optional)	4-8
ANTH 750	Islam and Gender: Gendered Lives of Muslims	4
or ANTH 785	The Anthropology of Dreams and Dreaming	
or ANTH 797	Advanced Topics	
<b>Credits</b>		<b>8-12</b>
<b>Total Credits</b>		<b>44-48</b>

## Student Learning Outcomes

- Demonstrate ability to conduct anthropological research: to collect primary and secondary source data in the observation, documentation, or excavation of human actions, languages, remains, and/or material artifacts.

- Master the ability to write with an anthropological lens: to critically analyze data with respect to historical and current anthropological theories and perspectives, and to construct persuasive arguments.
- Exhibit skills in presentation of anthropological research: in writing (ethnography, technical reports, and other genres), inter-personal and public speaking, and or data visualization (graphic illustration, exhibition, mapping, or modeling, for example).
- Demonstrate the knowledge or ability to collaborate with research partners and communities as part of a commitment to public, applied, engaged, or activist anthropology and archaeology.
- Demonstrate the ability to think comparatively about diversity and inequality across the global as well as within a specific social context, and to apply anthropological methods, perspectives, and theories to the world around them.

## Anthropology Minor

<https://cola.unh.edu/anthropology/program/minor/anthropology>

### Description

Anthropology asks the question: What does it mean to be human? Anthropologists, as scholars, collaborators, public figures and activists, take a critical, creative and holistic approach to the study of humankind. In our relatively small program in the College of Liberal Arts, students have the opportunity to take hands-on courses in archaeology and socio-cultural, applied, medical, biological and forensic anthropology, reflecting our faculty members' academic and applied research in the Americas, Europe, Africa, and Central and Southeast Asia.

Through coursework, fieldwork and study-abroad experiences, students gain life-long learning skills that prepare them for success in cross-cultural understanding and communication, as well as the ability to think comparatively about diversity and inequality on a local and global level.

A minor in anthropology provides many opportunities for cross-disciplinary collaboration, as students are encouraged to apply anthropological methods, perspectives and theories to the world around them, and to their other areas of study. Upon graduation, our majors and minors work for a diverse set of organizations, and are employed in a range of areas such as public health, business, law, international development, non-profit organizations, museums and education.

You do not need to declare a minor; however, it might be wise to meet with a faculty member from the Anthropology Department to discuss your minor plan.

At the beginning of your final semester of study, you should complete [a certification of completion of minor form](#), obtain the necessary signatures, and submit it to your Dean's Office.

### Requirements

A minor consists of five 4-credit courses (20 credits) in Anthropology, with a C or better in each course.

Code	Title	Credits
Select one ANTH course numbered 600 or above		4
Select four elective ANTH courses		16
<b>Total Credits</b>		<b>20</b>

## Arabic (ARBC)

### Programs

- [Arabic Minor](#) (p. 40)

## Arabic Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/arabic>

### Description

There are 26 countries where Arabic is the official or co-official language, extending beyond the Middle East region. The Arabic minor facilitates students' acquisition of skills in this critical language (speaking, listening, reading and writing), as well as cross-cultural competence. The linguistic skills achieved in the successful completion of this minor will be at the Advanced or Intermediate-High Proficiency level in Arabic as defined and measured by the American Council on the Teaching of Foreign Languages (ACTFL) Proficiency Guidelines. This minor provides a strong complement to many majors and will prepare students to compete for national fellowship opportunities, graduate school, the job market – any opportunity in which proficiency in Arabic is required or preferred.

### Requirements

The Arabic minor consists of **5 courses (20 credits)** as follows:

Code	Title	Credits
<b>Required Courses</b>		
ARBC 503	Intermediate Arabic	4
ARBC 504	Intermediate Arabic	4
ARBC 631	Advanced Arabic I	4
ARBC 632	Advanced Arabic II	4
<b>Elective Courses</b>		
Select one of the following <sup>1</sup>		4
ARBC 425	Introduction to Arabic Culture	
ARBC 700	Arabic Media	
GEOG 540	Geography of the Middle East	
HIST 585	Medieval Islam	
HUMA 511A	Medieval Humanities: Rise of Global Empires <sup>2</sup>	
or HUMA 511B	Medieval Humanities: Rise of Global Empires	
or HUMA 511C	Medieval Humanities: Rise of Global Empires	
POLT 559	Comparative Politics of the Middle East	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Or another course closely related to the minor area of study with approval of faculty.

<sup>2</sup> Please check with the contact for the minor to make sure that the topics covered are sufficiently relevant to Arabic studies.

Students may take equivalent courses while studying abroad to satisfy any of the courses required for the minor.

## Art and Art History (ARTS)

The courses offered by the Department of Art and Art History provide an opportunity, within the liberal arts framework, for students to acquire a thorough knowledge of the basic means of visual expression, to study intensively the history of art, or to prepare themselves for a career in

art teaching. In addition, these courses offer foundation experience for students who are interested in art but are majoring in other departments in the University. The Department of Art and Art History offers programs leading to a bachelor of arts degree in the arts with options in studio art, studio art/art education or art history and a bachelor of fine arts degree in studio art. Certification for art teaching in the public schools is offered in cooperation with the Department of Education (see Education, under Programs of Study).

The University reserves the right to retain selections from a student's work for a period of not more than two years.

## Double Option in The Arts

Students may earn a B.A. degree in the arts with both a studio art option and an art history option provided the requirements for each option are met. No more than 8 credits used for one option may be used for the second option. These 8 credits will be in Introductory Drawing and Introduction to Art History.

## Minors in the Department of Art and Art History

Students must receive a minimum grade of C- in all required courses. For art majors, only two courses from the art and art history major requirements can be applied toward the minor.

A maximum of two courses (8 credits) may be transferred from another accredited institution, provided UNH has accepted them as transfer credits. Transfer courses must be a minimum of three credits. Students with transfer courses that are accepted with less than four semester credits must still meet the credit requirement for completion of the minor.

<https://cola.unh.edu/art-and-art-history>

## Programs

- [Arts Major: Art History Option \(B.A.\)](#) (p. 41)
- [Arts Major: Studio Art Option \(B.A.\)](#) (p. 42)
- [Arts Major: Studio Art/Art Education Option \(B.A.\)](#) (p. 43)
- [Fine Arts Major \(B.F.A.\)](#) (p. 44)
- [Architectural Studies Minor](#) (p. 45)
- [Art History Minor](#) (p. 46)
- [Art Minor](#) (p. 46)
- [Design Studies Minor](#) (p. 46)
- [Studio Arts Minor](#) (p. 47)
- [Art History, Design, and Computer Sciences Cognate](#) (p. 53)

## Faculty

<https://cola.unh.edu/art-art-history/faculty-staff-directory>

## Arts Major: Art History Option (B.A.)

<https://cola.unh.edu/art-art-history/program/ba/arts-major-art-history-option>

## Description

The art history curriculum provides a comprehensive, in-depth study of Western art from the ancient world to the present as well as some exposure to non-Western cultures and artistic traditions. All courses in the program teach basic skills of interpretation and critical analysis within the framework of broad cultural perspectives that connect the visual arts to larger historical developments. They also teach good writing and research skills. In addition, art history majors typically branch out into other fields, such as history, literature and foreign languages. By the time they graduate, most majors are well equipped to pursue such traditional careers in the field as museum and gallery work, teaching, publishing or librarianship. But because art historical education is so broad, it also prepares students for a variety of other, more flexible options, such as law, business or architecture.

## Requirements

Students must complete a minimum of 10 courses (40 credits). The following courses are required:

Code	Title	Credits
ARTH 480	Introduction to Art History	4
ARTS 532	Introductory Drawing	4
ARTH 795	Understanding Art History: An In-Depth Overview (Capstone)	4
ARTH 799	Seminar in Art History	4
<b>Art History Courses: Select six, 600/700-level courses from the areas below (one 500-level may be used):</b>		
Pre-Renaissance Courses (Select one)		4
ARTH 674	Greek Art and Architecture	
ARTH 675	Roman Art and Architecture	
ARTH 677	Early Medieval Art	
ARTH 678	Romanesque and Gothic Art	
Renaissance/Baroque Courses (Select one)		4
ARTH 583	Baroque Art: Realism, Caricature, Shock	
ARTH 679	Northern Renaissance Art I	
ARTH 680	Iconoclasm and Collecting: The Art of Early Modern Northern Europe	
ARTH 681	Early Renaissance Art	
ARTH 682	The High Renaissance	
ARTH 684	Baroque Art in Northern Europe	
ARTH 685	Graphic Art of the Renaissance and Baroque Periods	
Modern Art Courses (Select one)		4
ARTH 587	Art in an Age of Revolutions, c. 1715-1900	
ARTH 654	17th and 18th Century American Architecture	
ARTH 655	Nineteenth-Century Architecture: The Architecture of Empire	
ARTH 656	Twentieth-Century Architecture: Modern and Contemporary	
ARTH 686	Sex and Sensuality in 18th-Century Art	
ARTH 688	Histories of Late 19th & 20th Century European Modernism	
ARTH 689	Contemporary Art and Theory: 1945-2000	
ARTH 693	American Art	
ARTH 694	Vision and Modernity: From Panorama to Early Film	
Electives: Pre-Renaissance, Baroque or Modern Art (select three additional courses)		12
ARTH 583	Baroque Art: Realism, Caricature, Shock	
ARTH 587	Art in an Age of Revolutions, c. 1715-1900	
ARTH 654	17th and 18th Century American Architecture	
ARTH 655	Nineteenth-Century Architecture: The Architecture of Empire	
ARTH 656	Twentieth-Century Architecture: Modern and Contemporary	
ARTH 674	Greek Art and Architecture	
ARTH 675	Roman Art and Architecture	
ARTH 677	Early Medieval Art	
ARTH 678	Romanesque and Gothic Art	
ARTH 679	Northern Renaissance Art I	
ARTH 680	Iconoclasm and Collecting: The Art of Early Modern Northern Europe	
ARTH 681	Early Renaissance Art	
ARTH 682	The High Renaissance	

ARTH 684	Baroque Art in Northern Europe	
ARTH 685	Graphic Art of the Renaissance and Baroque Periods	
ARTH 686	Sex and Sensuality in 18th-Century Art	
ARTH 689	Contemporary Art and Theory: 1945-2000	
ARTH 693	American Art	
ARTH 694	Vision and Modernity: From Panorama to Early Film	
Total Credits		40

These courses must be completed with a minimum grade of C-. Art history students receive preferential placement in ARTS 532 Introductory Drawing. Students contemplating graduate school should learn German, and, if possible, either French, Italian, or another language relevant to their areas of interest.

The Discovery Program capstone requirement may be fulfilled by completing ARTH 795 Understanding Art History: An In-Depth Overview.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Art history majors may use two major-required courses to satisfy two Discovery category requirements.

## Student Learning Outcomes

- We expect our art history majors to become conversant with some of the major conventions artists and architects have subscribed to over the millenia, and with how these have been bent or broken and why.
- We expect them to learn to write cogently and clearly, and to be able to analyze orally on the spot what they see in a work of art or architecture, often by comparison and contrast with works they know well.

## Arts Major: Studio Art Option (B.A.)

<https://cola.unh.edu/art-art-history/program/ba/arts-major-studio-art-option>

## Description

The B.A. in art - studio art option provides a strong fine arts education and solid foundation that prepares students for a life in the arts, whether it be as a professional or commercial artist, a teacher, an architect, a designer or a museum director. We offer courses in painting, drawing, photography (both digital and wet lab techniques), printmaking, sculpture (all media: steel, aluminum, bronze casting, clay, and wood), furniture design and fabrication, ceramics and design. A degree in studio art provides a foundation for diverse professional achievement.

## Requirements

Students selecting to work toward a bachelor of arts degree in studio art must complete a minimum of 14 courses (56 credits), with a minimum grade of C in each course. The following courses are required:

Code	Title	Credits
Core Foundation (3 courses)		12
ARTS 510	Principles of Design	

ARTS 532	Introductory Drawing	
ARTS 567	Introductory Sculpture	
Core Supplemental (3 courses)		12
One additional 500/600-level 2D:		
ARTS 536	Introduction Printmaking: Intaglio	
ARTS 546	Painting Design I: Perceptual Painting and Color Theory	
ARTS 632	Intermediate Drawing	
ARTS 633	Life Drawing	
One additional 500-level 3D:		
ARTS 501	Introductory Ceramics	
ARTS 525	Introductory Woodworking	
One 500-level Photography:		
ARTS 551	Introduction to Darkroom Photography	
ARTS 552	Introductory Digital Photography	
4 Studio courses in a concentration at 500-600-700 level (see concentration courses below)		16
1 Studio Electives course (Jterm or summer course may be used):		4
Select from ARTS 455, ARTS 501, ARTS 525, ARTS 536, ARTS 546, ARTS 551, ARTS 552, ARTS 596, ARTS 598, ARTS 601, ARTS 610, ARTS 611, ARTS 612, ARTS 613, ARTS 614, ARTS 625, ARTS 632, ARTS 633, ARTS 636, ARTS 646, ARTS 651, ARTS 667, ARTS 696, ARTS 732, ARTS 746, ARTS 791, ARTS 792, ARTS 796		
Core Art History (3 courses)		12
ARTH 480	Introduction to Art History	
or ARTH 474	Introduction to Architectural History	
Two 600-level or above art history courses:		
Select from ARTH 654, ARTH 655, ARTH 656, ARTH 674, ARTH 675, ARTH 677, ARTH 678, ARTH 679, ARTH 680, ARTH 681, ARTH 682, ARTH 684, ARTH 685, ARTH 686, ARTH 688, ARTH 689, ARTH 693, ARTH 694, ARTH 695, ARTH 697, ARTH 795		
Total Credits		56

## Concentration Courses (4 courses)

Minimum of three 600-700 level studio courses. No more than one of the following: a 500-level studio course (select from ARTS 501, ARTS 525, ARTS 536, ARTS 546, ARTS 551, ARTS 552, ARTS 596), ARTS 598 An Artist's Life, a 600-700 level art history (see selection of courses in art history requirement above), or ARTS 600 Internship in Studio Art (with approval). Jterm and summer online courses cannot be used.

Code	Title	Credits
Ceramics Concentration		
ARTS 601	Ceramics Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (J: Ceramics, may be repeated)	
Design Concentration		
ARTS 610	Principles of Typography	
ARTS 611	Animation and Motion Design	
ARTS 612	Interaction & Game Design	
ARTS 613	Design and Place	
ARTS 614	Design and People	
ARTS 796	Independent Study: Studio Art (G: Design, may be repeated)	
Drawing Concentration		
ARTS 632	Intermediate Drawing	
ARTS 633	Life Drawing	
ARTS 732	Advanced Drawing (may be repeated)	
ARTS 796	Independent Study: Studio Art (C: Drawing, may be repeated)	
Painting Concentration		
ARTS 646	Painting Design II: Perceptual Painting and the Individual Artist's Vision (may be repeated, must be taken twice before advancing to 746)	
ARTS 746	Painting Design III: Perceptual Painting and Narrative Themes (may be repeated)	
ARTS 796	Independent Study: Studio Art (D: Painting, may be repeated)	
Photography Concentration		
ARTS 651	Photography Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (A: Photography, may be repeated)	
Printmaking Concentration		
ARTS 636	Printmaking Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (E: Printmaking, may be repeated)	
Sculpture Concentration		
ARTS 667	Sculpture Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (B: Sculpture, may be repeated)	

## Wood/Furniture Design Concentration

ARTS 625	Wood/Furniture Design Workshop (may be repeated)
ARTS 796	Independent Study: Studio Art (K: Wood Design, may be repeated)

While these courses represent the minimum departmental requirements for the studio art option, students may wish to plan a program involving greater depth in one or several of the studio areas.

The Discovery Program capstone requirement will be fulfilled by completing a capstone project that reflects the training received, and personal artistic growth made, throughout the student's years of study at UNH. The capstone project includes participation in the BA/BFA Senior Exhibition in the UNH Museum of Art in April-May. Students will submit a minimum of 5 (or the equivalent what would be the equivalent of 5) recent works for faculty to review and select for the exhibition. At the review a written artist statement and verbal explanation of the work must also be presented.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Studio art majors may use two major-required courses to satisfy two Discovery category requirements.

## Student Learning Outcomes

### Introductory (500) Level:

- Basic skillset in a particular arts discipline
- Working knowledge of the tools and materials used in a particular arts discipline
- Basic understanding of analytical thinking when making and talking about art
- Demonstrate development of artistry

### Intermediate (500/600) Level:

- Demonstrate development of artistry and skill set in a range of artistic disciplines
- Demonstrate knowledge of tools and materials beyond the basics
- Deeper ability to discuss and analyze works of art
- Ability to verbalize intent in a particular work of art
- Ability to research particular artists
- Ability to declare an area of concentration for advanced in a particular arts discipline

### Advanced (600/700) Level:

- Demonstrate a high level of artistry
- Ability to work independently
- Develop and Demonstrate an individual sensibility
- Ability to understand and verbalize intent in a work of art
- Ability to construct a professional capstone portfolio or thesis
- Demonstrate in-depth familiarity with a range of artistic movements both historical and contemporary

## Arts Major: Studio Art/Art Education Option (B.A.)

<https://cola.unh.edu/art-art-history/program/ba/arts-major-studio-art-art-education-option>

### Description

The program in art education is organized into a five-year, teacher-education sequence. This curriculum is designed to prepare teachers of art in the public schools. The satisfactory completion of the B.A. studio art curriculum for art education students and required education courses, in conjunction with the fifth-year internship, will satisfy the initial certification requirements for teachers of art in the public schools of New Hampshire and in most other states. These requirements may change by the time students apply for certification and the students are required to fulfill the then-current requirements. Art education students may take accredited crafts courses at other institutions as art electives.

A portfolio is required for acceptance to the studio art/art education option.

### Requirements

Students selecting to work toward a bachelor of arts degree in studio art/art education must complete a minimum of 14 courses (56 credits), with a minimum grade of C in each course. The following courses are required:

Code	Title	Credits
<b>Required Core Foundation (4 courses)</b>		<b>16</b>
ARTS 501	Introductory Ceramics	
ARTS 510	Principles of Design	
ARTS 532	Introductory Drawing	
ARTS 567	Introductory Sculpture	
<b>Required Core Supplemental (2 courses)</b>		<b>8</b>
One additional 500/600-level 2D:		
ARTS 536	Introduction Printmaking: Intaglio	
ARTS 546	Painting Design I: Perceptual Painting and Color Theory	
ARTS 632	Intermediate Drawing	
ARTS 633	Life Drawing	
One 500-level Photography:		
ARTS 551	Introduction to Darkroom Photography	
ARTS 552	Introductory Digital Photography (recommended)	
<b>Four courses in a studio concentration at the 500/600/700 levels (see concentration courses below)</b>		<b>16</b>
<b>One studio elective (Jterm or summer course can be used)</b>		<b>4</b>
Select from ARTS 455, ARTS 501, ARTS 525, ARTS 536, ARTS 546, ARTS 551, ARTS 552, ARTS 596, ARTS 598, ARTS 601, ARTS 610, ARTS 611, ARTS 612, ARTS 613, ARTS 614, ARTS 625, ARTS 632, ARTS 633, ARTS 636, ARTS 646, ARTS 651, ARTS 667, ARTS 696, ARTS 732, ARTS 746, ARTS 791, ARTS 792, 796		
<b>Three art history courses</b>		<b>12</b>
ARTH 480	Introduction to Art History	
or ARTH 474	Introduction to Architectural History	
600-level elective (select from ARTH 654, ARTH 655, ARTH 656, ARTH 674, ARTH 675, ARTH 677, ARTH 678, ARTH 679, ARTH 680, ARTH 681, ARTH 682, ARTH 684, ARTH 685, ARTH 686, ARTH 688, ARTH 689, ARTH 693, ARTH 694, ARTH 695, ARTH 697, ARTH 795)		
600-level elective with depth of content in 20th-21st Century art (select from ARTH 656, ARTH 688, ARTH 689, ARTH 693, ARTH 694)		
In addition to the above, other courses are required for teaching certification.		
<b>Total Credits</b>		<b>56</b>

### Concentration Courses (4 courses)

Minimum of three 600-700 level studio courses. No more than one of the following: a 500-level studio course (select from ARTS 501,



ARTS 525, ARTS 536, ARTS 546, ARTS 551, ARTS 552, ARTS 596), ARTS 598 An Artist's Life, a 600-700 level art history (see selection of courses in art history requirement above), or ARTS 600 Internship in Studio Art (with approval). Jterm and summer online courses cannot be used.

Code	Title	Credits
<b>Ceramics Concentration</b>		
ARTS 601	Ceramics Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (J: Ceramics, may be repeated)	
<b>Design Concentration</b>		
ARTS 610	Principles of Typography	
ARTS 611	Animation and Motion Design	
ARTS 612	Interaction & Game Design	
ARTS 613	Design and Place	
ARTS 614	Design and People	
ARTS 796	Independent Study: Studio Art (G: Design, may be repeated)	
<b>Drawing Concentration</b>		
ARTS 632	Intermediate Drawing	
ARTS 633	Life Drawing	
ARTS 732	Advanced Drawing (may be repeated)	
ARTS 796	Independent Study: Studio Art (C: Drawing, may be repeated)	
<b>Painting Concentration</b>		
ARTS 646	Painting Design II: Perceptual Painting and the Individual Artist's Vision (may be repeated, must be taken twice before advancing to 746)	
ARTS 746	Painting Design III: Perceptual Painting and Narrative Themes (may be repeated)	
ARTS 796	Independent Study: Studio Art (D: Painting, may be repeated)	
<b>Photography Concentration</b>		
ARTS 651	Photography Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (A: Photography, may be repeated)	
<b>Printmaking Concentration</b>		
ARTS 636	Printmaking Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (E: Printmaking, may be repeated)	
<b>Sculpture Concentration</b>		
ARTS 667	Sculpture Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (B: Sculpture, may be repeated)	
<b>Wood/Furniture Design Concentration</b>		
ARTS 625	Wood/Furniture Design Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (K: Wood Design, may be repeated)	

The Discovery Program capstone requirement will be fulfilled by completing a capstone project that reflects the training received, and personal artistic growth made, throughout the student's years of study at UNH. The capstone project includes participation in the BA/BFA Senior Exhibition in the UNH Museum of Art in April-May. Students will submit a minimum of 5 (or the equivalent what would be the equivalent of 5) recent works for faculty to review and select for the exhibition. At the review a written artist statement and verbal explanation of the work must also be presented.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Studio art/art education majors may use two major-required courses to satisfy two Discovery category requirements.

## Student Learning Outcomes

### Introductory (500) Level:

- Basic skillset in a particular arts discipline
- Working knowledge of the tools and materials used in a particular arts discipline
- Basic understanding of analytical thinking when making and talking about art
- Demonstrate development of artistry

### Intermediate (500/600) Level:

- Demonstrate development of artistry and skill set in a range of artistic disciplines
- Demonstrate knowledge of tools and materials beyond the basics
- Deeper ability to discuss and analyze works of art
- Ability to verbalize intent in a particular work of art
- Ability to research particular artists
- Ability to declare an area of concentration for advanced in a particular arts discipline

### Advanced (600/700) Level:

- Demonstrate a high level of artistry
- Ability to work independently
- Develop and Demonstrate an individual sensibility
- Ability to understand and verbalize intent in a work of art
- Ability to construct a professional capstone portfolio or thesis
- Demonstrate in-depth familiarity with a range of artistic movements both historical and contemporary

## Fine Arts Major (B.F.A.)

<https://cola.unh.edu/art-art-history/program/bfa/fine-arts>

### Description

Incoming first-year and transfer applicants wishing to enter the bachelor of fine arts (B.F.A.) degree program must first apply for, and be admitted to, the bachelor of arts (B.A.) in the Arts: Studio Art option. Students may submit a B.F.A. portfolio **after** they begin their studies at UNH, as early as the spring semester of their first year. A full faculty review is held each spring semester.

The B.F.A. curriculum provides advanced training for students who plan to enter professional graduate school or pursue careers as professional artists.

### Requirements

Students selecting to work toward a B.F.A. degree must complete a minimum of 17 courses and 72 credits, with a minimum grade of C in each course. Transfer of 3-credit courses from other institutions will require additional course(s) to fulfill the major requirement of 72 credits. Transfer courses can fulfill only 8 requirements. The following courses are required:

Code	Title	Credits
<b>Core Foundation (3 courses)</b>		<b>12</b>
ARTS 510	Principles of Design	
ARTS 532	Introductory Drawing	
ARTS 567	Introductory Sculpture	
<b>Core Supplemental (3 courses)</b>		<b>12</b>

One additional 500/600 level 2D:		
ARTS 536	Introduction Printmaking: Intaglio	
ARTS 546	Painting Design I: Perceptual Painting and Color Theory	
ARTS 632	Intermediate Drawing	
ARTS 633	Life Drawing	
One additional 500-level 3D:		
ARTS 501	Introductory Ceramics	
ARTS 525	Introductory Woodworking	
One photography course:		
ARTS 551	Introduction to Darkroom Photography	
ARTS 552	Introductory Digital Photography	
<b>Core Seminars</b>		<b>12</b>
ARTS 598	An Artist's Life	
ARTS 798	Seminar/Senior Thesis (two-semester course)	
<b>5 Studio courses in a concentration (see concentration courses below)</b>		<b>20</b>
<b>One Studio Elective (Jterm and summer courses allowed)</b>		<b>4</b>
Select from ARTS 455, ARTS 501, ARTS 525, ARTS 536, ARTS 546, ARTS 551, ARTS 552, ARTS 596, ARTS 598, ARTS 601, ARTS 610, ARTS 611, ARTS 612, ARTS 613, ARTS 614, ARTS 625, ARTS 632, ARTS 633, ARTS 636, ARTS 646, ARTS 651, ARTS 667, ARTS 696, ARTS 732, ARTS 746, ARTS 791, ARTS 792, 796		
<b>Core Art History (3 courses)</b>		<b>12</b>
ARTH 480	Introduction to Art History	
or ARTH 474	Introduction to Architectural History	
2 600-level elective art history courses (select from ARTH 654, ARTH 655, ARTH 656, ARTH 674, ARTH 675, ARTH 677, ARTH 678, ARTH 679, ARTH 680, ARTH 681, ARTH 682, ARTH 684, ARTH 685, ARTH 686, ARTH 688, ARTH 689, ARTH 693, ARTH 694, ARTH 695, ARTH 697, ARTH 795)		
<b>Total Credits</b>		<b>72</b>

## Concentration Courses (5 courses)

Minimum of four 600-700 level studio courses and no more than one of the following: ARTS 600 Internship in Studio Art (with approval), a 600-700 level art history (see selection of courses in art history requirement above), or a 500-level studio course (select from ARTS 501, ARTS 525, ARTS 536, ARTS 546, ARTS 551, ARTS 552, ARTS 596). Jterm and summer courses cannot be used.

Code	Title	Credits
<b>Ceramics Concentration</b>		
ARTS 601	Ceramics Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (J: Ceramics, may be repeated)	
<b>Design Concentration</b>		
ARTS 610	Principles of Typography	
ARTS 611	Animation and Motion Design	
ARTS 612	Interaction & Game Design	
ARTS 613	Design and Place	
ARTS 614	Design and People	
ARTS 796	Independent Study: Studio Art (G: Design, may be repeated)	
<b>Drawing Concentration</b>		
ARTS 632	Intermediate Drawing	
ARTS 633	Life Drawing	
ARTS 732	Advanced Drawing (may be repeated)	
ARTS 796	Independent Study: Studio Art (C: Drawing, may be repeated)	
<b>Painting Concentration</b>		
ARTS 646	Painting Design II: Perceptual Painting and the Individual Artist's Vision (may be repeated, must be taken twice before advancing to 746)	
ARTS 746	Painting Design III: Perceptual Painting and Narrative Themes (may be repeated)	
ARTS 796	Independent Study: Studio Art (D: Painting, may be repeated)	
<b>Photography Concentration</b>		
ARTS 651	Photography Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (A: Photography, may be repeated)	
<b>Printmaking Concentration</b>		
ARTS 636	Printmaking Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (E: Printmaking, may be repeated)	
<b>Sculpture Concentration</b>		
ARTS 667	Sculpture Workshop (may be repeated)	
ARTS 796	Independent Study: Studio Art (B: Sculpture, may be repeated)	
<b>Wood/Furniture Design Concentration</b>		

ARTS 625	Wood/Furniture Design Workshop (may be repeated)
ARTS 796	Independent Study: Studio Art (K: Wood Design, may be repeated)

The possible areas of concentration within the department are painting, sculpture, ceramics, design, drawing, printmaking, photography, and furniture design. Proposals for individualized programs are accepted only by permission of the departmental chairperson, the major adviser, and the departmental bachelor of fine arts committee. Candidates applying for the bachelor of fine arts program are required to submit a portfolio to the B.F.A. committee, which meets each spring semester.

The Discovery Program capstone requirement may be fulfilled by completing ARTS 798 Seminar/Senior Thesis.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program.

Fine arts majors may use two major-required courses to satisfy two Discovery category requirements.

## Student Learning Outcomes

### Introductory (500) Level:

- Basic skillset in a particular arts discipline
- Working knowledge of the tools and materials used in a particular arts discipline
- Basic understanding of analytical thinking when making and talking about art
- Demonstrate development of artistry

### Intermediate (500/600) Level:

- Demonstrate development of artistry and skill set in a range of artistic disciplines
- Demonstrate knowledge of tools and materials beyond the basics
- Deeper ability to discuss and analyze works of art
- Ability to verbalize intent in a particular work of art
- Ability to research particular artists
- Ability to declare an area of concentration for advanced in a particular arts discipline

### Advanced (600/700) Level:

- Demonstrate a high level of artistry
- Ability to work independently
- Develop and Demonstrate an individual sensibility
- Ability to understand and verbalize intent in a work of art
- Ability to construct a professional capstone portfolio or thesis
- Demonstrate in-depth familiarity with a range of artistic movements both historical and contemporary

## Architectural Studies Minor

<https://cola.unh.edu/art-art-history/program/minor/architectural-studies>

## Description

The minor in architectural studies provides students with an interdisciplinary introduction to the history, theory and methods of architecture and its symbolism. The program allows students who are interested in this field to receive programmatic recognition of their work. It is designed to assist those who are contemplating enrollment at a school of architecture; are particularly interested in architectural history; want to supplement their technical majors (e.g., civil engineering) with strong academic minors; or plan to pursue careers in preservation, education, community service and public relations.

For more information, contact the minor coordinators: Ivo van der Graaff, [ivo.vandergraaff@unh.edu](mailto:ivo.vandergraaff@unh.edu), art and art history, or Raymond Cook, [ray.cook@unh.edu](mailto:ray.cook@unh.edu), civil engineering.

## Requirements

Five courses (18-20 credits), which consist of the following:

Code	Title	Credits
ARTS 532	Introductory Drawing	4
ARTH 474	Introduction to Architectural History	4
or ARTH/CLAS 501	Introduction to Mediterranean Archaeology	
Select one of the following:		4
ARTS 455	Architectural Design Studio	
ARTS 525	Introductory Woodworking	
ARTS 567	Introductory Sculpture	
Select two electives from the list below chosen in consultation with the minor coordinators:		6-8
ARTH 400	Topics in Art History (only with architectural papers)	
ARTS 510	Principles of Design	
ARTS 600	Internship in Studio Art (only topic C - Architecture)	
ARTS 625	Wood/Furniture Design Workshop	
ARTS 667	Sculpture Workshop (only topic: Kinetic)	
ARTH 654	17th and 18th Century American Architecture	
ARTH 655	Nineteenth-Century Architecture: The Architecture of Empire	
ARTH 656	Twentieth-Century Architecture: Modern and Contemporary	
ARTH 674	Greek Art and Architecture	
ARTH 675	Roman Art and Architecture	
ARTH 678	Romanesque and Gothic Art	
ARTS 796	Independent Study: Studio Art (only topic G: Architectural Design)	
CEE 402	2D Computer Aided Design	
CEE #444	Housing - Everyone Needs a Place to Live	
CEE 795	Independent Study	
CEE 700	Building Information Modeling	
CEE 719	Green Building Design	
CLAS 510	Building Rome (a J-term course)	
<b>Total Credits</b>		<b>18-20</b>

## Art History Minor

<https://cola.unh.edu/art-art-history/program/minor/art-history>

## Description

The art history minor offers those majoring in other fields (including studio art) the chance to gain a serious knowledge of aspects of the history and meanings of Western art from antiquity to the modern world. Particularly for those working in history and the humanities, a minor in art history will provide new interdisciplinary perspectives on their major fields.

## Requirements

The minor consists of five courses (20 credits).

Code	Title	Credits
One 400-level art history (ARTH 480 Introduction to Art History or ARTH 474 Introduction to Architectural History recommended but not required)		4
Select two additional art history courses at the 500-level or above		8
Select two additional art history courses at the 600-level or above		8
<b>Total Credits</b>		<b>20</b>

## Art Minor

<https://cola.unh.edu/art-art-history/program/minor/art>

## Description

The art minor is an appropriate option for students who do not want to take the specific requirements for the art history or studio art minors, but who are still interested in taking art history and/or studio classes.

## Requirements

The minor in art consists of five courses (20 credits) chosen from the offerings of the department. Courses can be all studio art, all art history, or a combination of both.

Code	Title	Credits
Select two ARTS/ARTH courses at the 500-level or above		8
Select three elective ARTS/ARTH courses		12
<b>Total Credits</b>		<b>20</b>

## Design Studies Minor

<https://cola.unh.edu/art-art-history/program/minor/design-studies>

## Description

Situated within the studio arts program, the interdisciplinary minor in design studies brings together the formal and conceptual principles of design in the visual expressions of the fine arts (painting, sculpture, photography, etc.), the commercial arts (graphic design, illustration, etc.), the industrial arts (engineering) and the performing arts (stage, costume and lighting design).

Course options in communication, marketing, English and art history offer the opportunity to contextualize the principles and products of design in a broader historical, sociological and cultural context.

Course requirements and options within the design studies minor enable students to develop a common skill set of literacy and fluency in a range of design software programs (Photoshop, InDesign, Light Box, Fuse, etc.), the utility of which has become increasingly more essential to a range of fields of study and vocations.

## Requirements

Five courses (20 credits) are required.<sup>1</sup>

Code	Title	Credits
<b>Applied/Studio Practice</b>		
ARTS 510	Principles of Design	4
Select two of the following:		8
ARTS 455	Architectural Design Studio	
ARTS 501	Introductory Ceramics	
ARTS 525	Introductory Woodworking	
ARTS 532	Introductory Drawing	
ARTS 536	Introduction Printmaking: Intaglio	
ARTS 546	Painting Design I: Perceptual Painting and Color Theory	
ARTS 551	Introduction to Darkroom Photography	
ARTS 567	Introductory Sculpture	
ARTS 610	Principles of Typography	
ARTS 613	Design and Place	
ARTS 614	Design and People	
THDA 460	Elements of Design	
THDA 546	Costume Design for the Theatre	
THDA #547	Stage Properties	
THDA 548	Stage Lighting Design and Execution	
<b>Technical Practice</b>		
Select one of the following:		4
ARTS 552	Introductory Digital Photography	
ARTS 611	Animation and Motion Design	
ARTS 612	Interaction & Game Design	
CEE 402	2D Computer Aided Design <sup>1</sup>	
CEE 700	Building Information Modeling <sup>1</sup>	
CMN 596	Special Topics in Media Studies (Multi-media Communication)	
ENGL 712	Multimedia Storytelling	
IT 403	Introduction to Internet Technologies	
IT 502	Intermediate Web Design	
<b>Historical/Theoretical Context</b>		
Select one of the following:		4
ARTH 480	Introduction to Art History	
ARTH 474	Introduction to Architectural History	
CMN 697	Seminar in Rhetorical Study (Rhetoric of the Photograph)	
CMN 756	Rhetorics of Display	
CMN 772	Seminar in Media Theory	
ENGL 533	Introduction to Film Studies	
ENGL 616A	Studies in Film/Genre	
ENGL 616B	Studies in Film/Authorship	
ENGL 616C	Studies in Film/Culture and Ideology	
ENGL 616D	Studies in Film/Narrative and Style	
MKTG 520	Topics in Marketing (Understanding Your Customer or Digital Marketing Communications)	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> 19 credits are required to complete the minor if CEE 402 or CEE 700 is selected.

Students must receive a **minimum grade of C** in all required courses.

A maximum of two courses (8 credits) may be transferred from another accredited institution, provided UNH has accepted them as transfer credits. Transfer courses must be a minimum of 3 credits. Students with 3 credit transfers must make up the credit shortage.

Only two courses from the student's area/department of concentration may be used to meet requirements towards a minor in design studies.

## Studio Arts Minor

<https://cola.unh.edu/art-art-history/program/minor/studio-arts>

## Description

The studio arts minor is for students who are interested in continuing on to the intermediate and advanced levels in a variety of mediums.

## Requirements

The minor in studio arts consists of five courses (20 credits) with a distribution that includes

Code	Title	Credits
ARTS 532	Introductory Drawing	4
Select two studio courses from the 600 level or above		8
Select two additional studio courses chosen from the offerings of the department		8
<b>Total Credits</b>		<b>20</b>

## Asian Studies

## Programs

- [Asian Studies Minor](#) (p. 47)

## Asian Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/asian-studies>

## Description

The aim of the interdisciplinary Asian studies minor program is to foster teaching and learning as well as research in all areas of Asia. The minor offers opportunities to develop proficiency in Asian languages and to study the histories, politics, literatures, cultures and religions of East Asia (China, Japan, Korea and others) and South Asia (India, Pakistan, Sri Lanka, Bhutan and others). Courses offered provide students the chance to explore a wide range of contemporary subjects such as foreign policy, language use, education, environment, the Asian-American experience, ethnic and religious conflict, literary and cultural production, and cross-border movements of industry and ideas.

For further information, please contact Lawrence C. Reardon, associate professor of political science, [chris.reardon@unh.edu](mailto:chris.reardon@unh.edu), (603) 862-1858.

## Requirements

To complete the minor in Asian Studies, students are required to take five courses (20 credits) or their equivalent, and no more than three can be counted from any one of the following disciplines:

- Anthropology (ANTH)
- Asian American or South Asian Literature (ENGL)
- Geography (GEOG)
- History (HIST)
- Languages, Literatures, and Cultures (either CHIN or JPN)
- Philosophy (PHIL)
- Political Science (POLT)

The following are a list of courses that count toward the minor. Please note additional courses may also count. Visit the program website for the most up-to-date information.

Code	Title	Credits
ANTH 500	Peoples and Cultures of the World (only topic D) Asia)	4
ANTH 501	World Archaeological Cultures (only topic F) Asia)	4
ARTH 697	Topics in Asian Art	4
CHIN #400	Conversational Chinese	4
CHIN 401	Elementary Chinese I	4
CHIN 402	Elementary Chinese II	4
CHIN 425	Introduction to Chinese Culture	4
CHIN 503	Intermediate Chinese I	4
CHIN 504	Intermediate Chinese II	4
CHIN 521	What does it Mean to be Modern? Lenses of Modern Chinese Literature and Film	4
CHIN 632	Advanced Chinese Conversation and Composition II	4
CHIN 795	Independent Study	1-4
CMN #770	From Pokemon to K-Pop: East Asian Media and Popular Culture	4
ENGL 581	Reading the Postcolonial Experience	4
ENGL 616C	Studies in Film/Culture and Ideology	4
ENGL 738	Asian American Studies	4
ENGL 777	The English Novel in the World	4
GEOG 530	China: People, Politics and Economy	4
HIST 425	Foreign Cultures	4
HIST #444G	Voices from Modern China	4
HIST 579	History of China in Modern Times	4
HIST 580	History of Japan in Modern Times	4
HIST 797	Colloquium (American Century in Asia)	4
HIST 797	Colloquium (Chinese-Western Encounters)	4
JPN 401	Elementary Japanese I	4
JPN 402	Elementary Japanese II	4
JPN 503	Intermediate Japanese I	4
JPN 504	Intermediate Japanese II	4
JPN #631	Advanced Japanese I	4
JPN 795	Independent Study	1-4
JPN 796	Independent Study	1-4
PHIL 520	Introduction to Eastern Philosophy	4
POLT 545	People and Politics in Asia	4
POLT 546	Wealth and Politics in Asia	4
POLT 556	Politics in China	4
POLT 569	The Rise of China	4
POLT 742	Politics of Afghanistan, Pakistan, and India	4
POLT 797E	Seminar in International Politics (US/China Decision Making)	4

## Chinese (CHIN)

### Programs

- [Chinese Minor](#) (p. 48)

## Chinese Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/chinese>

### Description

The Chinese minor provides students with linguistic skills and cross-cultural competence that will complement their studies in many other disciplines, such as business, international affairs, education, hotel management and social service. It prepares students for future academic and professional opportunities in which proficiency in Chinese is required or preferred. Students who have studied Chinese at UNH have gone

on to use Chinese for a variety of career paths in both domestic and international settings.

## Requirements

**20 credits** which consist of the following:

Code	Title	Credits
Four language courses above the 500 level:		
CHIN 503	Intermediate Chinese I	4
CHIN 504	Intermediate Chinese II	4
CHIN 631	Advanced Chinese Conversation and Composition I	4
CHIN 632	Advanced Chinese Conversation and Composition II	4
Choose one of the following Chinese culture and literature courses: <sup>1</sup>		4
CHIN 425	Introduction to Chinese Culture	4
CHIN 521	What does it Mean to be Modern? Lenses of Modern Chinese Literature and Film	4
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Or another Chinese culture or literature course approved by the faculty.

At the beginning of your final semester of study, please complete a [Certification of Completion of Minor form](#), obtain the necessary signatures, and submit it to your Dean's Office.

## Cinema Studies

### Programs

- [Cinema Studies Minor](#) (p. 48)

## Cinema Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/cinema-studies>

### Description

The minor in cinema studies offers a variety of opportunities to study a predominant contemporary form of narrative, aesthetic and social discourse: the moving image. Film is the primary medium of study for the minor, but the cinematic practices of video and television also may be included as potential areas of interest. Courses consist of interdisciplinary approaches to the analysis of cinema, covering works from the early cinema to the present, from the U.S. and other nations. Students learn the aesthetics, history, technology, economics and theory of cinema, while also acquiring the language for analyzing its forms and practices. The minor allows for organized and meaningful study of the moving image from a wide range of scholarly interests and approaches that complement the increasingly significant place of cinema in many major disciplines and other programs. Students enrolled in the cinema studies minor will become articulate and critical spectators in the larger cultural contexts of film and media studies.

Cinema studies students are required to take five courses. Students must earn at least a C- in each course and maintain a 2.0 grade-point average in courses taken for the minor. "Double counting" of minor course credits with major course credits will be left to the discretion of existing major departments, with the exception that no more than eight credits, if approved, will "double count."



Interested students should contact the cinema minor coordinator, [Matt Konzett](mailto:matthias.konzett@unh.edu) ([matthias.konzett@unh.edu](mailto:matthias.konzett@unh.edu)), Department of English, (603) 862-0261.

## Requirements

Code	Title	Credits
<b>Introductory Course</b>		
ENGL 533	Introduction to Film Studies	4
<b>History and Theory of Film</b>		
LLC 540	Film History	4
or ENGL 618	Film Theory	
<b>Advanced and/or Focused Courses</b>		
Select two of the following:		8
ENGL 616A	Studies in Film/Genre	
ENGL 616B	Studies in Film/Authorship	
ENGL 616C	Studies in Film/Culture and Ideology	
ENGL 616D	Studies in Film/Narrative and Style	
ITAL 525	Italian Cinema	
<b>Elective Courses</b>		
Select one elective course <sup>1</sup>		4
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Electives are drawn from an approved list of courses for the minor, which is compiled and announced every semester. Students also may choose from the advanced and/or focused courses. Elective courses have a significant cinema studies component and may have another disciplinary focus as well. Contributing departments and/or programs include: American studies, anthropology, arts, communication, English, French, geography, German, history, humanities, Italian, music, philosophy, political science, psychology, Russian, sociology, Spanish, theatre and dance, and women's and gender studies. Students should check with the cinema minor coordinator each semester for approval of the elective.

## Classics (CLAS)

Classics encompasses the interdisciplinary study of the Greeks and Romans, as well as the ways in which the ancient world's influence extends to the Medieval Period, the Renaissance and the modern world. Studying classics, therefore, is to investigate several thousand years of material through the study of languages, literature, history, politics, law, archaeology, art, mythology and folklore, gender and sexuality, religious studies, philosophy and more—all with methods derived from a variety of humanistic and social science perspectives. This breadth provides an excellent liberal arts education that prepares students for a variety of careers, as well as for further study. Classics majors from UNH have gone on to law school, medical school, and graduate school in classics and many related disciplines and have taken up careers in teaching, government service, the military and business.

Classics majors have many opportunities at UNH to pursue their own interests in the ancient world while completing their requirements. In addition to Greek and Latin, program faculty may occasionally offer, on request, courses on other ancient languages, including Hittite, Hebrew, Egyptian Hieroglyphs, Syriac and Sanskrit. Students are encouraged to take courses offered outside the department that relate to the field of classics, such as those in ancient history, archaeology, ancient philosophy, classical art, modern languages, linguistics and English literature. Some of these courses can even count for major requirements; a current list of approved courses is available from any departmental adviser. Study abroad is another way that many majors broaden their

studies. Students have frequently spent semesters at many study abroad sites, including the Intercollegiate Center for the Classical Studies in Rome. (UNH is part of the consortium of Universities that supports this program.) The Department of Classics, Humanities and Italian Studies regularly runs its own popular January Term course in Rome and manages several other study abroad programs.

The program offers three different options for the classics major. In brief, the differences are:

- The Classical Languages and Literatures (CLL) option allows for the most in-depth study of the ancient languages and requires knowledge of both Ancient Greek and Latin. It thus provides the strongest preparation for students considering graduate study in classics or related areas, and can also be an appropriate choice (with careful planning) for those thinking about teaching Latin in secondary schools. At the same time, it is designed for any student who desires a solid liberal arts education.
- The Ancient Mediterranean Civilizations (AMC) option balances language study with the opportunity for students to select from a wide range of courses covering many aspects of the Greek and Roman worlds, as well as the neighboring peoples in Europe, North Africa and the Near East. The flexibility of this option makes it especially attractive for students who wish to double major in another subject. It is generally not suitable, however, for those who wish to pursue related graduate study or a career in teaching Latin. AMC majors can, however, supplement the requirements with additional coursework to keep these options open.
- The Latin and Latin Teaching (LLT) option is designed to provide a good foundational liberal arts education centered on Latin and the Roman world, but it also includes specific elements that make it particularly appropriate for students who are considering careers teaching Latin in secondary schools after graduation. This option does not lead directly to state certification, which can be pursued during a fifth year of study in the Department of Education.

<https://cola.unh.edu/classics-humanities-italian-studies>

## Programs

- [Classics Major: Ancient Mediterranean Civilizations Option \(B.A.\)](#) (p. 50)
- [Classics Major: Classical Languages & Literatures Option \(B.A.\)](#) (p. 50)
- [Classics Major: Latin & Latin Teaching Option \(B.A.\)](#) (p. 51)
- [Classics Minor](#) (p. 52)
- [Greek Minor](#) (p. 52)
- [Latin Minor](#) (p. 52)

## Faculty

<https://cola.unh.edu/classics-humanities-italian-studies/faculty-staff-directory>

## Classics Major: Ancient Mediterranean Civilizations Option (B.A.)

<https://cola.unh.edu/classics-humanities-italian-studies/program/ba/classics-major-ancient-mediterranean-civilizations-option>

### Description

The Ancient Mediterranean Civilizations (AMC) option balances language study with the opportunity for students to select from a wide range of courses covering many aspects of the Greek and Roman worlds, as well as the neighboring peoples in Europe, North Africa and the Near East. The flexibility of this option makes it especially attractive for students who wish to double major in another subject. It is generally not suitable, however, for those who wish to pursue related graduate study or a career in teaching Latin. AMC majors can, however, supplement the requirements with additional coursework to keep these options open.

### Requirements

To complete the AMC option of the classics major, a student must complete 10 courses (40 credits), distributed as follows:

Code	Title	Credits
<b>Language Proficiency</b>		
Demonstrate proficiency by taking at least 8 credits in GREK or LATN at the 503 level or above		8
<b>Other Courses</b>		
Select at least 32 additional credits in CLAS, GREK, or LATN courses, including: <sup>1</sup>		32
CLAS 403	Introduction to Greek Civilization	
or CLAS 404	Introduction to Roman Civilization	
At least 8 credits from courses at the 600 level or above		
<b>Capstone Experience</b>		
Select an approved capstone experience of the following:		
Senior thesis		
Honors thesis		
CLAS capstone course approved by the advisor at the 600 or 700 level		
At least 4 credits in 700-level LATN or GREK courses		
Approved internship		
Approved semester study abroad focused on the classical world		
<b>Total Credits</b>		<b>40</b>

<sup>1</sup> No more than 8 credits may come from CLAS courses at the 400 level, with up to an additional 8 credits from LATN and GREK courses at the 400 level. There are also courses taught outside of the program that are approved substitutes for CLAS courses, and the department will accept up to 8 credits from such courses. An up-to-date list of these courses is available from departmental advisers and additional exceptions are allowed with the written approval of the adviser.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Classics majors may use two major-required courses to satisfy two Discovery category requirements.

The required minimum overall GPA in major coursework is 2.0.

### Student Learning Outcomes

Classics: Student Learning Outcomes for Classics Major: Ancient Mediterranean Civilizations Option (B.A.)

Analyze and critique the cultural and historical importance of the ancient Greeks and Romans.

Recognize and assess the relative value, and to integrate, the distinct categories of evidence from antiquity: material and textual.

Demonstrate an understanding of the steps of the intellectual process as developed in classical antiquity, including:

- identifying and defining essential questions
- research in the best and fullest range of evidence
- reasoned critique of the evidence
- insightful synthesis of all relevant evidence
- critical evaluation and integration of previous interpretations
- creating an argument, including in essays or papers, which takes into account all the evidence
- Translate key Latin and/or Greek texts at the intermediate level and demonstrate a knowledge of Latin or Greek vocabulary, morphology, and syntax at an intermediate level.
- Show a familiarity with the essential literary sources from classical antiquity, and how they have been received in later periods.

## Classics Major: Classical Languages & Literatures Option (B.A.)

<https://cola.unh.edu/classics-humanities-italian-studies/program/ba/classics-major-classical-languages-literatures-option>

### Description

The Classical Languages and Literatures (CLL) option allows for the most in-depth study of the ancient languages and requires knowledge of both Ancient Greek and Latin. It thus provides the strongest preparation for students considering graduate study in classics or related areas, and can also be an appropriate choice (with careful planning) for those thinking about teaching Latin in secondary schools. At the same time, it is designed for any student who desires a solid liberal arts education.

### Requirements

To complete the CLL option of the classics major, a student must complete 10 courses (40 credits), distributed as follows:

Code	Title	Credits
<b>Language Courses <sup>1</sup></b>		
Select at least 12 credits at the 503 level or above <sup>2</sup>		12-24
Including:		
Select at least one class at the 700 level in the primary language (GREK or LATN)		
Select at least one class at the 504 level or above in the secondary language (LATN or GREK)		
<b>Non-Language Courses</b>		
Select at least 16 credits in CLAS courses. As many as 28 credits may be counted toward this option. <sup>3</sup>		16-28
<b>Capstone</b>		
Select an approved capstone experience of the following:		
Senior thesis		
Honors thesis		

CLAS capstone course at the 600 or 700 level
At least 8 credits in 700-level LATN or GREK courses
Approved internship
Approved semester study abroad focused on the classical world
<b>Total Credits</b>

40

- <sup>1</sup> No credits from language courses at the 400 level may be counted toward this option.
- <sup>2</sup> Students may count as many as 24 toward the CLL major option.
- <sup>3</sup> No more than 4 credits may come from courses at the 400 level. There are also courses taught outside of the program that are approved substitutes for CLAS courses, and the department will accept up to 8 credits from such courses. An up-to-date list of these courses is available from departmental advisers and additional exceptions are allowed with the written approval of the adviser.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Classics majors may use two major-required courses to satisfy two Discovery category requirements.

The required minimum overall GPA in major coursework is 2.0.

## Student Learning Outcomes

Student Learning Outcomes for Classics Major: Classical Languages and Literatures Option

- Translate, contextualize, and interpret key texts in their primary language (Greek or Latin) at the upper level.
- Translate, contextualize, and interpret intermediate-level texts in their secondary language (Greek or Latin).
- Demonstrate an accurate understanding of linguistic concepts related to Greek and Latin including the elements of phonetics, semantics, and morphology and syntax at an upper level for their primary language and at an intermediate level for their secondary language.
- Analyze and critique, including in essays or papers, the cultural, literary, and historical significance of the ancient Greeks and Romans, and how they have been received in later periods.

## Classics Major: Latin & Latin Teaching Option (B.A.)

<https://cola.unh.edu/classics-humanities-italian-studies/program/ba/classics-major-latin-latin-teaching-option>

### Description

The Latin and Latin Teaching (LLT) option is designed to provide a good foundational liberal arts education centered on Latin and the Roman world, but it also includes specific elements that make it particularly appropriate for students who are considering careers teaching Latin in secondary schools after graduation. This option does not lead directly to state certification, which can be pursued during a fifth year of study in the Department of Education.

## Requirements

To complete the LLT option of the classics major, a student must complete 10 courses (40 credits), distributed as follows:

Code	Title	Credits
<b>Latin Language Courses</b>		
Select at least 20 credits of LATN courses at the 504 level or above <sup>1</sup>		20
<b>Other Courses</b>		
Student must take at least three of the following courses in areas concerning mythology or Roman history:		12
CLAS 401	Classical Mythology	
CLAS 404	Introduction to Roman Civilization	
CLAS 601	Classical Myth II: The Power and Persistence of Myth	
CLAS 677	History of Ancient Rome	
CLAS 678	Topics in Ancient Roman History	
Select 8 credits of electives (which may include credits earned in a capstone experience) <sup>2</sup>		8
<b>Capstone Experience</b>		
Select an approved capstone experience of the following:		
Senior thesis		
Honors thesis		
CLAS capstone course at the 600 or 700 level		
At least 12 credits in 700-level LATN courses		
Approved external internship		
CLAS 694	Supervised Practicum (4-credit internal Latin teaching internship)	
Approved semester study abroad focused on the classical world		
<b>Total Credits</b>		<b>40</b>

- <sup>1</sup> At least 4 credits must come at the 700 level.
- <sup>2</sup> An up-to-date list of these courses is always available from department advisors, and advisors can also approve exceptions in writing. (At present, the following CLAS courses do not count: CLAS 403 Introduction to Greek Civilization, CLAS 525 Greek and Latin Origins of Medical Terms, and CLAS 694 Supervised Practicum.) Besides CLAS 401 Classical Mythology and CLAS 404 Introduction to Roman Civilization, no other 400-level courses may count. No Greek language courses are required for the LLT option, but students are encouraged to complete at least the introductory sequence (401–402).

There are also courses taught outside of the program that are approved substitutes for CLAS courses, and the department will accept up to 8 credits from such courses. An up-to-date list of these courses is available from departmental advisers and additional exceptions are allowed with the written approval of the advisor.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Classics majors may use two major-required courses to satisfy two Discovery category requirements.

The required minimum overall GPA in major coursework is 2.0.

Please note that the LLT option does not by itself meet New Hampshire state certification requirements. Those who intend to pursue this certification should enroll in EDUC 500 Exploring Teaching as early as possible and then apply early in the fall of their year of graduation for a fifth year of internship and study through UNH's Department of Education. Students are also encouraged strongly to consider taking some EDUC electives during their period of undergraduate study.

## Student Learning Outcomes

Student Learning Outcomes for Classics Major: Latin and Latin Teaching Option (B.A.)

- Ability to read major works of Latin authors in prose and poetry, and to translate Latin into idiomatic English.
- Ability to read aloud both prose and poetry in correct meter in Latin using an accepted standard of pronunciation.
- Knowledge of the morphology, phonology, and syntax of Latin; and of the historical development of Latin and the place of Latin in the etymology of English words.
- Ability to write short compositions in Latin.
- Knowledge, as demonstrated in essays or papers, of: a) major aspects of Greek and Roman history, cultural institutions and their connections to the western tradition and other world cultures b) the history and content of Greek and Roman literature, in translation or in the original c) classical mythology.

## Classics Minor

<https://cola.unh.edu/classics-humanities-italian-studies/program/minor/classics>

### Description

Classics encompasses the interdisciplinary study of the Greeks and Romans, as well as the ways in which the ancient world's influence extends to the Medieval Period, the Renaissance and the modern world. Studying classics, therefore, is to investigate several thousand years of material through the study of languages, literature, history, politics, law, archaeology, art, mythology and folklore, gender and sexuality, religious studies, philosophy and more—all with methods derived from a variety of humanistic and social science perspectives. This breadth provides an excellent liberal arts education that prepares students for a variety of careers, as well as for further study.

The coordinator is Scott Smith, Murkland Hall 301; Department of Classics, Humanities and Italian Studies; e-mail [scott.smith@unh.edu](mailto:scott.smith@unh.edu).

### Requirements

A minor in classics consists of five courses (20 credits).

Code	Title	Credits
Select five elective courses in classics, Greek and/or Latin		20
<b>Total Credits</b>		<b>20</b>

## Greek Minor

<https://cola.unh.edu/classics-humanities-italian-studies/program/minor/greek>

### Description

Explore the cultural foundations of Western civilization in the Greek minor, studying ancient and modern Greek and Greek history, literature, philosophy and religion. The minor complements studies in areas such as business, classics, history, the humanities, philosophy or international

affairs, and will help you prepare for a career at home or abroad, or for graduate studies.

The coordinator is Scott Smith, Murkland Hall 301; Department of Classics, Humanities and Italian Studies; e-mail [scott.smith@unh.edu](mailto:scott.smith@unh.edu).

## Requirements

A minor in Greek consists of five courses (20 credits).

Code	Title	Credits
Select five elective courses in Greek		20
<b>Total Credits</b>		<b>20</b>

## Latin Minor

<https://cola.unh.edu/classics-humanities-italian-studies/program/minor/latin>

### Description

In the Latin minor, you'll study Latin and the civilization, culture and mythology of the Roman world. You'll be able to improve your fluency and your composition skills, and read in the original such classics as Lucretius, Catullus, Vergil, Horace and Ovid.

The coordinator is Scott Smith, Murkland Hall 301; Department of Classics, Humanities and Italian Studies; e-mail [scott.smith@unh.edu](mailto:scott.smith@unh.edu).

## Requirements

A minor in Latin consists of five courses (20 credits).

Code	Title	Credits
Select five elective courses in Latin		20
<b>Total Credits</b>		<b>20</b>

## Cognates

- [Art History, Design, and Computer Sciences Cognate](#) (p. 53)
- [Digital Writing and Literature Cognate](#) (p. 53)
- [Intercultural Communication for the Professional World Cognate](#) (p. 53)
- [Medical Sociology Cognate](#) (p. 136)
- [Philosophy of Business, Innovation, & Technology Cognate](#) (p. 123)
- [Political and Legal Philosophy Cognate](#) (p. 124)
- [Skills and Perspectives for the Digital World Cognate](#) (p. 188)
- [Studies in Fashion and Design Cognate](#) (p. 150)
- [Studies in the Design of Interior Space Cognate](#) (p. 149)
- [Technical Writing and Public Speaking Cognate](#) (p. 54)
- [Philosophy of Business, Innovation, & Technology Cognate](#) (p. 123)
- [Studies in Fashion and Design Cognate](#) (p. 150)
- [Studies in the Design of Interior Space Cognate](#) (p. 149)

# Art History, Design, and Computer Sciences Cognate

<https://cola.unh.edu/art-art-history/program/cognate/art-history-design-computer-sciences>

## Description

The cognate is for students to develop basic skills in art history and design as well as computer programming. The aim is for them to be able to apply programming skills to develop projects related to museum collections management and visitor experience, research projects, website design for cultural institutions, and art market intelligence and data transparency. Students will be encouraged to learn the basic concepts of art history and design and combine them in creative ways with emerging technologies such as Augmented Reality, Virtual Reality, 3D modelling and more traditional website design. The aim is to give students a head start on how emerging technologies can come together with the art market as well as cultural heritage to help document, preserve, investigate and present it for future generations.

## Requirements

Students will need to complete the following three modules, preferably in order.

Code	Title	Credits
<b>1. Arts</b>		<b>4</b>
Select one of the following:		
ARTH 440A	From Digging to Digital: Preserving and Displaying the Past	
ARTH 474	Introduction to Architectural History	
ARTH 480	Introduction to Art History	
ARTS 510	Principles of Design	
<b>2. Computer Sciences</b>		<b>4</b>
Select one of the following:		
CS 405	Introduction to Applications Programming	
CS 408	Living in a Networked World: The Good, the Bad, and the Ugly	
CS 410P	Introduction to Scientific Programming/Python	
CS 414	From Problems to Algorithms to Programs	
CS 415	Introduction to Computer Science I	
CS 457	Introduction to Data Science and Analytics	
IT 403	Introduction to Internet Technologies	
After completion of the two required courses above:		
<b>3. Digital Applications <sup>1</sup></b>		<b>4</b>
Select one of the following:		
ARTH 674	Greek Art and Architecture	
ARTH 675	Roman Art and Architecture	
ARTH 699	Museum Studies	
HIST 771	Museum Studies	
Any other 600-level Art History course, by instruction permission (WI)		
<b>Total Credits</b>		<b>12</b>

<sup>1</sup> Students should aim to complete a project focused on digital applications.

## Digital Writing and Literature Cognate

<https://cola.unh.edu/english/program/cognate/digital-writing-literature>

## Description

Many jobs nowadays require not only solid reading and writing skills; but also the ability to deploy and adapt these skills in a variety of electronic, professional, public and semi-public platforms. This cognate builds students' ability to comprehend and interpret difficult texts (including complex instructions); to edit, proofread and frame their work for different audiences and contexts; and to navigate rudimentary markup (code) and varied electronic interfaces with confidence and independence.

In consultation with a program advisor, students may choose to pursue a "track": e.g., courses like ENGL 623 Creative Nonfiction and ENGL 712 Multimedia Storytelling may serve as a "creative" track for students interested in honing their digital storytelling and audio skills; while ENGL 693 Special Topics in Literature and ENGL 739 American Indian Literature may offer students a way in to cultural heritage management or nonprofit careers. Alternatively, students already focused on a particular course of study (e.g., journalism) may wish to learn how digital tools work in parallel fields (thus taking ENGL 631 Digital Reporting to enhance their digital reporting skills while also taking ENGL 739 American Indian Literature to learn how to edit Wikipedia).

Contact the Department of English, 230F Hamilton Smith Hall or (603) 862-1313, with questions.

## Requirements

Code	Title	Credits
ENGL 501	Introduction to Creative Nonfiction	4
or ENGL 502	Professional and Technical Writing	
Choose any two from the following:		8
ENGL 602	Advanced Professional and Technical Writing	
ENGL 620	English Major Internship (Digital Archiving and Editing)	
ENGL 623	Creative Nonfiction (see advisor for help in identifying appropriate section)	
ENGL 631	Digital Reporting	
ENGL 693	Special Topics in Literature (Topic N, Introduction to Digital Humanities)	
ENGL 712	Multimedia Storytelling	
ENGL 739	American Indian Literature	
ENGL 789	Special Topics in English Teaching (Teaching English in the 21st Century)	
<b>Total Credits</b>		<b>12</b>

Credit toward the cognate will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the cognate. Courses taken on the pass/fail basis may not be used for the cognate.

## Intercultural Communication for the Professional World Cognate

<https://cola.unh.edu/languages-literatures-cultures/program/cognate/intercultural-communication-professional-world>

## Description

This cognate is designed to provide students with the means to develop a global perspective, intermediate communication skills, and an understanding of the dynamics of intercultural communication. Research has linked study abroad experience with students' future employability, and "intercultural/global competence" in particular is a skill valued by employers in a wide range of fields. This cognate provides students a



means to attain these valuable, marketable skills, as well as a means to demonstrate this to potential employers.

Contact the Department of Languages, Literatures and Cultures with questions [LLC.dept@unh.edu](mailto:LLC.dept@unh.edu) or call (603) 862-4005.

## Requirements

Code	Title	Credits
<b>Professional Culture <sup>1</sup></b>		
Choose one of the following:		4
LLC 535A	Professional Culture in European Union - - Case Study: Germany	
LLC 535B	Professional Culture in Latin America - Case Study: Mexico and Brazil	
LLC #535C	Professional Culture in Asia - Case Study: China and Japan	
<b>Language Skills</b>		
Choose any modern language course numbered 503 or above (503, 631, 632) consistent with the region covered in the professional culture course above and the study abroad experience below		4
<b>Study Abroad Experience</b>		
Choose any program in country for 5 weeks or longer that involves coursework in the target or host language/ language other than English <sup>2</sup>		4
<b>Total Credits</b>		12

<sup>1</sup> Taught in English, fulfills WC Discovery, no prior knowledge assumed

<sup>2</sup> Students can petition for an alternate experience, such as The Washington Center Program, as long as the internship placement involves foreign language use. Preferably, this will relate to the same region covered in the professional culture course and the language skills course, but that is not required.

Credit toward the cognate will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the cognate. Courses taken on the pass/fail basis may not be used for the cognate.

## Technical Writing and Public Speaking Cognate

<https://cola.unh.edu/english/program/cognate/technical-writing-public-speaking>

### Description

The cognate in technical writing and public speaking (TWPS) offers students intensive instruction in oral and written communication as important means of addressing technical, professional or practical problems whose solutions require others' cooperation. Students learn practical precepts for analyzing those "communication situations" and for making informed, strategic decisions when composing oral and written responses in response to them. Students also undergo extensive practice creating standard and, thus, widely applicable forms of spoken and written communication. All students acquire a foundation in effective expression by taking introductory courses in public speaking and in professional and technical writing. Students then build upon that foundation and complete the cognate with one advanced course in either public speaking or professional and technical writing. This cognate is attractive to students who recognize that effective expression is valued in nearly any field of endeavor they are likely to pursue in their post-graduate lives.

Please contact the Liberal Arts Dean's Office for additional information, (603) 862-2062, 110 Murkland Hall.

## Requirements

Code	Title	Credits
<b>Introductory Courses</b>		
CMN 500	Public Speaking	4
ENGL 502	Professional and Technical Writing	4
<b>Advanced Course</b>		
Choose one of the following:		
CMN 600 or ENGL 602	Public Speaking as a Civic Art Advanced Professional and Technical Writing	4
<b>Total Credits</b>		12

Credit toward the cognate will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the cognate. Courses taken on the pass/fail basis may not be used for the cognate.

## Communication (CMN)

The Department of Communication at UNH emphasizes a range of studies in human communication, including rhetoric, media and interpersonal communication. Students are taught to analyze verbal, nonverbal and mediated messages from a variety of perspectives including historical, critical, interpretive and empirical approaches. Students explore connections and interrelationships among the people, environments, technologies and messages that comprise the social world.

The communication major prepares students well for a wide variety of careers in business, media, marketing, government, education, health, advocacy and social services. While offering access to a cutting-edge media lab and courses that teach students multi-media production skills, the department's primary focus is analytical rather than vocational. We do not train students to do specific communication tasks, such as managing social media profiles or creating promotional content. Rather, we help students develop an understanding of how communication works the way it does, and how different modes of communication shape understanding and social relations. Students grapple with such "how" and "why" questions as they study real-world political issues, news events, cultural phenomena and communication between friends, family members, colleagues, community members and strangers.

The department is committed to providing a strong liberal arts orientation that helps students develop their abilities to think — to describe, analyze, critique, explore, integrate, synthesize and create ideas. The department's faculty members believe that these are the skills and abilities that will be the most useful resources in students' professional, civic and personal lives after leaving UNH. The program trains students to understand, adapt to and participate in social change. These educational efforts lead to the kind of fundamental understanding that identifies the communication professional and also provides a firm foundation for advanced, graduate study in communication and related fields.

The department's faculty members have a strong national and international reputation for their research and publications. In addition, the department is recognized on campus for its commitment to teaching. About half of the department's tenure-track faculty members have won awards for teaching excellence. The faculty is also very active in university, community and professional service.

The department offers a business applications option for communication majors who want to augment the liberal arts focus of their major with

professional training in such areas as marketing, advertising and organizational behavior.

The department offers a media practices option for communication majors who want to augment their major with training in media production and applied media communication through courses at UNH-Manchester Communication Arts Department.

The department also offers internships, which are designed to integrate classroom study and supervised practical experience in a work setting. Internship credits do not count toward completion of the communication major, but they do contribute to the total number of credits needed for graduation.

<https://cola.unh.edu/communication>

## Programs

- [Communication Major \(B.A.\)](#) (p. 55)
- [Communication Major: Business Applications Option \(B.A.\)](#) (p. 56)
- [Communication Major: Media Practices Option \(B.A.\)](#) (p. 57)
- [Communication Minor](#) (p. 59)

## Faculty

<https://cola.unh.edu/communication/faculty-staff-directory>

## Communication Major (B.A.)

<https://cola.unh.edu/communication/program/ba/communication-major>

## Description

The purpose of the communication major is to prepare students to engage more knowingly with the communicative patterns, problems and practices that they will encounter in their personal, professional and civic lives. This purpose requires that students learn to move beyond commonplace and conventional understandings of "communication" and acquire sophisticated perspectives — workable orientations — for describing, analyzing, reflecting upon and engaging with those patterns, problems and practices. Accordingly, the major not only acquaints students with a variety of empirical, critical, historical, theoretical and pragmatic perspectives on communication phenomena, but encourages them to formulate workable orientations of their own for engaging with communication issues and questions. Students who graduate with a communication major are prepared to become thoughtful and proficient "communication decision-makers" during their postgraduate lives.

Students wishing to declare communication as a major should contact the department's academic adviser, [Andrew Sharp](#) ([andrew.sharp@unh.edu](mailto:andrew.sharp@unh.edu)), for application information and requirements.

## Requirements

Majors must complete ten courses (40 credits) with a 2.0 overall average in the major. The distribution of required courses for the major is as follows:

Code	Title	Credits
Complete the following three introductory courses: <sup>1</sup>		
CMN 455	Introduction to Media Studies	4
CMN 456	Propaganda and Persuasion	4
CMN 457	Introduction to Language and Social Interaction	4
Select three 500-level communication analysis courses <sup>2</sup>		12
Select four upper-division courses <sup>3</sup>		16
<b>Total Credits</b>		<b>40</b>

- Majors must earn a grade of C or better in each introductory course.
- Students must complete the 400-level prerequisite before taking a 500-level course.
  - At least two of the three 500-level courses must have different 400-level prerequisites.
  - Majors must earn a grade of C- or better in all three analysis courses.
  - CMN 500 Public Speaking, CMN 599 Internship, and CMN 575 Research Practicum cannot be used to fulfill an analysis course requirement.
- Students are eligible to take upper-division courses after successfully completing at least two of the 500-level analysis courses, each with a different 400-level prerequisite.
  - At least one of the student's four upper-division courses must be at the 700 level.
  - Majors must earn a grade of C- or better in all upper-division courses.
  - Up to four credits of CMN 795 can be used towards the major, but can only fulfill the capstone requirement with department approval.
  - CMN 796 Comm-Entary Journal cannot be used to fulfill the advanced-level requirement.

A maximum of 8 credits of independent study (CMN 795 Independent Study) may be counted toward the major. CMN 799H Honors Thesis and CMN 796 Comm-Entary Journal cannot be used to fulfill an advanced course requirement. The Discovery Program Capstone requirement may be fulfilled by completing any 700-level communication course except CMN 796 Comm-Entary Journal. CMN 795 Independent Study can only fulfill the capstone requirement with department approval and can be repeated for a maximum of 8 credits.

Transfer students must complete 20 credits of their communication coursework at UNH to complete the major satisfactorily. Exchange students may transfer no more than 10 approved credits from another institution to be applied toward completion of the communication major at UNH.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

## Student Learning Outcomes

1. Students will be able to describe the Communication discipline and its central questions. We expect students to be able to:

- Explain and synthesize the history of Communication theory.
- Articulate the differences between approaches within the discipline (media studies, language and social interaction, and rhetorical studies).
- Identify contemporary debates within the field.
- Distinguish Communication scholarship from other areas of study.
- Understand the role of Communication scholarship in society.
- Articulate the relevance of communication in civic life, including an ability to apply key concepts in the field to world events, situations, or problems.

2. Students will be able to think critically about communication processes by applying communication theories and concepts. We expect students to be able to:

- Identify theories, perspectives, principles, and concepts relevant to the discipline.
- Recognize academic writing, identify the work's thesis, explain its method, assess the evidence used, and determine its significance.
- Engage with communicative patterns, processes, problems, and practices that they encounter in their personal, professional and civic lives.
- Acquire effective frameworks for describing, analyzing, reflecting upon, and engaging with those patterns, processes, problems, and practices.

3. Prepare students to become thoughtful and proficient communicators. We expect students to be able to:

- Become critical consumers of messages.
- Understand how meanings are constructed by speakers and audiences.
- Evaluate claims and arguments, and to be able to explain how they are grounded.
- Recognize the collaborative construction of meaning and its relation to social change.
- Explore the ways in which various forms of communication constitute, maintain, and transform social life.
- Formulate coherent arguments/theses, provide support for their perspectives, and communicate them clearly and logically.
- Select creative and appropriate modalities and technologies to accomplish communicative goals.
- Adapt messages and coordinate communication with others recognizing the diverse needs.

## Communication Major: Business Applications Option (B.A.)

<https://cola.unh.edu/communication/program/ba/communication-major-business-applications-option>

## Description

The Department of Communication in collaboration with the Department of Marketing and the Department of Management in the Peter T. Paul College of Business and Economics offers a business applications option for communication students. The objective of the business applications option is to offer a select group of communication students the opportunity to augment the liberal arts focus of their major with professional training in such areas as marketing, advertising and organizational behavior. Qualified students who meet all requirements will graduate<sup>1</sup> with a B.A. degree in communication: business applications, an achievement which will be recorded on their official transcripts.

## Minimum Requirements for Option Eligibility

1. Declared communication major.
2. Completion of CMN 455 Introduction to Media Studies, CMN 456 Propaganda and Persuasion, and CMN 457 Introduction to Language and Social Interaction with a C or better.
3. Completion of at least one CMN 500-level course with a C- or better.
4. Maintain minimum in-major GPA of 2.5.
  - Student enrollment in the Business Applications Option will be contingent upon **space availability**.
  - Overall, total enrollment should **not exceed twenty students** in any given academic year.

<sup>1</sup> Students admitted to the option must earn a minimum 2.5 cumulative grade point average in major courses at graduation or they will, by default, graduate with a BA in Communication without the special option designation on their diplomas.

## Requirements

### Major Courses

Completion of all Communication major requirements.

Majors must complete ten courses (40 credits) with a 2.0 overall average in the major. The distribution of required courses for the major is as follows:

Code	Title	Credits
Complete the following three introductory courses: <sup>1</sup>		
CMN 455	Introduction to Media Studies	4
CMN 456	Propaganda and Persuasion	4
CMN 457	Introduction to Language and Social Interaction	4
Select three 500-level communication analysis courses <sup>2</sup>		12
Select four upper-division courses <sup>3</sup>		16
<b>Total Credits</b>		<b>40</b>

- <sup>1</sup>
  - Majors must earn a grade of C or better in each introductory course.
- <sup>2</sup>
  - Students must complete the 400-level prerequisite before taking a 500-level course.
  - At least two of the three 500-level courses must have different 400-level prerequisites.

- Majors must earn a grade of C- or better in all three analysis courses.
- CMN 500 Public Speaking, CMN 599 Internship, and CMN 575 Research Practicum cannot be used to fulfill an analysis course requirement.

- <sup>3</sup>
- Students are eligible to take upper-division courses after successfully completing at least two of the 500-level analysis courses, each with a different 400-level prerequisite.
  - At least one of the student's four upper-division courses must be at the 700 level.
  - Majors must earn a grade of C- or better in all upper-division courses.
  - Up to four credits of CMN 795 can be used towards the major, but can only fulfill the capstone requirement with department approval.
  - CMN 796 Comm-Entary Journal cannot be used to fulfill the advanced-level requirement.

## Option Courses and Internship

Code	Title	Credits
ADMN 400	Introduction to Business	4
CMN 599	Internship <sup>1</sup>	4
Choose two:		8
MGT 520	Topics in Management	
MKTG 520	Topics in Marketing	
MKTG 530	Survey of Marketing	
MGT 535	Organizational Behavior	
Total Credits		16

<sup>1</sup> Students undergo a business applications internship experience **that must be completed in one semester**. (Prerequisites: CMN 455, CMN 456, CMN 457)

A maximum of 8 credits of independent study (CMN 795 Independent Study) may be counted toward the major. CMN 799H Honors Thesis and CMN 796 Comm-Entary Journal cannot be used to fulfill an advanced course requirement. The Discovery Program Capstone requirement may be fulfilled by completing any 700-level communication course except CMN 796 Comm-Entary Journal. CMN 795 Independent Study can only fulfill the capstone requirement with department approval and can be repeated for a maximum of 8 credits.

Transfer students must complete 20 credits of their communication coursework at UNH to complete the major satisfactorily. Exchange students may transfer no more than 10 approved credits from another institution to be applied toward completion of the communication major at UNH.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

## Student Learning Outcomes

1. Students will be able to describe the Communication discipline and its central questions. We expect students to be able to:

- Explain and synthesize the history of Communication theory.
- Articulate the differences between approaches within the discipline (media studies, language and social interaction, and rhetorical studies).
- Identify contemporary debates within the field.
- Distinguish Communication scholarship from other areas of study.
- Understand the role of Communication scholarship in society.
- Articulate the relevance of communication in civic life, including an ability to apply key concepts in the field to world events, situations, or problems.

2. Students will be able to think critically about communication processes by applying communication theories and concepts. We expect students to be able to:

- Identify theories, perspectives, principles, and concepts relevant to the discipline.
- Recognize academic writing, identify the work's thesis, explain its method, assess the evidence used, and determine its significance.
- Engage with communicative patterns, processes, problems, and practices that they encounter in their personal, professional and civic lives.
- Acquire effective frameworks for describing, analyzing, reflecting upon, and engaging with those patterns, processes, problems, and practices.

3. Prepare students to become thoughtful and proficient communicators. We expect students to be able to:

- Become critical consumers of messages.
- Understand how meanings are constructed by speakers and audiences.
- Evaluate claims and arguments, and to be able to explain how they are grounded.
- Recognize the collaborative construction of meaning and its relation to social change.
- Explore the ways in which various forms of communication constitute, maintain, and transform social life.
- Formulate coherent arguments/theses, provide support for their perspectives, and communicate them clearly and logically.
- Select creative and appropriate modalities and technologies to accomplish communicative goals.
- Adapt messages and coordinate communication with others recognizing the diverse needs.

## Communication Major: Media Practices Option (B.A.)

<https://cola.unh.edu/communication/program/ba/communication-major-media-practices-option>

## Description

The Department of Communication in collaboration with the Communication Arts Department at the UNH Manchester campus offers the media practices option. This option is designed for qualified students who want to augment their communication major at Durham with training in media production and applied media communication through courses in the Communication Arts Department at the Manchester Campus.<sup>1</sup> Qualified students who meet all requirements will graduate with a B.A. degree in communication with a media practices option, an achievement which will be recorded on their official transcripts.

## Minimum Requirements for Option Eligibility

1. Declared Communication Major.
2. Completion of CMN 455 Introduction to Media Studies, CMN 456 Propaganda and Persuasion, and CMN 457 Introduction to Language and Social Interaction with a C or better.
3. Maintain minimum in-major GPA of 2.5.

<sup>1</sup> Students are responsible for their own travel arrangements between Durham and Manchester campuses.

## Requirements

## Major Courses

Completion of all Communication major requirements.

Majors must complete ten courses (40 credits) with a 2.0 overall average in the major. The distribution of required courses for the major is as follows:

Code	Title	Credits
Complete the following three introductory courses: <sup>1</sup>		
CMN 455	Introduction to Media Studies	4
CMN 456	Propaganda and Persuasion	4
CMN 457	Introduction to Language and Social Interaction	4
Select three 500-level communication analysis courses <sup>2</sup>		
Select four upper-division courses <sup>3</sup>		16
<b>Total Credits</b>		<b>40</b>

- <sup>1</sup>
  - Majors must earn a grade of C or better in each introductory course.
- <sup>2</sup>
  - Students must complete the 400-level prerequisite before taking a 500-level course.
  - At least two of the three 500-level courses must have different 400-level prerequisites.
  - Majors must earn a grade of C- or better in all three analysis courses.
  - CMN 500 Public Speaking, CMN 599 Internship, and CMN 575 Research Practicum cannot be used to fulfill an analysis course requirement.
- <sup>3</sup>
  - Students are eligible to take upper-division courses after successfully completing at least two of the 500-level analysis courses, each with a different 400-level prerequisite.

- At least one of the student's four upper-division courses must be at the 700 level.
- Majors must earn a grade of C- or better in all upper-division courses.
- Up to four credits of CMN 795 can be used towards the major, but can only fulfill the capstone requirement with department approval.
- CMN 796 Comm-Entary Journal cannot be used to fulfill the advanced-level requirement.

## Option Courses

Code	Title	Credits
Completion of two media practices courses (8 credits) in the Department of Communication Arts at Manchester campus from among the following: <sup>1</sup>		8
CA 500	Media Writing	
CA 502	Image and Sound	
CA 512	Screenwriting	
CA 514	Fundamentals of Video Production	
CA 515	Advanced Video Production	
CA 517	Fundamentals of Audio Prod	
CA #520	Special Topics in Applied Communication	

## Internship

Code	Title	Credits
Based on work experience at a site directly relevant to applied media practices or production for a minimum of 4 academic credits completed in one semester. Junior standing is required. <sup>2</sup>		4
CMN 599	Internship	

- <sup>1</sup> Students may arrange to take Media Practices (CA) courses at any time during the course of their academic programs after they have satisfactorily completed the three 400-level introductory courses. Thus, students may take the 500-level CA courses before, concurrently with, or after completion of CMN 500-level courses and/or CMN 600-level courses.
- <sup>2</sup> Visit our [Internships webpage](#) for procedures on how to arrange internships.

A maximum of 8 credits of independent study (CMN 795 Independent Study) may be counted toward the major. CMN 799H Honors Thesis and CMN 796 Comm-Entary Journal cannot be used to fulfill an advanced course requirement. The Discovery Program Capstone requirement may be fulfilled by completing any 700-level communication course except CMN 796 Comm-Entary Journal. CMN 795 Independent Study can only fulfill the capstone requirement with department approval and can be repeated for a maximum of 8 credits.

Transfer students must complete 20 credits of their communication coursework at UNH to complete the major satisfactorily. Exchange students may transfer no more than 10 approved credits from another institution to be applied toward completion of the communication major at UNH.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.



## Student Learning Outcomes

1. Students will be able to describe the Communication discipline and its central questions. We expect students to be able to:

- Explain and synthesize the history of Communication theory.
- Articulate the differences between approaches within the discipline (media studies, language and social interaction, and rhetorical studies).
- Identify contemporary debates within the field.
- Distinguish Communication scholarship from other areas of study.
- Understand the role of Communication scholarship in society.
- Articulate the relevance of communication in civic life, including an ability to apply key concepts in the field to world events, situations, or problems.

2. Students will be able to think critically about communication processes by applying communication theories and concepts. We expect students to be able to:

- Identify theories, perspectives, principles, and concepts relevant to the discipline.
- Recognize academic writing, identify the work's thesis, explain its method, assess the evidence used, and determine its significance.
- Engage with communicative patterns, processes, problems, and practices that they encounter in their personal, professional and civic lives.
- Acquire effective frameworks for describing, analyzing, reflecting upon, and engaging with those patterns, processes, problems, and practices.

3. Prepare students to become thoughtful and proficient communicators. We expect students to be able to:

- Become critical consumers of messages.
- Understand how meanings are constructed by speakers and audiences.
- Evaluate claims and arguments, and to be able to explain how they are grounded.
- Recognize the collaborative construction of meaning and its relation to social change.
- Explore the ways in which various forms of communication constitute, maintain, and transform social life.
- Formulate coherent arguments/theses, provide support for their perspectives, and communicate them clearly and logically.
- Select creative and appropriate modalities and technologies to accomplish communicative goals.
- Adapt messages and coordinate communication with others recognizing the diverse needs.

## Communication Minor

<https://cola.unh.edu/communication/program/minor/communication>

### Description

Students who enroll in a communication minor have the flexibility of structuring their pathway of five courses to explore the ways in which various forms of communication constitute, maintain and transform

social life. The program trains students to understand, adapt to and participate in social change. We offer courses in media studies, rhetoric and face-to-face interaction. We'll encourage you to "learn how to learn," to become clear and precise writers, and to develop your abilities to think — to describe, analyze, critique, explore, integrate, synthesize and create ideas. The department's faculty members believe that these are the skills and abilities of a strong liberal arts education that will be the most useful resources in students' professional, civic and personal lives after leaving UNH.

The contact for the communication minor is the department's academic adviser, [Andrew Sharp \(andrew.sharp@unh.edu\)](mailto:andrew.sharp@unh.edu).

## Requirements

Students who pursue a communication minor must complete any five courses (20 credits) within the minor with a C or better at the 400 level and with a C- or better at the 500, 600, and 700 levels, and maintain a minimum grade-point average of 2.0.

## Required Courses

Code	Title	Credits
Select 5 communication courses		20
Total Credits		20

Any combination of five communication courses is acceptable. Please see exceptions below.

- Communication minor students are not able to count both CMN 500 Public Speaking and CMN 600 Public Speaking as a Civic Art toward the minor.
- CMN 575 Research Practicum and CMN 599 Internship do not count toward the minor
- No more than two transfer courses from other institutions can be applied to the minor and all transfers are contingent upon departmental approval.
- No more than 4 credits of independent study can count toward the minor.
- No pass/fail or credit/fail courses can count toward the minor.

## Education (EDUC)

### Basic Programs

Undergraduate course work in Education engages students in a diverse and varied collection of educational experiences that prepare them for present and future challenges as well as for a wide range of employment opportunities in education and professional settings engaged in education policy, community-based education, and advocacy.

Undergraduate students have the following options:

- Educational Studies Dual Major (first major + education major)
- Education Minor
- Special Education Minor
- Teacher Certification in Elementary Education & ESOL
- Teacher Certification in Other Content Areas

### Accelerated Master's Program

UNH undergraduate students with a 3.2 or higher cumulative grade-point average (GPA) can apply for "early admission" to the Graduate

School either one or two semesters prior to their final semester as an undergraduate. Admitted students may register for a maximum of 12 credits of dual-credit coursework (undergraduate & graduate level coursework) prior to completing their bachelor's degree. To receive graduate credit, students must be admitted to the Graduate School before the start of the semester in which the course(s) will be taken and need to maintain a 3.2 GPA or higher until their undergraduate degree is awarded. Applying for early admission involves the regular Graduate School application at [www.gradschool.unh.edu](http://www.gradschool.unh.edu).

### Program Philosophy

The following conceptual framework guides all of the programs that prepare professionals in education at the University of New Hampshire:

The professional education unit at the University of New Hampshire seeks to prepare practitioners who will become leaders in their own practice settings and within their profession, applying knowledge to improve education for all students and enrich the lives of clients. Immersion in subject matter, research, theory and field-based experience provide a base for our graduates to make well-reasoned judgments in complex situations, render informed decisions, model exemplary practice, and take initiative for planned change.

Students learn to establish caring and thoughtful environments that celebrate individual differences and backgrounds while fostering cooperation and educational improvement. We stress reflective critical inquiry as a mode of study and community-building as a means to promote change. We value and support both our students' local practice and their broader leadership within the profession.

### Mission Statement of Programs in Educator Preparation

The following mission statement gives direction to the basic and advanced programs in teacher education:

We seek to prepare beginning teachers who demonstrate excellence in classroom practice and who will become educational leaders. Our graduates will possess the knowledge, skills, and dispositions required for outstanding classroom practice and eventual leadership within the local school community and the larger education community.

### Undergraduate Work toward Teacher Certification in Elementary & Secondary Education

#### Step I. Enroll in Exploring Teaching: Education 500

Students are encouraged to take [EDUC 500: Exploring Teaching](#), as a sophomore, however, completion during junior or senior year also can leave enough time for other education course requirements.

#### Step II. Professional Coursework in Education at the Undergraduate Level

Education 500 is a prerequisite to further work in the teacher education program. An undergraduate receives a co-adviser in the Department of Education (usually the Exploring Teaching instructor). Along with the major adviser, this co-adviser works with the student to plan the undergraduate portion of the five-year teacher education program.

#### Step III. Admission to the Internship and Graduate Phase of our Educator Preparation Programs

Undergraduate students apply to the Graduate School second semester of their junior year or first semester of their senior year. As mentioned above, students admitted to the Accelerated Master's Program begin

their graduate degree coursework senior year, earning a maximum of 12 graduate credits over one or two semesters.

The final phase of the program includes a full-year internship, electives, and an inquiry research project. This phase normally takes an academic year, plus a few summer courses to complete.

The year-long internship and inquiry research project ([EDUC 900: Internship and Seminar in Teaching](#) / [EDUC 901: Internship and Seminar in Teaching](#)) comprises the final stage of the five-year program. The elementary internship also includes a two-course sequence in literacy instruction (EDUC 808 & 809, or ENGL 816 and EDUC 812 or ENGL 815).

The internship is a teaching and learning experience in which the intern works in an elementary or secondary school over the course of an entire school year. It typically begins in late August and runs through late April / early May. Due to the intensive time commitment, it is recommended that, at most, only one course be taken in addition to the internship each semester. Interns become a part of the school staff, sharing appropriate instructional tasks and often carrying the full instructional duties in one or more classes.

Interns are mentored and supervised by a school staff member who is designated as a "cooperating teacher" or "CT", along with a UNH faculty member who collaborates in intern supervision and conducts a weekly two-hour seminar for all interns with whom s/he is working.

Before the internship, students have completed a bachelor's degree with a major outside of education. Because of this, they possess depth of knowledge in a subject area and a broad general education, in addition to substantive course preparation for teaching. Secondary education candidates must have completed an approved major, or its equivalent, in the subject that they intend to teach. Elementary education candidates may pursue an undergraduate major in any area, though majors in the core disciplines taught in elementary schools are desirable.

Undergraduates apply for the internship in the fall of their senior year and participate in a school placement process early spring semester. Starting the process early will facilitate finding the best setting for students' needs and goals. The director of field experiences in Durham and the associate director of teacher education in Manchester play a major role in identifying internship sites and prospective CT's, and they consult regularly throughout the placement process.

Internship applications are available at the Department of Education, Durham, and the Office of Teacher Education, Manchester. Admission to the internship requires a completed application to the internship, admission to the UNH Graduate School, and a consultation with the director of field experiences.

<https://cola.unh.edu/education>

## Programs

- [Education Four-Year, Undergraduate Options](#) (p. 61)
- [Educational Studies Dual Major](#) (p. 61)
- [Educational Studies Major: Equity, Diversity & Inclusion \(B.A.\)](#) (p. 62)
- [Education Minor](#) (p. 63)
- [Special Education Minor](#) (p. 64)

## Faculty

<https://cola.unh.edu/education/faculty-staff-directory>

## Education Four-Year, Undergraduate Options

<https://cola.unh.edu/education/program/bs/education-four-year-undergraduate-options-ba-bm>

### Description

The Educational Studies Major: Equity, Diversity & Inclusion (B.A.) four-year program is for students interested in becoming teachers in elementary school settings. Graduates will be eligible for certification by the NH Department of Education in elementary education plus English to Speakers of Other Languages (ESOL).

- [Educational Studies Major: Equity, Diversity & Inclusion \(B.A.\)](#)

A bachelor's degree including a one-semester student-teaching requirement allows students to be recommended for licensure in certain specialized areas. Those areas are

- [Health and Physical Education Major \(B.S.\)](#)
- [Human Development and Family Studies Major \(B.S.\) - Child Development/Early Childhood Education](#)
- [Mathematics Education Major: Secondary Option \(B.S.\)](#)
- [Mathematics Education Major: Elementary/Middle School Education K-8 Option \(B.S.\)](#)
- [Music Education Major \(B.M.\)](#)
- [Theatre Major: Secondary Theatre Education Option \(B.A.\)](#)
- [Theatre Major: Dance Option \(B.A.\)](#)

### Requirements

See the [Educational Studies Major: Equity, Diversity & Inclusion \(B.A.\)](#) page for the requirements of this program.

For the specialized areas listed on the Description tab (i.e., health and physical education, human development and family studies, math education, music education, theatre and dance education), students must fulfill requirements for the major appropriate for the licensure being sought, in addition to the following core professional courses or their equivalent:

Code	Title	Credits
EDUC 500	Exploring Teaching	4
EDUC 605	Educational Perspectives in Critical Times	4
EDUC 701	Human Development & Learning: Cultural Perspectives	4
EDUC 751A or EDUC 751B	Inclusive Elementary Education: Literacies and Learning for Diverse Learners Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions	4
EDUC 694	Courses in Supervised Teaching	8

A minimum 2.8 cumulative grade-point average at the time of application to student teaching is required. Students in music, mathematics, and physical education need to apply by March 1st of the junior year and October 15th of the senior year for spring semester to the Department of Education for student teaching. An unofficial transcript and a current resume must accompany the application. Return

applications to the Department of Education Office, 203 Morrill Hall or [Education.Department@unh.edu](mailto:Education.Department@unh.edu).

## Educational Studies Dual Major

<https://cola.unh.edu/education/program/educational-studies-dual-major>

### Description

The dual major in educational studies is designed for students who are interested in an education that integrates field-work and research in a range of educational settings, including classrooms, museums and non-profits whether they aspire to become educators, activists, policymakers or deepen their knowledge of education as informed citizens.

The dual major in educational studies is committed to deepening our understanding of educational institutions and the processes necessary to bring about systemic changes that lead to equity and access to a first-rate educational experience for all students. In addition to core courses and electives taught by educational studies faculty, our dual major benefits from a wide array of cross-referenced courses offered by other departments and programs, including Gender and Women's Studies, Anthropology, History, Economics, Political Science, Psychology, Sociology, Theatre and Dance and others. Although the interdisciplinary major does not lead to teacher certification, we do advise students from across the University on pathways to teaching.

### Requirements

The dual major in educational studies requires **(32 credits)** each completed with a **C+ or better**. Any education course to be applied for a future teacher licensure requirement must be completed with a grade of **B- or better**. The dual major cannot be declared until after a first major has been declared and students must have a UNH undergraduate GPA of a 2.50 or better at the time of declaring. The required minimum overall GPA in major coursework is 2.50.

### Required courses

Code	Title	Credits
<b>Foundations</b>		<b>4</b>
EDUC 402	Introduction to Educational Studies: Social Change and Education in Local and Global Contexts	
<b>Explorations in Learning and Teaching</b>		<b>4</b>
Choose one (1) 500-level exploration and applied experience course:		
EDUC 500	Exploring Teaching	
EDUC 520	Education, Poverty, and Development	
<b>Core Courses</b>		<b>8</b>
Two (2) core courses emphasizing interdisciplinary grounding in education and learning (All 700 level Ed courses are open to only Juniors and Seniors):		
EDUC 605	Educational Perspectives in Critical Times	
EDUC 701	Human Development & Learning: Cultural Perspectives	
<b>Elective Courses</b>		<b>12</b>
Choose three (3) elective courses, providing students with opportunities for focused inquiry in educational studies. Students may either emphasize a single cluster or take elective coursework in more than one cluster below:		
<b>Instructional Methods in Schools</b>		
EDUC 703C	Classroom Management: Creating Positive Learning Environments	
EDUC 703F	Teaching Elementary School Science	
EDUC 703M	Teaching Elementary Social Studies	
EDUC 706	Teaching & Learning Literacy in the Elementary Classroom	
EDUC 745	Math with Technology in Early Education	
MATH 601	Exploring Mathematics for Teachers I	
MATH 703	Teaching of Mathematics in Grades K-5	

<b>Language and Literacy</b>	
EDUC 506	Mentoring Readers and Writers in the Elementary Grades
EDUC 550	Language and Linguistic Diversity in Schools
EDUC 712	Teaching Multilingual Learners
EDUC 734	Critical Perspectives on Children's Literature
<b>Special Education</b>	
EDUC 556	Peer to Peer Mentoring for Students with Disabilities
EDUC 650	Introduction to Disability in Inclusive Schools and Communities
EDUC 656	Advocating for Diverse and Inclusive Family-School-Community Partnerships
EDUC 751A	Inclusive Elementary Education: Literacies and Learning for Diverse Learners
EDUC 751B	Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions
EDUC 760	Introduction to Young Children with Special Needs
EDUC 761	Designing Curriculum for Inclusive, Equitable Settings for Young Children (birth-8)
<b>Critical and Diverse Perspectives</b>	
EDUC 444B	Public Issues, Democratic Schooling & Active Citizenship in a Global Context
EDUC 520	Education, Poverty, and Development
EDUC 525	Teaching Race
EDUC 718	Critical Social Justice in and Beyond Education
<b>Law and Educational Policy</b>	
EDUC 767	Students, Teachers, and the Law
<b>Capstone Course</b>	
EDUC 784	Educators as Community-Engaged Researchers
or Semester in the City if completed during senior year	
or INCO 790 Advanced Research Experience and URC Presentation	
or McNair Research Thesis	
or A capstone in their first major-if it's related to an Educational Studies project and approved by both advisors and the director of Undergraduate Studies.	
<b>Total Credits</b>	<b>32</b>

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Students who are interested in a dual major in Educational Studies will need to file an *Intent to Dual Major Form*. The form is available from the program website at [cola.unh.edu/education](https://cola.unh.edu/education). For more information, please contact [education.department@unh.edu](mailto:education.department@unh.edu).

## Student Learning Outcomes

**GOAL ONE:** Our students effectively analyze the social dimensions of education, to include issues of culture, gender, equity, health, and economics. Specifically, students will:

- demonstrate understanding of the roles of gender, race, ethnicity, and economic class in effecting education in formal and informal settings.
- demonstrate understanding of the history and politics of education including the principles, assumptions and impacts of school reform initiatives, education, international development and economic globalization as well as alternatives for defining and pursuing diverse conceptions of education, quality of life, and equity.
- demonstrate understanding of how economics and markets shape private and public actions and outcomes with respect to education on local, regional, national and global scales.
- demonstrate understanding of the origins, similarities and differences among concepts of diversity, universality, pluralism, multiculturalism, and cosmopolitanism and their implications for education in formal and informal at a variety of scales.
- demonstrate cultural self-awareness and cultural sensitivity in analysis, synthesis, visioning, design and intervention related to studies in education.

- demonstrate an understanding of the role of public health related to education at various scales.

**GOAL TWO:** Our students engage diverse histories of education in the context of civic engagement, activism, and commitment to equity and justice for Social Good. Specifically, students will:

- demonstrate understanding of the relationship between awareness and action and be able to articulate theories of ethics and civic engagement in the context of educational initiatives on local, national and international levels.
- demonstrate understanding of the principles, assumptions and frameworks of educating for equity and justice from diverse perspectives.
- critique these issues based on their direct experience in "engaged learning" projects as well as in historical social movement analogues, including civil rights, abolition, environmental movements, and women's suffrage.

## Educational Studies Major: Equity, Diversity & Inclusion (B.A.)

<https://cola.unh.edu/education/program/ba/educational-studies-equity-diversity-inclusion>

### Description

The UNH major in educational studies: equity, diversity and inclusion (EDI) offers students committed to becoming teachers in elementary school settings opportunities to integrate knowledge and research methodologies from several academic disciplines and field sites into a focused examination of the interdisciplinary field of education. The four-year educational studies: EDI major program is designed for students who seek a rich understanding of education grounded in science, the arts and the humanities. The principles of equity, diversity and inclusion are woven throughout every course and field experience. All declared majors choose one of two strands of EDI: special education or multilingual learners. Graduates will be eligible for certification by the NH Department of Education in elementary education plus English to Speakers of Other Languages (ESOL).

The goal of the program is to graduate civically, globally and intellectually engaged students who understand the complexities of education, are capable of analyzing and evaluating complex problems influencing education from a variety of disciplinary perspectives, and are committed to becoming community teachers — teachers who are leaders and role-models in the communities in which they teach. Program graduates will be prepared for present and future challenges as well as for a wide range of employment opportunities in educational and professional settings engaged in educational policy, community-based education and educational advocacy.

### Requirements

The major in educational studies: equity, diversity, and inclusion requires **88-98 credits** with each course completed with a **B- or better**. The required minimum overall GPA in major coursework is **3.0**.



Code	Title	Credits
<b>Foundations (24 credits)</b>		
EDUC 402	Introduction to Educational Studies: Social Change and Education in Local and Global Contexts	4
EDUC 500	Exploring Teaching	4
EDUC 525	Teaching Race	4
or EDUC 520	Education, Poverty, and Development	
EDUC 605	Educational Perspectives in Critical Times	4
EDUC 656	Advocating for Diverse and Inclusive Family-School-Community Partnerships	4
EDUC 701	Human Development & Learning: Cultural Perspectives	4
or PSYC 581	Child Development	
<b>Curriculum and Methods (36 credits)</b>		
MATH 601	Exploring Mathematics for Teachers I	4
MATH 703	Teaching of Mathematics in Grades K-5	4
EDUC 703C	Classroom Management: Creating Positive Learning Environments	4
EDUC 703F	Teaching Elementary School Science	4
EDUC 703M	Teaching Elementary Social Studies	4
EDUC 706	Teaching & Learning Literacy in the Elementary Classroom	4
EDUC 733	Teaching Writing in the Elementary Grades	4
or EDUC 734	Critical Perspectives on Children's Literature	
EDUC 751A	Inclusive Elementary Education: Literacies and Learning for Diverse Learners	4
EDUC 761	Designing Curriculum for Inclusive, Equitable Settings for Young Children (birth-8)	4
<b>Field Experiences: Communities and Classrooms (2-6 credits)</b>		
(2-6 credits of one or more of the following 500/600 field experience courses)		
EDUC 506	Mentoring Readers and Writers in the Elementary Grades	4
EDUC 507	Mentoring Adolescents in Community Settings	2
EDUC 556	Peer to Peer Mentoring for Students with Disabilities	2
EDUC 610H	Field Experience in Educational Studies	1-8
<b>Choose ONE of the following two paths:</b>		
<b>PATH A: Inclusive Education for Students with Disabilities (12 credits)</b>		
EDUC 650	Introduction to Disability in Inclusive Schools and Communities	4
EDUC 739	Equitable Assessment and Individualized Educational Planning: Building Access and Agency	4
EDUC 740	Advanced Methods for Inclusive Curricular Design and Teaching: Building Access and Agency, Part II	4
<b>PATH B: Multilingual Learners (16 credits)<sup>1</sup></b>		
ENGL 405	Introduction to Linguistics	4
or ENGL 791	English Grammar	
EDUC 550	Language and Linguistic Diversity in Schools	4
or ENGL 719	Sociolinguistics Survey	
ENGL 715	Teaching English as a Second Language: Theory and Methods	4
or EDUC 712	Teaching Multilingual Learners	
ENGL 716	Curriculum, Materials and Assessment in English as a Second Language	4
<b>Culminating Experiences (16 credits)</b>		
EDUC 798	Internship and Seminar in Inclusive Teaching	4
EDUC 799	Internship and Seminar in Inclusive Teaching	8
EDUC 784	Educators as Community-Engaged Researchers	4

<sup>1</sup> Students may pursue a TESOL minor by completing 4 additional credits (see TESOL minor for course options).

Students are encouraged to complete a study away program or a robust cross-cultural experience such as Semester in the City or through the National Student Exchange.

Course selection for a B.A. in Educational Studies is designed in close consultation with a Department of Education advisor.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second or dual major.

## Student Learning Outcomes

- **GOAL ONE:** Our students effectively analyze the social dimensions of education, to include issues of culture, gender, equity, health and economics.
- **GOAL TWO:** Our students are able to recognize and respond to systematic and pervasive acts of marginalization that may percolate through schools and school communities and are situated within the contexts of more complex intersections among students' abilities, languages, races, ethnicities, religions, genders and sexualities, all of which impact student identity, motivation, interest and connection to education.
- **GOAL THREE:** Our students demonstrate depth of knowledge in their subjects; recognize how knowledge in their subjects is created, organized and linked to other disciplines; identify the organizing themes and central concepts necessary for understanding a subject; and identify associated content necessary for students to understand these themes and concepts.
- **GOAL FOUR:** Our students understand how students develop and learn; treat students equitably and work diligently to help each student reach his or her potential; and create and maintain an atmosphere conducive to learning.
- **GOAL FIVE:** Our students demonstrate specialized knowledge of how to teach subject matter to their students. They use multiple approaches to facilitate student learning. They create lessons that are engaging, appropriately challenging, and motivating for students. They involve students in thoughtful inquiry and reflection.
- **GOAL SIX:** Our students use multiple strategies to assess students, regularly assess student progress using appropriate measures, and demonstrate the ability to make informed decisions about students and their learning based on classroom, district and state assessments.
- **GOAL SEVEN:** Our students make well-reasoned choices and decisions within the complex and demanding conditions of teaching. They analyze the effects of their actions and make appropriate changes. They consider the moral and philosophical implications of educational decisions. They improve their practice by reflecting on their own experience, observing others, seeking advice and drawing upon educational research and scholarship.
- **GOAL EIGHT:** Our students assess the relative merits of educational reform efforts and determine their appropriateness to the classroom, school and broader societal contexts in which teaching and learning occur. They develop and articulate their own conceptual and philosophical perspective on teaching and learning based on professional experience and current theories and research in education. They understand the nature of educational change, the teacher's role in the change process, and are willing to take risks as advocates for the benefit of students, teachers and the profession.
- **GOAL NINE:** Our students are active members of learning and professional communities. They work with colleagues to enhance their own teaching, learning and professional development and work collaboratively with students, peers and community members to create and contribute to effective learning environments.

## Education Minor

<https://cola.unh.edu/education/program/minor/education>



## Description

Explore the field of education. Five courses (20 credits) comprise the minor in Education.

A Certification of Completion of Minor form needs to be completed at the beginning of a student's final undergraduate semester at UNH. Forms are available from the Registrar's Office or the Department of Education Office.

## Requirements

A minor consists of twenty (20) credits in Education Department courses.

Code	Title	Credits
Select five (5) education courses		20
<b>Total Credits</b>		<b>20</b>

A methods course located in another department may be counted for four (4) of these twenty (20) credits (e.g., ARTS 791 or ARTS 792, ENGL 792, MATH #708, MATH 709, etc.).

No more than eight (8) credits used by the student to satisfy major requirements may be used for the minor.

Courses used in obtaining a minor in special education cannot be used towards a minor in education.

EDUC 500 Exploring Teaching can only be counted once (four credits) towards the minor.

No more than two (2) transferred courses in Education or a closely-related area from another college or university may be used towards a minor in Education. A three-credit (3) course transferred from another school will count for three credits (3) at UNH, not four credits (4).

## Special Education Minor

<https://cola.unh.edu/education/program/minor/special-education>

## Description

Explore the field of special education. Five courses (20 credits) comprise the minor in Special Education.

A Certification of Completion of Minor form needs to be completed at the beginning of a student's final undergraduate semester at UNH. Forms are available from the Registrar's Office or the Department of Education Office.

## Requirements

A minor consists of 20 credits in Education Department courses. The specific courses required for the minor are:

Code	Title	Credits
<b>Required Courses</b>		
EDUC 650	Introduction to Disability in Inclusive Schools and Communities	4
EDUC 656	Advocating for Diverse and Inclusive Family-School-Community Partnerships	4
Choose one of the following: <sup>1</sup>		4
EDUC 751A	Inclusive Elementary Education: Literacies and Learning for Diverse Learners	
EDUC 751B	Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions	

### Elective Courses

Choose two of the following:		8
EDUC 556	Peer to Peer Mentoring for Students with Disabilities <sup>2</sup>	
EDUC 720	Educational Technology	
EDUC 745	Math with Technology in Early Education	
EDUC #752	Contemporary Issues in Learning Disabilities	
EDUC #757	Contemporary Issues in Autism Spectrum Disorders	
EDUC 760	Introduction to Young Children with Special Needs	
EDUC 761	Designing Curriculum for Inclusive, Equitable Settings for Young Children (birth-8)	
EDUC 762	Curriculum for Young Children with Special Needs: Evaluation and Program Design	
One course taken at UNH in a closely related department		
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Section to be determined by the undergraduate major and future career interests

<sup>2</sup> May be taken twice as the content/readings are different each semester

No more than one required course or one elective may be a transfer course. A three-credit course taken transferred from another school will count for three credits at UNH, not four credits. A minor in Special Education does **NOT** lead to a teaching certification.

## English (ENGL)

The English department offers four majors: English, English literature, English teaching and English/journalism. A fifth undergraduate program is the interdepartmental linguistics major. We also offer the English/law 3+3 option for students interested in pursuing a JD after just 3 years of undergraduate study as an English major and the English major/text, business writing and digital studies option.

Though we offer several different programs in the English department, our shared focus is on studying the expressive possibilities of the English language in its myriad forms. Our classes pursue three teaching missions. First, we train students in professional study of the English language. Second, we offer students ways of understanding the various traditions of works written in English, with emphasis upon close reading and placing works in historical and cultural contexts. Third, and particularly important, we teach students to write with clarity, persuasiveness and elegance, and for a variety of audiences and situations. In all of our undergraduate English majors, we provide our students with critical thinking, writing and research skills that will enrich their personal and professional lives.

## Writing Programs

The Department of English offers courses for students interested in becoming writers. Writing workshops are offered in fiction, poetry and creative nonfiction. Intermediate-level courses may be taken more than once for credit, especially with two different instructors.

<https://cola.unh.edu/english>

## Programs

- [English Literature Major \(B.A.\)](#) (p. 65)
- [English Major \(B.A.\)](#) (p. 66)
- [English Major: Text, Business Writing and Digital Studies Option \(B.A.\)](#) (p. 68)
- [English Major: Law 3+3 Option \(B.A.\)](#) (p. 70)

- [English Teaching Major \(B.A.\)](#) (p. 73)
- [English/Journalism Major \(B.A.\)](#) (p. 75)
- [English Minor](#) (p. 76)
- [Writing Minor](#) (p. 77)

Faculty

<https://cola.unh.edu/english/faculty-staff-directory>

English Literature Major (B.A.)

<https://cola.unh.edu/english/program/ba/english-literature>

Description

The English literature major serves those students who want to focus particularly on the study of literature — its many forms and styles, its rich history and the range of approaches to its analysis. The English literature track is an especially attractive major for those who plan to go on to graduate school.

As an English literature major, a student will learn about various literary traditions, both British and American literature as well as traditions organized around other principles, such as post-colonial literature, women's literature, African-American literature and genres like poetry and drama. Courses are designed to expose students to many different sorts of works and to help them develop questions and strategies of critical thinking that will make all kinds of literary expression meaningful. And the works students will study will provide many ways of looking at the world and enrich their quality of life. What's more, students have many opportunities to hone critical writing and research skills and to practice the art of presenting research findings to a group, all skills in high demand in today's workplace. The English literature major is an excellent way to combine development of interpretive and writing skills with an exciting, in-depth encounter with some of the very best writing ever produced in the English language.

Requirements

As an English literature major, you must complete a minimum of 40 credits of major coursework with a grade of C- or better, with the exception of ENGL 419 How to Read Anything, which you must complete with a grade of C or better. You may not use ENGL 401 First-Year Writing, ENGL 415s, "Literature and..." courses, or ENGL 444 classes to satisfy major requirements.

A minimum of six courses must be completed at the 600 level or higher.

Code	Title	Credits
Coursework must meet the following distribution requirements (a single course may satisfy multiple requirements):		
ENGL 419	How to Read Anything <sup>1</sup>	
Select two 500-level literature courses (select from list below)		
Select two pre-1800 literature courses (select from list below)		
Select two post-1800 literature courses (select from list below)		
ENGL 714	Critical Skills	
Select one American literature course at the 600/700 level		
Select one British literature course at the 600/700 level		
Select one course that addresses race, the construction of race, and racial theories in a U.S. context (select from list below)		
Select one course that investigates Anglophone literature in a global or transnational context (select from list below)		

Select one course in a specific genre including, poetry, memoir, nonfiction, drama, fiction, and film with the exception of ENGL 533 (select from list below)

Capstone:	
ENGL 787	English Major Seminar

<sup>1</sup> This must be completed with a minimum grade of "C." *ENGL 419 How to Read Anything is the only 400-level class that may count towards the English literature major.*

Code	Title	Credits
500-level Courses		
ENGL/LING 405	Introduction to Linguistics	
ENGL 501	Introduction to Creative Nonfiction	
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
ENGL 510	Introduction to the Digital Humanities	
ENGL 511	Major Writers in English	
ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	
ENGL 513W	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 514W	British Literature III: Revolts, Renewals, Migrations	
ENGL 515W	American Literature I Conquest and Nation: First Contact to the Civil War	
ENGL 516W	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
ENGL #517	Black Creative Expression	
ENGL 518W	Bible as Literature	
ENGL 520	Dystopian and Post-Apocalyptic Fiction	
ENGL 521	Nature Writers	
ENGL 526	Introduction to Fiction Writing	
ENGL 527	Introduction to Poetry Writing	
ENGL 533	Introduction to Film Studies	
ENGL 534	21st Century Journalism: How the News Works	
ENGL 549	In the Groove: African American Music as Literature	
ENGL 550	Introduction to the Literature and Culture of Race	
ENGL 555	Science Fiction	
ENGL 560	Introduction to Latinx Literature and Culture	
ENGL 575	Sex and Sensibility: The Rise of Chick Lit	
ENGL 581	Reading the Postcolonial Experience	
ENGL 585	Introduction to Women in Literature	
ENGL 585R	Introduction to Women in Literature	
ENGL 595	Literary Topics	

Code	Title	Credits
Pre-1800 Literature Courses		
ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	
or ENGL 513W	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 595	Literary Topics (if topic is appropriate)	
ENGL 657	Shakespeare	
ENGL 693R	Special Topics in Literature (if topic is appropriate)	
ENGL #741	Early American Literature: Colonialism, Revolution, Nation	
ENGL 751	Medieval Romance	
ENGL 753	Old English	
ENGL 756	Chaucer	
ENGL 758	Advanced Shakespeare	
ENGL 758R	Advanced Shakespeare	
ENGL 759	Milton	
ENGL 767	Literature of the Restoration and Early 18th Century	
ENGL 768	Literature of the Later 18th Century	
ENGL 780	Drama of Shakespeare's Contemporaries: Will and Company	
ENGL 783	English Novel of the Eighteenth Century	
ENGL 787	English Major Seminar (if topic is appropriate)	
ENGL 787R	English Major Seminar (if topic is appropriate)	

Code	Title	Credits
Post-1800 Literature Courses		
ENGL 514W	British Literature III: Revolts, Renewals, Migrations	
or ENGL 516W	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
ENGL 595	Literary Topics (if topic is appropriate)	
ENGL 609	Ethnicity in America: The African American Experience in the 20th Century	
ENGL 636	Literature and the Environment	

ENGL 650	I Hear America Singing: Studying American Literature and Culture
ENGL 681	Contemporary African Literature
ENGL 690	African American Literature
ENGL 693R	Special Topics in Literature (if topic is appropriate)
ENGL 738	Asian American Studies
ENGL 739	American Indian Literature
ENGL 743R	American Literature, 1865-1915: The Birth of the American Empire
ENGL 745	Contemporary American Literature
ENGL 749R	Major American Authors
ENGL 773	Literary Modernisms: Return, Revolt, Recycle
ENGL 774R	Modern & Contemporary British Literature: New Departures
ENGL 775	Modern Irish Literature: A Changing Landscape
ENGL 777	The English Novel in the World
ENGL 782	Modern and Contemporary Drama
ENGL #784	English Novel of the 19th Century
ENGL 787	English Major Seminar (if topic is appropriate)
ENGL 787R	English Major Seminar (if topic is appropriate)
ENGL 797R	Special Studies in Literature (Race & Racial Theories) (if topic is appropriate)

Code	Title	Credits
<b>Race, the Construction of Race, and Racial Theory Courses</b>		
ENGL 440A	On Race in Culture and Society	
ENGL #441	On Race and Culture in Society	
ENGL #517	Black Creative Expression	
ENGL 549	In the Groove: African American Music as Literature	
ENGL 550	Introduction to the Literature and Culture of Race	
ENGL 560	Introduction to Latinx Literature and Culture	
ENGL 585R	Introduction to Women in Literature	
ENGL 609	Ethnicity in America: The African American Experience in the 20th Century	
ENGL 650R	I Hear America Singing: Studying American Literature and Culture	
ENGL 690	African American Literature	
ENGL 693	Special Topics in Literature (subtopic R)	
ENGL 693R	Special Topics in Literature	
ENGL 738	Asian American Studies	
ENGL 739	American Indian Literature	
ENGL 743R	American Literature, 1865-1915: The Birth of the American Empire	
ENGL 749R	Major American Authors	
ENGL 758R	Advanced Shakespeare	
ENGL 774R	Modern & Contemporary British Literature: New Departures	
ENGL 778	Race and Gender in Film and Popular Culture	
ENGL 787R	English Major Seminar	
ENGL 797R	Special Studies in Literature (Race & Racial Theories)	

Code	Title	Credits
<b>Courses that Investigate Anglophone Literature in Global or Transnational Contexts</b>		
ENGL 581	Reading the Postcolonial Experience	
ENGL 681	Contemporary African Literature	
ENGL 773	Literary Modernisms: Return, Revolt, Recycle	
ENGL 775	Modern Irish Literature: A Changing Landscape	
ENGL 777	The English Novel in the World	

Code	Title	Credits
<b>Courses in a specific genre including poetry, memoir, nonfiction, drama, fiction, and film <sup>1</sup></b>		
ENGL 520	Dystopian and Post-Apocalyptic Fiction	
ENGL 555	Science Fiction	
ENGL 575	Sex and Sensibility: The Rise of Chick Lit	
ENGL 585R	Introduction to Women in Literature	
ENGL 616A	Studies in Film/Genre	
ENGL 616B	Studies in Film/Authorship	
ENGL 616C	Studies in Film/Culture and Ideology	
ENGL 616D	Studies in Film/Narrative and Style	
ENGL 618	Film Theory	
ENGL 693R	Special Topics in Literature (if topic is appropriate)	
ENGL 778	Race and Gender in Film and Popular Culture	
ENGL 797R	Special Studies in Literature (Race & Racial Theories)	

<sup>1</sup> With the exception of ENGL 533 Introduction to Film Studies

Please see your advisor if you have questions about other courses that might fulfill these requirements.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

The required minimum overall GPA in major coursework is 2.0.

English literature majors may use one major-required course to satisfy one Discovery category requirement.

Majors may only count one online course toward their English major requirements.

Students interested in majoring in English literature should consult Carla Cannizzaro, academic/career counselor, Department of English, 230F Hamilton Smith Hall, (603) 862-1313 or the director of the English literature program.

## Student Learning Outcomes

English Department Student Learning Outcomes: Undergraduate program Undergraduate students in the English Department at the University of New Hampshire have many options as they advance to degree. They can choose to complete a general English major or opt to follow one of several specialized tracks: English Literature, Journalism, English Teaching, and Linguistics. I. All undergraduate English majors acquire the same core skills. These include:

- Proficiency in analytical writing, critical thinking, and public-speaking.
- Knowledge of important literary genres and subgenres
- Fluency in literary terminology,
- A broad understanding of British-and-American literature, from the medieval period in England and the moment of first contact in America to the present day.
- Demonstrated proficiency in writing an analytical essay that offers a sophisticated close-reading or explication of a literary text. This essay will have a clear thesis and proceed in a logical fashion, with interpretive claims supported by evidence from the text.
- Demonstrated proficiency in literary research and in writing an extended thesis-driven research paper in which sources are correctly and responsibly cited.

Demonstrated understanding of how to read across the color line in the US and /or how to analyze literary works written in English from outside the UK and the US—from India, Africa, and the Caribbean, for example. II. Students in our major tracks acquire the following specialized skills.

## English Major (B.A.)

<https://cola.unh.edu/english/program/ba/english>

## Description

Our general English major has two objectives: provide our students with a common core of literary experience and expertise, and offer them opportunity to shape a course of study suited to their personal interests. By offering flexible requirements, we encourage students to devise a path through coursework that has an intelligent rationale. If

students have a special interest in writing, for example, they can take the minimum number of literature courses (five) and complete the major by taking offerings in fiction, creative nonfiction and poetry writing; if students' interests are in literary studies, they can focus on offerings in that arena; or they can match up courses from different arenas in the department (say, literature and writing courses focused on poetry). All the undergraduate courses we offer in the English department are open to English majors so students can sample a range of courses in literature, linguistics, creative or nonfiction writing, and English teaching, according to how particular interests may change and grow.

The guiding principle of the general English major, then, is that it is open and liberal by design. It allows students to sample a variety of courses in order to study the operation of language from many perspectives.

## Requirements

### Major Requirements

1. Students must complete a minimum of 40 credits of with a minimum grade of C-.
2. The required minimum overall GPA is 2.0.
3. ENGL 401, 415s, "Literature and..." courses, 444s, ENGL 620 and ENGL 788 may not be used to satisfy major requirements.
4. A total of six courses must be numbered 600 and above.
5. One major-required course may be used to satisfy one Discovery category requirement.
6. Only one online course may count toward major requirements.
7. Special Topics in Literature courses (e.g. ENGL 693, 787, 797) may be used to satisfy Pre-1800 or Post-1800 and/or Race Requirement areas if the designated topic is appropriate.
8. Capstone must be completed with a minimum grade of C. May not be double-counted toward major requirements. Submit a Capstone Declaration form indicating the English course to be taken at the time of registration.

Code	Title	Credits
<b>Required</b>		
ENGL 419	How to Read Anything (Minimum grade of C)	4

Code	Title	Credits
<b>Select two courses from the following:</b>		
		8

Code	Title	Credits
<b>500-level Courses</b>		
ENGL/LING 405	Introduction to Linguistics	
ENGL 501	Introduction to Creative Nonfiction	
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
ENGL 510	Introduction to the Digital Humanities	
ENGL 511	Major Writers in English	
ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	
ENGL 513W	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 514W	British Literature III: Revolts, Renewals, Migrations	
ENGL 515W	American Literature I Conquest and Nation: First Contact to the Civil War	
ENGL 516W	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
ENGL #517	Black Creative Expression	
ENGL 518W	Bible as Literature	
ENGL 520	Dystopian and Post-Apocalyptic Fiction	
ENGL 521	Nature Writers	
ENGL 526	Introduction to Fiction Writing	
ENGL 527	Introduction to Poetry Writing	
ENGL 533	Introduction to Film Studies	

ENGL 534	21st Century Journalism: How the News Works
ENGL 549	In the Groove: African American Music as Literature
ENGL 550	Introduction to the Literature and Culture of Race
ENGL 555	Science Fiction
ENGL 560	Introduction to Latinx Literature and Culture
ENGL 575	Sex and Sensibility: The Rise of Chick Lit
ENGL 581	Reading the Postcolonial Experience
ENGL 585	Introduction to Women in Literature
ENGL 585R	Introduction to Women in Literature
ENGL 595	Literary Topics

Code	Title	Credits
<b>Select two courses from the following:</b>		
		8

Code	Title	Credits
<b>Pre-1800 Literature Courses</b>		
ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	
or ENGL 513W	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 595	Literary Topics (if topic is appropriate)	
ENGL 657	Shakespeare	
ENGL 693R	Special Topics in Literature (if topic is appropriate)	
ENGL #741	Early American Literature: Colonialism, Revolution, Nation	
ENGL 751	Medieval Romance	
ENGL 753	Old English	
ENGL 756	Chaucer	
ENGL 758	Advanced Shakespeare	
ENGL 758R	Advanced Shakespeare	
ENGL 759	Milton	
ENGL 767	Literature of the Restoration and Early 18th Century	
ENGL 768	Literature of the Later 18th Century	
ENGL 780	Drama of Shakespeare's Contemporaries: Will and Company	
ENGL 783	English Novel of the Eighteenth Century	
ENGL 787	English Major Seminar (if topic is appropriate)	
ENGL 787R	English Major Seminar (if topic is appropriate)	

Code	Title	Credits
<b>Select two courses from the following:</b>		
		8

Code	Title	Credits
<b>Post-1800 Literature Courses</b>		
ENGL 514W	British Literature III: Revolts, Renewals, Migrations	
or ENGL 516W	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
ENGL 595	Literary Topics (if topic is appropriate)	
ENGL 609	Ethnicity in America: The African American Experience in the 20th Century	
ENGL 636	Literature and the Environment	
ENGL 650	I Hear America Singing: Studying American Literature and Culture	
ENGL 681	Contemporary African Literature	
ENGL 690	African American Literature	
ENGL 693R	Special Topics in Literature (if topic is appropriate)	
ENGL 738	Asian American Studies	
ENGL 739	American Indian Literature	
ENGL 743R	American Literature, 1865-1915: The Birth of the American Empire	
ENGL 745	Contemporary American Literature	
ENGL 749R	Major American Authors	
ENGL 773	Literary Modernisms: Return, Revolt, Recycle	
ENGL 774R	Modern & Contemporary British Literature: New Departures	
ENGL 775	Modern Irish Literature: A Changing Landscape	
ENGL 777	The English Novel in the World	
ENGL 782	Modern and Contemporary Drama	
ENGL #784	English Novel of the 19th Century	
ENGL 787	English Major Seminar (if topic is appropriate)	
ENGL 787R	English Major Seminar (if topic is appropriate)	
ENGL 797R	Special Studies in Literature (Race & Racial Theories) (if topic is appropriate)	

Code	Title	Credits
<b>Select one course from the following:</b>		
		4

Code	Title	Credits
<b>Race, the Construction of Race, and Racial Theory Courses</b>		
ENGL 440A	On Race in Culture and Society	
ENGL #441	On Race and Culture in Society	
ENGL #517	Black Creative Expression	
ENGL 549	In the Groove: African American Music as Literature	
ENGL 550	Introduction to the Literature and Culture of Race	
ENGL 560	Introduction to Latinx Literature and Culture	
ENGL 585R	Introduction to Women in Literature	
ENGL 609	Ethnicity in America: The African American Experience in the 20th Century	
ENGL 650R	I Hear America Singing: Studying American Literature and Culture	
ENGL 690	African American Literature	
ENGL 693	Special Topics in Literature (subtopic R)	
ENGL 693R	Special Topics in Literature	
ENGL 738	Asian American Studies	
ENGL 739	American Indian Literature	
ENGL 743R	American Literature, 1865-1915: The Birth of the American Empire	
ENGL 749R	Major American Authors	
ENGL 758R	Advanced Shakespeare	
ENGL 774R	Modern & Contemporary British Literature: New Departures	
ENGL 778	Race and Gender in Film and Popular Culture	
ENGL 787R	English Major Seminar	
ENGL 797R	Special Studies in Literature (Race & Racial Theories)	
Code	Title	Credits
Select one additional 500-, 600-, or 700-level ENGL course		4
Capstone (one 700-level ENGL course)		4

Please see your advisor if you have questions about other courses that might fulfill these requirements.

If you're interested in majoring in English please contact Carla Cannizzaro, academic/career counselor, Department of English, 230F Hamilton Smith Hall, (603) 862-1313.

## Student Learning Outcomes

Undergraduate students in the English Department at the University of New Hampshire have many options as they advance to degree. They can choose to complete a general English major or opt to follow one of several specialized tracks: English Literature, Journalism, English Teaching, and Linguistics. I. All undergraduate English majors acquire the same core skills. These include:

- Proficiency in analytical writing, critical thinking, and public-speaking.
- Knowledge of important literary genres and subgenres
- Fluency in literary terminology,
- A broad understanding of British-and-American literature, from the medieval period in England and the moment of first contact in America to the present day.
- Demonstrated proficiency in writing an analytical essay that offers a sophisticated close-reading or explication of a literary text. This essay will have a clear thesis and proceed in a logical fashion, with interpretive claims supported by evidence from the text.
- Demonstrated proficiency in literary research and in writing an extended thesis-driven research paper in which sources are correctly and responsibly cited.
- Demonstrated understanding of how to read across the color line in the US and /or how to analyze literary works written in English from outside the UK and the US—from India, Africa, and the Caribbean, for example.

## English Major: Text, Business Writing and Digital Studies Option (B.A.)

<https://cola.unh.edu/english/program/ba/english-major-text-business-writing-digital-studies-option>

### Description

The modern workplace requires that employees be adaptable. The Bureau of Labor Statistics conducted a long-term study that showed people held 11.7 jobs between the ages of 18 and 48, and those numbers are increasing with people moving between jobs more frequently every year. It is crucial that we prepare our students not just for one industry, but rather arm them with the transferable skills of critical reading, writing, analysis, production, theory and aesthetics of new forms in digital media and business. Students will leave this major option with the skills that are in the highest demand in all fields today.

This major option addresses the growing demand for graduates who are well-versed in a combination of humanistic and digital skills and able to work in a variety of professional environments. In particular, graduates of this option will be prepared for careers at cultural and historical institutions, as well as in emerging job markets of information management and online content delivery. This specialization complements areas requirements for the English major but it is not limited to English majors. Double majors are encouraged. Small classes, a great sense of community and a diversity of faculty specializations create an atmosphere that propels students toward success. Students will receive real-life work experience through our internship class, and they will also leave this major with a digital portfolio that contains a collection of professional projects that can be used on the job market.

In this English major option, students are trained in the critical reading, analysis, production, theory and aesthetics of new forms in media and business. These forms include but are not limited to social media, business writing conventions, modes of digital storytelling (i.e. audio and video essays, podcasts and wikis), digital archives, web design, and online communities and interaction. Students are also trained in analysis through traditional humanistic literature and they are expected to fulfill the core learning objectives shared by *all English major tracks*. These include:

- the ability to communicate and debate effectively with others, both orally and in writing,
- the ability to closely examine a variety of texts (including modern digital artifacts and archival materials)
- developing the ability to use a variety of media and communication platforms;
- experience and practice in dynamic critical thinking and creativity

### Requirements

#### Eleven courses (44 credits)

Completed with a **minimum grade of C-** (with the exception of ENGL 419, which must be completed with a grade of C or better).

Students must meet the following distribution requirements. **Note that any one course may satisfy more than one requirement:**



Code	Title	Credits
ENGL 419	How to Read Anything <sup>1</sup>	4
One 500-level Introductory Course. Select from the following:		4
ENGL 501	Introduction to Creative Nonfiction (Digital Essay version)	
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing (Text, Business Writing, Digital version)	
ENGL 510	Introduction to the Digital Humanities	4
ENGL 602	Advanced Professional and Technical Writing	4
Select three ENGL courses numbered 600 or above <sup>2</sup>		12
Select two pre-1800 literature courses (select from the list below)		8
Select two post-1800 literature courses (select from the list below)		8
Select one course that addresses race, the construction of race, and racial theories (select from the list below)		4
Capstone: <sup>3</sup>		4
ENGL 796	The Internship Experience	
Digital Portfolio		

<sup>1</sup> Must be completed with a minimum grade of “C” to count towards the major.

<sup>2</sup> Students may include any advanced-level ENGL courses in which **20% of student assessment/work includes a digital humanities, digital research, or digital production component** (even if taken to fulfill literature requirements). *ENGL 602 may NOT be double counted for this requirement. Look for the 'DH' designation in the course descriptions during registration.*

<sup>3</sup> **The Internship Experience:** Experiential learning course that allows students to apply all of the writing, speaking, and critical thinking skills into an on-the-job experience, enabling them first-hand practice with writing documents at work, peer collaboration, public speaking opportunities/presentations, and supervision and evaluation. Students must have JR or SR status to enroll in this course. Students should submit a Capstone Declaration form indicating the ENGL course taken for Capstone credit at time of registration. Capstone Declaration forms can be picked up in the main English office.

**Digital Portfolio:** A minimum of six polished projects represented in a digital portfolio started in ENGL 602 and expanded over your career at UNH. A reflective essay will accompany this portfolio. This is a non-credit degree requirement.

Code	Title	Credits
<b>Pre-1800 Literature Courses</b>		
ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	
or ENGL 513W	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 595	Literary Topics (if topic is appropriate)	
ENGL 657	Shakespeare	
ENGL 693R	Special Topics in Literature (if topic is appropriate)	
ENGL #741	Early American Literature: Colonialism, Revolution, Nation	
ENGL 751	Medieval Romance	
ENGL 753	Old English	
ENGL 756	Chaucer	
ENGL 758	Advanced Shakespeare	
ENGL 758R	Advanced Shakespeare	
ENGL 759	Milton	
ENGL 767	Literature of the Restoration and Early 18th Century	
ENGL 768	Literature of the Later 18th Century	
ENGL 780	Drama of Shakespeare's Contemporaries: Will and Company	
ENGL 783	English Novel of the Eighteenth Century	
ENGL 787	English Major Seminar (if topic is appropriate)	
ENGL 787R	English Major Seminar (if topic is appropriate)	

Code	Title	Credits
<b>Post-1800 Literature Courses</b>		
ENGL 514W	British Literature III: Revolts, Renewals, Migrations	
or ENGL 516W	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
ENGL 595	Literary Topics (if topic is appropriate)	
ENGL 609	Ethnicity in America: The African American Experience in the 20th Century	
ENGL 636	Literature and the Environment	

ENGL 650	I Hear America Singing: Studying American Literature and Culture
ENGL 681	Contemporary African Literature
ENGL 690	African American Literature
ENGL 693R	Special Topics in Literature (if topic is appropriate)
ENGL 738	Asian American Studies
ENGL 739	American Indian Literature
ENGL 743R	American Literature, 1865-1915: The Birth of the American Empire
ENGL 745	Contemporary American Literature
ENGL 749R	Major American Authors
ENGL 773	Literary Modernisms: Return, Revolt, Recycle
ENGL 774R	Modern & Contemporary British Literature: New Departures
ENGL 775	Modern Irish Literature: A Changing Landscape
ENGL 777	The English Novel in the World
ENGL 782	Modern and Contemporary Drama
ENGL #784	English Novel of the 19th Century
ENGL 787	English Major Seminar (if topic is appropriate)
ENGL 787R	English Major Seminar (if topic is appropriate)
ENGL 797R	Special Studies in Literature (Race & Racial Theories) (if topic is appropriate)

Code	Title	Credits
<b>Race, the Construction of Race, and Racial Theory Courses</b>		
ENGL 440A	On Race in Culture and Society	
ENGL #441	On Race and Culture in Society	
ENGL #517	Black Creative Expression	
ENGL 549	In the Groove: African American Music as Literature	
ENGL 550	Introduction to the Literature and Culture of Race	
ENGL 560	Introduction to Latinx Literature and Culture	
ENGL 585R	Introduction to Women in Literature	
ENGL 609	Ethnicity in America: The African American Experience in the 20th Century	
ENGL 650R	I Hear America Singing: Studying American Literature and Culture	
ENGL 690	African American Literature	
ENGL 693	Special Topics in Literature (subtopic R)	
ENGL 693R	Special Topics in Literature	
ENGL 738	Asian American Studies	
ENGL 739	American Indian Literature	
ENGL 743R	American Literature, 1865-1915: The Birth of the American Empire	
ENGL 749R	Major American Authors	
ENGL 758R	Advanced Shakespeare	
ENGL 774R	Modern & Contemporary British Literature: New Departures	
ENGL 778	Race and Gender in Film and Popular Culture	
ENGL 787R	English Major Seminar	
ENGL 797R	Special Studies in Literature (Race & Racial Theories)	

Please see your advisor if you have questions about other courses that might fulfill these requirements.

### Notes:

To graduate from UNH, a student must earn a total of 128 credits.

Majors may only count one online course towards their major requirements.

English 403 'Exploring Literature', English 415 'Literature and...' and English 444 classes may NOT be used to satisfy ENGL major or minor requirements.

English majors may use one major-required course to satisfy one Discovery category requirement.

If you're interested in majoring in English: Text, Business Writing and Digital Studies please contact Carla Cannizzaro, academic/career counselor, Department of English, 230F Hamilton Smith Hall, (603) 862-1313.

## Student Learning Outcomes

Undergraduate students in the English Department at the University of New Hampshire have many options as they advance to degree. They can choose to complete a general English major or opt to follow one of several specialized tracks: English Literature, Journalism, English Teaching, and Linguistics. I. All undergraduate English majors acquire the same core skills. These include:

- Proficiency in analytical writing, critical thinking, and public-speaking.
- Knowledge of important literary genres and subgenres
- Fluency in literary terminology,
- A broad understanding of British-and-American literature, from the medieval period in England and the moment of first contact in America to the present day.
- Demonstrated proficiency in writing an analytical essay that offers a sophisticated close-reading or explication of a literary text. This essay will have a clear thesis and proceed in a logical fashion, with interpretive claims supported by evidence from the text.
- Demonstrated proficiency in literary research and in writing an extended thesis-driven research paper in which sources are correctly and responsibly cited.
- Demonstrated understanding of how to read across the color line in the US and /or how to analyze literary works written in English from outside the UK and the US—from India, Africa, and the Caribbean, for example.

## English Major: Law 3+3 Option (B.A.)

<https://cola.unh.edu/english/program/ba/english-major-law-33-option>

### Description

The 3+3 program offers highly motivated UNH undergraduate students of English the possibility to earn both a bachelor's degree and a law degree in six, rather than seven, years of study. After completing three years as an undergraduate and gaining admission to the UNH Law School through the approved process, the 3+3 program participant will become a full-time first-year law student. Upon successful completion of the first year of law study, the credits earned will be counted toward the JD degree and as elective credits sufficient to complete UNH's requirements for the bachelor's degree.

## Eligibility and Admission Process

### STEP ONE: Application to the 3+3 English/Law B.A./JD option

Students apply to the program either when they submit their applications to UNH, selecting the English/JD option on the online application, *OR* after they are admitted to UNH, by applying directly to the English Department's "English/Law 3+3 Committee." In both cases, undergraduate applicants must fulfill the general requirements for admission to the English major.

**Students applying at the time of admission to UNH will typically present the following high school credentials:**

- A **3.5 GPA** in high school (UNH recalculates high school GPA's to a 4.0 weighted scale)
- A rigorous high school curriculum defined as the following:

- 4 years of college prep (CP) or higher English
- 4 years of CP or higher mathematics
- 4 years of CP or higher social studies/history
- Completed at least level 3 of a foreign language
- 3 or more years of CP or higher laboratory sciences.
- A recommended score of **1200** or better (combined Math and Verbal) on the SAT or a **29** on the ACT.

**Currently enrolled UNH students applying to the program must:**

- Have a **3.5 GPA** in college courses at the time of application. The English Department committee governing admission to the 3+3 program will also consider past SAT scores, maturity, and the ability to complete a highly demanding program of study based on performance thus far.
- For both groups, it is important to note that satisfying these requirements does not guarantee admission to this program. The review process is holistic (meaning all parts of the application carry weight and influence the final decision) and other components of the application will influence any admission decisions. Available space within the program will also influence who is admitted and how many students can be accepted.

## STEP TWO: Application to UNH Law school

To be eligible, students must:

- Complete all Discovery and major requirements, and accrue at least 98 credits before beginning law school in their Senior year.
- Maintain at least a **3.5 GPA** (including transfer credits) at time of application to law school, and at the end of their Junior year.
- Take the LSAT no later than December of the final undergraduate year (i.e. the Junior year) and earn a score of **157 or above**.
- Submit the law school application through the Law School Admissions Council by January of the calendar year in which the student wishes to enroll in law school.

## Requirements

Students in the English/law 3+3 option complete the requirements of the English major. See the Degree Plan for the recommended path through the English major.

**Participation requires that students:**

- Complete all discovery and major requirements and **at least 98 credits** before beginning law school
- Maintain a **3.5 or above** grade point average, including transfer credits
- Take the LSAT no later than December of the final undergraduate year and have a score of **157 or above**.
- Submit the law school application through the Law School Admissions by January 1 of the year in which the student wishes to enroll in law school.

## Major Requirements

1. Students must complete a minimum of 40 credits of with a minimum grade of C-.
2. The required minimum overall GPA is 2.0.

- ENGL 401, 415s, "Literature and..." courses, 444s, ENGL 620 and ENGL 788 may not be used to satisfy major requirements.
- A total of six courses must be numbered 600 and above.
- One major-required course may be used to satisfy one Discovery category requirement.
- Only one online course may count toward major requirements.
- Special Topics in Literature courses (e.g. ENGL 693, 787, 797) may be used to satisfy Pre-1800 or Post-1800 and/or Race Requirement areas if the designated topic is appropriate.
- Capstone must be completed with a minimum grade of C. May not be double-counted toward major requirements. Submit a Capstone Declaration form indicating the English course to be taken at the time of registration.

ENGL 758	Advanced Shakespeare
ENGL 758R	Advanced Shakespeare
ENGL 759	Milton
ENGL 767	Literature of the Restoration and Early 18th Century
ENGL 768	Literature of the Later 18th Century
ENGL 780	Drama of Shakespeare's Contemporaries: Will and Company
ENGL 783	English Novel of the Eighteenth Century
ENGL 787	English Major Seminar (if topic is appropriate)
ENGL 787R	English Major Seminar (if topic is appropriate)

Code	Title	Credits
Select two courses from the following:		8

Code	Title	Credits
<b>Post-1800 Literature Courses</b>		
ENGL 514W or ENGL 516W	British Literature III: Revolts, Renewals, Migrations American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
ENGL 595	Literary Topics (if topic is appropriate)	
ENGL 609	Ethnicity in America: The African American Experience in the 20th Century	
ENGL 636	Literature and the Environment	
ENGL 650	I Hear America Singing: Studying American Literature and Culture	
ENGL 681	Contemporary African Literature	
ENGL 690	African American Literature	
ENGL 693R	Special Topics in Literature (if topic is appropriate)	
ENGL 738	Asian American Studies	
ENGL 739	American Indian Literature	
ENGL 743R	American Literature, 1865-1915: The Birth of the American Empire	
ENGL 745	Contemporary American Literature	
ENGL 749R	Major American Authors	
ENGL 773	Literary Modernisms: Return, Revolt, Recycle	
ENGL 774R	Modern & Contemporary British Literature: New Departures	
ENGL 775	Modern Irish Literature: A Changing Landscape	
ENGL 777	The English Novel in the World	
ENGL 782	Modern and Contemporary Drama	
ENGL #784	English Novel of the 19th Century	
ENGL 787	English Major Seminar (if topic is appropriate)	
ENGL 787R	English Major Seminar (if topic is appropriate)	
ENGL 797R	Special Studies in Literature (Race & Racial Theories) (if topic is appropriate)	

Code	Title	Credits
Select one course from the following:		4

Code	Title	Credits
<b>Race, the Construction of Race, and Racial Theory Courses</b>		
ENGL 440A	On Race in Culture and Society	
ENGL #441	On Race and Culture in Society	
ENGL #517	Black Creative Expression	
ENGL 549	In the Groove: African American Music as Literature	
ENGL 550	Introduction to the Literature and Culture of Race	
ENGL 560	Introduction to Latinx Literature and Culture	
ENGL 585R	Introduction to Women in Literature	
ENGL 609	Ethnicity in America: The African American Experience in the 20th Century	
ENGL 650R	I Hear America Singing: Studying American Literature and Culture	
ENGL 690	African American Literature	
ENGL 693	Special Topics in Literature (subtopic R)	
ENGL 693R	Special Topics in Literature	
ENGL 738	Asian American Studies	
ENGL 739	American Indian Literature	
ENGL 743R	American Literature, 1865-1915: The Birth of the American Empire	
ENGL 749R	Major American Authors	
ENGL 758R	Advanced Shakespeare	
ENGL 774R	Modern & Contemporary British Literature: New Departures	
ENGL 778	Race and Gender in Film and Popular Culture	
ENGL 787R	English Major Seminar	
ENGL 797R	Special Studies in Literature (Race & Racial Theories)	

Code	Title	Credits
<b>Required</b>		
ENGL 419	How to Read Anything (Minimum grade of C)	4

Code	Title	Credits
Select two courses from the following:		8

Code	Title	Credits
<b>500-level Courses</b>		
ENGL/LING 405	Introduction to Linguistics	
ENGL 501	Introduction to Creative Nonfiction	
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
ENGL 510	Introduction to the Digital Humanities	
ENGL 511	Major Writers in English	
ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	
ENGL 513W	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 514W	British Literature III: Revolts, Renewals, Migrations	
ENGL 515W	American Literature I Conquest and Nation: First Contact to the Civil War	
ENGL 516W	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
ENGL #517	Black Creative Expression	
ENGL 518W	Bible as Literature	
ENGL 520	Dystopian and Post-Apocalyptic Fiction	
ENGL 521	Nature Writers	
ENGL 526	Introduction to Fiction Writing	
ENGL 527	Introduction to Poetry Writing	
ENGL 533	Introduction to Film Studies	
ENGL 534	21st Century Journalism: How the News Works	
ENGL 549	In the Groove: African American Music as Literature	
ENGL 550	Introduction to the Literature and Culture of Race	
ENGL 555	Science Fiction	
ENGL 560	Introduction to Latinx Literature and Culture	
ENGL 575	Sex and Sensibility: The Rise of Chick Lit	
ENGL 581	Reading the Postcolonial Experience	
ENGL 585	Introduction to Women in Literature	
ENGL 585R	Introduction to Women in Literature	
ENGL 595	Literary Topics	

Code	Title	Credits
Select two courses from the following:		8

Code	Title	Credits
<b>Pre-1800 Literature Courses</b>		
ENGL 512 or ENGL 513W	British Literature I Age of Heroes: Beowulf to Dr. Faustus British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 595	Literary Topics (if topic is appropriate)	
ENGL 657	Shakespeare	
ENGL 693R	Special Topics in Literature (if topic is appropriate)	
ENGL #741	Early American Literature: Colonialism, Revolution, Nation	
ENGL 751	Medieval Romance	
ENGL 753	Old English	
ENGL 756	Chaucer	

Code	Title	Credits
Select one additional 500-, 600-, or 700-level ENGL course		4
Capstone (one 700-level ENGL course)		4

Please see your advisor if you have questions about other courses that might fulfill these requirements.

## Law School Requirements

The following summarizes the required curriculum and bar recommended curriculum. 85 credits are required for graduation.

### Required courses include:

Administrative Process  
Criminal Procedure  
Professional Responsibility  
Upper Level Writing Course  
Upper Level Skills Course

### Bar recommended courses include:

Personal Taxation  
Business Associations  
Wills, Trust & Estates  
Evidence

Questions about the English/law 3+3 undergraduate program should be directed to Carla Cannizzaro, academic/career counselor, Department of English, 230F Hamilton Smith Hall, (603) 862-1313.

Questions about UNH Law School entry should be directed to Kevin Sousa, UNH pre-law advisor, 110 Murkland Hall, (603) 862-2062.

## Degree Plan

## The Path Through the English Undergraduate Major

Below is a suggested course outline to help guide English undergraduate students participating in the English/Law 3+3 program through completion of their major and Discovery program requirements. Variations to this suggested path of courses may be undertaken with the approval of the student's English undergraduate advisor.

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ENGL 401	First-Year Writing	4
Discovery Course		4
ENGL 419	How to Read Anything	4
Foreign Language Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Discovery Course		4
Discovery Course		4
ENGL 500-level Course (512, 513 count as pre-1800 lit courses; 514, 516 are post-1800 lit.)		4
Select one of the following:		
ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	

ENGL 513W	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 514W	British Literature III: Revolts, Renewals, Migrations	
ENGL 516W	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
Foreign Language or Elective (if FL is completed in one semester)		4
<b>Credits</b>		<b>16</b>

### Second Year

#### Fall

Discovery Course		4
Discovery Course		4
ENGL 500-level Course (512, 513 count as pre-1800 lit courses; 514, 516 are post-1800 lit.)		4

Select one of the following:

ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	
ENGL 513W	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 514W	British Literature III: Revolts, Renewals, Migrations	
ENGL 516W	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
Any 500-700 Level ENGL Course		4
LAW 475	Getting Ready to Succeed in Law School (Option: can instead be taken in second year spring or third year fall.)	2
<b>Credits</b>		<b>18</b>

#### Spring

Discovery Course		4
Discovery Course		4
ENGL 600-700 Pre-1800 Literature Course (such a Shakespeare, Chaucer, Literature of Early America)		4
ENGL 600-700 Post-1800 Literature Course (such as Victorian Novel, Contemporary American Literature, Postcolonial Literature)		4
LAW 475	Getting Ready to Succeed in Law School (If not previously taken.)	2

**Credits** **18**

### Third Year

#### Fall

Discovery Course		4
Discovery Course		4
ENGL 600-700 Pre-1800 Literature Course (if you took 512 or 513, this can be any 600-700-level ENGL course.)		4
ENGL 600-700 Post-1800 Literature Course (If you took 514, 515, or 516, this can be any 600-700-level ENGL course.)		4
LAW 475	Getting Ready to Succeed in Law School (If not previously taken.)	2

**Credits** **18**

#### Spring

ENGL 600-700 Race Course Requirement		4
ENGL 600-700-level Elective Course		4
ENGL 787	English Major Seminar	4

Elective Course	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>102</b>

**TOTAL:** 98 Credits (40 Discovery, 44 English, 4-8 Foreign Language, 4-8 Elective)

**NEED:** Beyond ENGL 401 First-Year Writing, 3 more WI courses, one in major, one at 600 level.

**LAW 475:** Students should take LAW 475 Getting Ready to Succeed in Law School at some point during their Sophomore year but no later than the first semester of their Junior year. This course, taught by a UNH Law School faculty member, will teach students how to prepare for a legal education. The course will instruct students on the LSAT exam and offer valuable strategies on how to improve LSAT scores. Such instruction will include administration of practice test questions as well as explanations for answers. This two-credit course will also explain the necessary study skills to excel in law school.

**HONORS:** It is not necessary to complete the honors program, but it is possible: Honors in Discovery + Honors in Major with Thesis (See addendum I) .

**SEQUENCE:** With the exception of ENGL 419 How to Read Anything and ENGL 787 English Major Seminar, English courses don't need to be taken in any specific order; the guide above is only a suggestion. In general, 500-level courses should be taken before 600-700 level ones. However, a student could take a class that satisfies the Race Requirement in Semester I of Junior year rather than Semester II, or a pre-1800 600-700 level literature course in Semester II of Junior year. As long as all the categories listed above are met, students have the flexibility to choose the courses that best meet their interests and schedules. There are some writing and journalism courses that have prerequisites, and students should be careful to note these before choosing upper-level courses in those fields.

**ADVISING:** It is very important that students progressing through the 3+3 English/Law program maintain close contact with their degree advisor. This will help students remain "on track" to complete degree requirements, and the advisor will guide the student into the next phase of the program, admission to the Law school. Students who **plan early and work closely** with their advisor may find it possible to include study abroad and participation in other University programs, if desired, but only with careful planning.

All students participating in the English/Law 3+3 program are strongly encouraged to consult with the pre-law advisor on campus: **Kevin Sousa**, [kevin.sousa@unh.edu](mailto:kevin.sousa@unh.edu) ([paula.dinardo@unh.edu](mailto:paula.dinardo@unh.edu)); 603-862-2062, 110 Murkland Hall.

## The Path Through UNH Law School

This is a possible Law School course outline. Variations to this suggested path of courses may be undertaken with the approval of the student's Law school advisor.

### Senior/First Year Law (31 credits)

Course	Title	Credits
<b>Fourth Year</b>		
<b>Fall</b>		
LGP 920	Contracts	3

LGP 909	Civil Procedure	4
LGP 960	Torts	3
LSK 919	Legal Analysis and Writing 1	2
LSK 900	Legal Research and Information Literacy	2
LGP 900	The Legal Profession	1
<b>Credits</b>		<b>15</b>

### Spring

LGP 969	Article II Sales	2
LGP 916	Constitutional Law	4
LGP 952	Property	4
LSK 920	Legal Analysis and Writing 2	3
LIP 944 or LPI 912	Fundamentals of Intellectual Property or Fundamentals of Law Practice	3
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>31</b>

The schedule and track of the second and third years of law school are directed by each student with careful advising from the law faculty.

## Student Learning Outcomes

Undergraduate students in the English Department at the University of New Hampshire have many options as they advance to degree. They can choose to complete a general English major or opt to follow one of several specialized tracks: English Literature, Journalism, English Teaching, and Linguistics. I. All undergraduate English majors acquire the same core skills. These include:

- Proficiency in analytical writing, critical thinking, and public-speaking.
- Knowledge of important literary genres and subgenres
- Fluency in literary terminology,
- A broad understanding of British-and-American literature, from the medieval period in England and the moment of first contact in America to the present day.
- Demonstrated proficiency in writing an analytical essay that offers a sophisticated close-reading or explication of a literary text. This essay will have a clear thesis and proceed in a logical fashion, with interpretive claims supported by evidence from the text.
- Demonstrated proficiency in literary research and in writing an extended thesis-driven research paper in which sources are correctly and responsibly cited.
- Demonstrated understanding of how to read across the color line in the US and /or how to analyze literary works written in English from outside the UK and the US—from India, Africa, and the Caribbean, for example.

## English Teaching Major (B.A.)

<https://cola.unh.edu/english/program/ba/english-teaching-major>

### Description

Are you passionate about serving your community? Do you enjoy reading, writing, creative thinking and imagination? Are you eager to shape the future? The English teaching major could be a wonderful choice for you!



English teaching majors synthesize knowledge across areas — literature, language, composition, speaking, listening, identity, linguistics and education, just to name a few. We think critically and collaborate. We spark learning and we study it. We evaluate texts and resources, examine literacy skills, consider appropriate media, and design reading and writing opportunities and instruction in a variety of contexts. In particular, the English teaching major focuses on preparing future teachers and educational leaders, but the skills students learn are valuable in many settings, from the classroom to the workplace to the broader world.

The goal of the English teaching major is to prepare informed, thoughtful, and skilled English teachers who will become educational leaders in their own communities and in the teaching profession. In the English Department, students learn about literature, cultural theories of race and identity, composition, grammar, a variety of textual and digital media, and instructional practices appropriate to grades five through twelve. In the Education Department, students learn about human development, the history of schooling, and many philosophical perspectives on learning and education.

The final steps to becoming a teacher are completing a Master's program in the Education Department and applying for New Hampshire teacher certification. Students who choose one of these programs will complete graduate-level coursework and undertake a year-long teaching internship where they will collaborate with a teacher to apply their knowledge in a classroom. Students who complete this program are uniquely well prepared to become leaders in the profession over the long term. State certification is transferable to most other states, and, after five years, 88.7% of UNH master's program graduates report that they are teaching or employed in an education-related job. Join the English teaching major and turn your passion for English into a fulfilling career serving your community!

## Requirements

Completion of the undergraduate teaching major does not in itself meet state certification requirements. Students should enroll in the undergraduate major and:

Pass the following courses with an average of 2.5 or better:

Code	Title	Credits
ENGL 419	How to Read Anything	4
ENGL 514W	British Literature III: Revolts, Renewals, Migrations	4
ENGL 516W	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	4
ENGL 657	Shakespeare	4
Select one of the following:		8
ENGL 725 & ENGL 726	Seminar in English Teaching and Seminar in English Teaching	
ENGL 710 & ENGL 792	Teaching Writing and Teaching Literature and Literacy	
ENGL 791	English Grammar	4
Two additional literature courses numbered 600 or above <sup>1</sup>		8
One course that addresses race, the construction of race, and radical theories (see list below) <sup>2</sup>		0-4
Any English department course in writing, linguistics, critical theory, film, or literature <sup>3</sup>		4
Complete the Discovery Program capstone for English Teaching majors:		
ENGL 789	Special Topics in English Teaching	4
EDUC 500	Exploring Teaching	4

<sup>1</sup> ENGL 512 British Literature I Age of Heroes: Beowulf to Dr. Faustus or ENGL 513W British Literature II Age of Revolutions: Shakespeare to Austen may be substituted for one of the two required literature courses numbered 600 or above

<sup>2</sup> Other courses may count, when relevant and with prior written approval of the student's advisor. The course used to fulfill this requirement may be double counted within the 'Two literature courses 600 or above' OR 'Any English Department course...' requirement area.

<sup>3</sup> Except ENGL 401 First-Year Writing, ENGL 415s, "Literature and..." courses, and ENGL 444s

Code	Title	Credits
<b>Race, the Construction of Race, and Racial Theory Courses</b>		
ENGL 440A	On Race in Culture and Society	
ENGL #441	On Race and Culture in Society	
ENGL #517	Black Creative Expression	
ENGL 549	In the Groove: African American Music as Literature	
ENGL 550	Introduction to the Literature and Culture of Race	
ENGL 560	Introduction to Latinx Literature and Culture	
ENGL 585R	Introduction to Women in Literature	
ENGL 609	Ethnicity in America: The African American Experience in the 20th Century	
ENGL 650R	I Hear America Singing: Studying American Literature and Culture	
ENGL 690	African American Literature	
ENGL 693	Special Topics in Literature (subtopic R)	
ENGL 693R	Special Topics in Literature	
ENGL 738	Asian American Studies	
ENGL 739	American Indian Literature	
ENGL 743R	American Literature, 1865-1915: The Birth of the American Empire	
ENGL 749R	Major American Authors	
ENGL 758R	Advanced Shakespeare	
ENGL 774R	Modern & Contemporary British Literature: New Departures	
ENGL 778	Race and Gender in Film and Popular Culture	
ENGL 787R	English Major Seminar	
ENGL 797R	Special Studies in Literature (Race & Racial Theories)	

English teaching majors should apply for the fifth-year teaching internship and master's degree program by fall or spring of their senior year (usually September 30 for the internship and November 1 or February 1 for the master's program). Students with a GPA of 3.2 or better can apply for the master's degree program in their junior year. If accepted early, the student can earn graduate credit for up to three undergraduate English or education courses.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of Arts candidates must also satisfy the foreign language proficiency requirement.

English teaching majors may use one major-required course to satisfy one Discovery category requirement.

Majors may only count one online course towards their English major requirements.

Students interested in majoring in English teaching should consult Carla Cannizzaro, academic/career counselor, Department of English, 230F Hamilton Smith Hall, (603) 862-1313, or the director of the English teaching program, Prof. Alecia Magnifico.

## Student Learning Outcomes

Students will have the opportunity to compare philosophies of English teaching and learning, and to develop their own approaches to writing and literacy instruction in unit plans and lesson plans. In class, we will discuss theoretical and pedagogical ideas centered on student writing, engage in reading and writing exercises, produce and practice instructional activities and assessments, evaluate approaches to teaching writing, and review state-level standards and tests. Overall,

the aim of the course is recognition of literacy skills (including reading, writing, listening, speaking, and viewing) and consideration of how they can be used for learning goals including comprehension, analysis, description, and evaluation. Students will:

- Design activities, lessons, and units to meet established standards and objectives in writing and language use.
- Adapt materials for a variety of students' needs, including exceptional learners.
- Identify teaching resources among mentors, professional literature, conferences, organizations (e.g., National Council of Teachers of English [NCTE]), technology, and websites.
- Reflect and write on the theoretical bases for instructional decisions, evaluating professional literature and using appropriate academic conventions.
- Deliver engaging, on-point writing and language instruction appropriate to audience and content; practice a variety of presentation and discussion strategies.

## English/Journalism Major (B.A.)

<https://cola.unh.edu/english/program/ba/englishjournalism-major>

### Description

In our digital age, the ability to evaluate, edit, package and communicate information has become crucial to many, if not most, careers. Founded on the study of literature, the oldest form of story-telling, our English/journalism major prepares students for success in the media or any vocation that requires strong research and communications skills. Learn the basics: interviewing, fact gathering, verification and writing in both news and feature styles. Then broaden your repertoire by producing stories for digital platforms using audio, photo, video and data visualization.

### Requirements

English/journalism majors must complete ENGL 401 First-Year Writing before taking the first journalism course, ENGL 534 21st Century Journalism: How the News Works. After completing ENGL 534 21st Century Journalism: How the News Works, majors may move on to ENGL 621 Newswriting. Journalism majors must complete classes taken for major credit with a grade of C- or better, with the exception of ENGL 419 How to Read Anything and the course taken for Capstone credit.

Code	Title	Credits
ENGL 401	First-Year Writing	4
ENGL 419	How to Read Anything <sup>1</sup>	4
Select one pre-1800 literature course (select from list below)		4
Select one post-1800 literature course (select from list below)		4
Select one course that addresses race, the construction of race, and racial theories (select from list below)		4
Select one additional ENGL course at the 500, 600 or 700 level. Any English course may be used to satisfy this requirement except courses with a journalism focus (see list of excluded courses in footnote) <sup>2</sup>		4
ENGL 534	21st Century Journalism: How the News Works	4
ENGL 621	Newswriting	4
Select three additional journalism courses from the following:		12
ENGL 623	Creative Nonfiction	
ENGL 631	Digital Reporting	
ENGL 703T	Travel Writing	
ENGL 711	Editing	
ENGL 712	Multimedia Storytelling	

ENGL 721	Advanced Reporting
ENGL 722	Feature Writing
ENGL 723	Issues in Journalism
ENGL 735	Entrepreneurial Journalism
Capstone: Any English course at the 700 level (except ENGL 795). <sup>3</sup>	

- <sup>1</sup> Must be completed with a minimum grade of C. ENGL 419 How to Read Anything is the only 400-level class that may count towards the English/Journalism major. ENGL 415s, "Literature and..." courses, and ENGL 444s will NOT count towards this major.
- <sup>2</sup> English courses with a journalism focus are ENGL 534, ENGL 621, ENGL 623, ENGL 631, ENGL 703T, ENGL 711, ENGL 712, ENGL 720, ENGL 721, ENGL 722, ENGL 723, ENGL 725.
- <sup>3</sup> Capstone course may not be double-counted towards other major requirement areas. **Minimum grade required:** C. ENGL 788 Senior Honors written as part of the English Honors in Major program may be used as a Capstone course. Students must submit a Capstone Declaration form at the time of registration. Capstone course credit may not be applied retroactively.

Code	Title	Credits
<b>Pre-1800 Literature Courses</b>		
ENGL 512	British Literature I Age of Heroes: Beowulf to Dr. Faustus	
or ENGL 513W	British Literature II Age of Revolutions: Shakespeare to Austen	
ENGL 595	Literary Topics (if topic is appropriate)	
ENGL 657	Shakespeare	
ENGL 693R	Special Topics in Literature (if topic is appropriate)	
ENGL #741	Early American Literature: Colonialism, Revolution, Nation	
ENGL 751	Medieval Romance	
ENGL 753	Old English	
ENGL 756	Chaucer	
ENGL 758	Advanced Shakespeare	
ENGL 758R	Advanced Shakespeare	
ENGL 759	Milton	
ENGL 767	Literature of the Restoration and Early 18th Century	
ENGL 768	Literature of the Later 18th Century	
ENGL 780	Drama of Shakespeare's Contemporaries: Will and Company	
ENGL 783	English Novel of the Eighteenth Century	
ENGL 787	English Major Seminar (if topic is appropriate)	
ENGL 787R	English Major Seminar (if topic is appropriate)	

Code	Title	Credits
<b>Post-1800 Literature Courses</b>		
ENGL 514W	British Literature III: Revolts, Renewals, Migrations	
or ENGL 516W	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	
ENGL 595	Literary Topics (if topic is appropriate)	
ENGL 609	Ethnicity in America: The African American Experience in the 20th Century	
ENGL 636	Literature and the Environment	
ENGL 650	I Hear America Singing: Studying American Literature and Culture	
ENGL 681	Contemporary African Literature	
ENGL 690	African American Literature	
ENGL 693R	Special Topics in Literature (if topic is appropriate)	
ENGL 738	Asian American Studies	
ENGL 739	American Indian Literature	
ENGL 743R	American Literature, 1865-1915: The Birth of the American Empire	
ENGL 745	Contemporary American Literature	
ENGL 749R	Major American Authors	
ENGL 773	Literary Modernisms: Return, Revolt, Recycle	
ENGL 774R	Modern & Contemporary British Literature: New Departures	
ENGL 775	Modern Irish Literature: A Changing Landscape	
ENGL 777	The English Novel in the World	
ENGL 782	Modern and Contemporary Drama	
ENGL #784	English Novel of the 19th Century	
ENGL 787	English Major Seminar (if topic is appropriate)	
ENGL 787R	English Major Seminar (if topic is appropriate)	
ENGL 797R	Special Studies in Literature (Race & Racial Theories) (if topic is appropriate)	

Code	Title	Credits
<b>Race, the Construction of Race, and Racial Theory Courses</b>		
ENGL 440A	On Race in Culture and Society	
ENGL #441	On Race and Culture in Society	
ENGL #517	Black Creative Expression	
ENGL 549	In the Groove: African American Music as Literature	
ENGL 550	Introduction to the Literature and Culture of Race	
ENGL 560	Introduction to Latinx Literature and Culture	
ENGL 585R	Introduction to Women in Literature	
ENGL 609	Ethnicity in America: The African American Experience in the 20th Century	
ENGL 650R	I Hear America Singing: Studying American Literature and Culture	
ENGL 690	African American Literature	
ENGL 693	Special Topics in Literature (subtopic R)	
ENGL 693R	Special Topics in Literature	
ENGL 738	Asian American Studies	
ENGL 739	American Indian Literature	
ENGL 743R	American Literature, 1865-1915: The Birth of the American Empire	
ENGL 749R	Major American Authors	
ENGL 758R	Advanced Shakespeare	
ENGL 774R	Modern & Contemporary British Literature: New Departures	
ENGL 778	Race and Gender in Film and Popular Culture	
ENGL 787R	English Major Seminar	
ENGL 797R	Special Studies in Literature (Race & Racial Theories)	

(Note: the course used to fulfill this requirement may be double counted as one of the pre-1800 and post-1800 literature courses required for this major.)

Please see your advisor if you have questions about other courses that might fulfill these requirements.

Certain courses publish student writing digitally, at times in collaboration with professional news outlets. Students are also encouraged to write and edit for student publications such as *The New Hampshire* and *Main Street Magazine*.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

English/journalism majors may use one major-required course to satisfy one Discovery category requirement.

Majors may only count one online course toward their English major requirements.

Students interested in the English/journalism major should see Carla Cannizzaro, academic/career counselor, Department of English, 230F Hamilton Smith Hall, (603) 862-1313, or the director of the Journalism Program, Prof. Tom Haines.

## Student Learning Outcomes

English Department Student Learning Outcomes: Undergraduate program  
Undergraduate students in the English Department at the University of New Hampshire have many options as they advance to degree. They can choose to complete a general English major or opt to follow one of several specialized tracks: English Literature, Journalism, English Teaching, and Linguistics.

I. All undergraduate English majors acquire the same core skills. These include:

- Proficiency in analytical writing, critical thinking, and public-speaking.
- Knowledge of important literary genres and subgenres
- Fluency in literary terminology,
- A broad understanding of British-and-American literature, from the medieval period in England and the moment of first contact in America to the present day.
- Demonstrated proficiency in writing an analytical essay that offers a sophisticated close-reading or explication of a literary text. This essay will have a clear thesis and proceed in a logical fashion, with interpretive claims supported by evidence from the text.
- Demonstrated proficiency in literary research and in writing an extended thesis-driven research paper in which sources are correctly and responsibly cited.
- Demonstrated understanding of how to read across the color line in the US and /or how to analyze literary works written in English from outside the UK and the US—from India, Africa, and the Caribbean, for example.

II. Students in our major tracks acquire the following specialized skills.

(1) English / Journalism majors will be able to:

- Demonstrate proficiency in a wide range of reporting skills (i.e., finding trends, understanding context, editing, and so forth).
- Find and interview credible sources.
- Know how to write feature articles, profiles, and other kinds of news stories.

(2) English Teaching Majors will be able to:

- Design activities, lessons, and units to meet established standards and objectives in writing and language.

## English Minor

<https://cola.unh.edu/english/program/minor/english>

### Description

The English minor offers students the opportunity to develop critical thinking, writing and research skills that will enrich both their personal lives and their professional careers. Students draw upon courses in literature, creative writing, journalism and linguistics to craft their own course of study.

Students interested in minoring in English may contact Carla Cannizzaro, academic/career counselor, Department of English, 230F Hamilton Smith Hall, (603) 862-1313 with any questions.

### Requirements

To minor in English at UNH, students complete five courses (20 credits).

Code	Title	Credits
<b>Required course</b>		
ENGL 419	How to Read Anything	4
Electives <sup>1</sup>		16
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Elective courses: at least three courses at the 600 level or above.

ENGL 401 First-Year Writing and ENGL 415s, "Literature and..." courses and ENGL 444s cannot be applied toward the English minor. No more than two transfer courses may be applied toward the English minor.

The minimum acceptable grade for each course is C-.

## Writing Minor

<https://cola.unh.edu/english/program/minor/writing>

### Description

With employers stressing the importance of writing skills and the writing demands of all professions increasing, the writing minor is designed to serve students who want to demonstrate sustained work with writing. Students take a concentration of courses in creative writing or journalism, focusing on the creative and practical uses of writing. The completion of a writing minor will enhance the job prospects in fields where the demands for writing is higher than ever. The writing minor also serves students who want to use the imagination to develop stories, poems, essays and screenplays.

### Requirements

Students must complete at least five 4-credit courses (20 credits) from the list of approved courses. At least three of the courses must be at the 600 level or higher. ENGL 415s, "Literature and..." courses cannot be applied toward the English writing minor. The minimum acceptable grade for each course is C-. No more than two transfer courses can be applied toward the English writing minor. English literature and English teaching majors may declare a writing minor with the approval of their faculty adviser. A maximum of two English courses (8 credits) are allowed to double-count toward the literature or teaching major and writing minor. Other English Department majors are not eligible to declare a writing minor.

## Courses that Count Toward the Writing Minor

Code	Title	Credits
ENGL 419	How to Read Anything	4
ENGL 501	Introduction to Creative Nonfiction	4
ENGL 502	Professional and Technical Writing	4
ENGL 503	Persuasive Writing	4
ENGL 526	Introduction to Fiction Writing	4
ENGL 527	Introduction to Poetry Writing	4
ENGL 602	Advanced Professional and Technical Writing	4
ENGL 621	News Writing	4
ENGL 623	Creative Nonfiction	4
ENGL 625	Intermediate Fiction Writing Workshop	4
ENGL 625A	Intermediate Fiction Writing Workshop: Screenwriting	4
ENGL 627	Intermediate Poetry Writing Workshop	4
ENGL 631	Digital Reporting	4
ENGL 694	Special Topics in Creative Writing	4
ENGL 701	Advanced Fiction Writing Workshop	4
ENGL 703T	Travel Writing	4
ENGL 710	Teaching Writing	4
ENGL 711	Editing	4
ENGL 712	Multimedia Storytelling	4
ENGL 721	Advanced Reporting	4
ENGL 722	Feature Writing	4

ENGL 729	Special Topics in Composition Studies	4
ENGL 791	English Grammar	4

At the beginning of your final semester of study at UNH, please fill out a Certification of Completion of Minor form and obtain signatures from your major advisor, the English department coordinator, and the Dean of your college.

Students interested in minoring in English writing may contact Carla Cannizzaro, academic/career counselor, Department of English, 230F Hamilton Smith Hall, (603) 862-1313 with any questions.

## French (FREN)

### Study Abroad in Dijon

The department offers a junior year and semesters abroad at the University of Burgundy in Dijon, France (see FREN 690 Study Abroad in Dijon France). This program is open to all qualified students at the University of New Hampshire who have completed FREN 631 Advanced French: Reading and Writing and FREN 632 Advanced French: Listening and Speaking by the end of the semester preceding their departure. Early consultation with the director of the program is urged. Non-credit orientation meetings are required during the semester prior to departure.

### Summer Study in Dijon

This program is open to all students interested in an immersion program during the summer. It provides four to eight weeks of intensive courses in French at the CIEF (*Centre International des Etudes françaises*) at the *Université de Bourgogne* in Dijon, France. A minimum GPA of 2.5 is required. Special fee. 4 to 8 credits. No previous study of the language is necessary to participate. Study in Dijon can satisfy the language requirement. Consult faculty of the French program to ensure proper placement. For French majors, the summer course can only satisfy the study abroad requirement of those who have documented academic reasons preventing them from studying abroad for an entire semester. By petition only.

### Spring/Summer Study in Toulouse

This program is a half-semester spring course followed by a summer travel experience in southwestern France. Students enroll in a 2-credit version of FREN 595 French Practicum during the second half of the spring semester. On-campus class sessions will prepare students for travel and introduce them to the diversity of French cultural heritage. The program will culminate in a 2-week stay in Toulouse, France, with UNH faculty, facilitated by CIEE's Toulouse center staff.

## Teaching Assistantship in France (TAPIF)

Each year the French government offers teaching assistantships in French elementary or secondary schools for graduating students who have studied French. The application process begins during the fall semester of the senior year. Consultation with the advisor is recommended.

<https://cola.unh.edu/languages-literatures-cultures>

Programs

- [French Major \(B.A.\)](#) (p. 78)
- [French Minor](#) (p. 79)

Faculty

<https://cola.unh.edu/languages-literatures-cultures/faculty-staff-directory>

French Major (B.A.)

<https://cola.unh.edu/languages-literatures-cultures/program/ba/french-major>

Description

The undergraduate major in French offered by the Department of Languages, Literatures and Cultures is centered on the study of the French language and the literatures and cultures of France and the French-speaking world. Students who complete the requirements for the major can expect to become proficient in French at a level that would allow them to communicate with native speakers, to develop an in-depth critical appreciation of French and Francophone cultures and literatures, and to be culturally sensitive members of society.

The program offers courses devoted to authors, works, and literary and cultural movements that span ten centuries and four continents. The curriculum also includes interdisciplinary courses on relations between literature and other areas of study such as history, law, religion, politics and the arts. All courses are conducted in French, and majors are expected to write papers and examinations in that language.

French can be taken either as a primary major or as one of two majors, in consultation with the director of undergraduate studies. Appropriate majors to combine with French might include, but are not limited to, international affairs, political science, English, education, film and media studies, history, music, philosophy, theater studies, women’s studies, business and communication.

The French major may interest students desiring a general humanistic education based on the language and literature of the French-speaking world; students planning to teach French at the elementary or secondary level; students who intend to pursue graduate work in preparation for teaching and research at the college level; and students preparing for careers in such areas as international law, business, journalism, international organizations, and public or government service, which require both training in a major foreign language and/or a general background in a humanistic discipline.

Requirements

All students must complete at least 10 classes (40 credits). All coursework required for the French major must be completed with a grade of C or better. Specific course requirements are:

Code	Title	Credits
Language courses <sup>1</sup>		
Students entering major at a higher language level will replace the language courses with additional electives		
FREN 503	Intermediate French I	

FREN 504	Intermediate French II
FREN 631	Advanced French: Reading and Writing
FREN 632	Advanced French: Listening and Speaking
Electives <sup>2</sup>	
Select a minimum of five courses from the following Culture, Linguistics, and Literature category	
FREN 525	A Road Trip Through France: Baguette, Brie, Bordeaux, and Beyond
FREN #525H	Honors/A Road Trip Through France: Baguette, Brie, Bordeaux, and Beyond
FREN 526	Introduction to Francophone Cultures
FREN 651	Love, War, and Power in French Literature
FREN 595	French Practicum
FREN #595A	A Culinary Exploration in Southern France
FREN 652	Greatest Hits of French
FREN 676	Topics in Francophone Culture
FREN #677	France in the European Union
FREN 765	Rebellion and Upheaval in 18th-Century Literature and Culture
FREN 775	Les Mis and their World
FREN 785	Francophonies Plurielles
FREN 790	Cultural Encounters: A View from Abroad
FREN 795	Special Studies in French Language and Literature
LLC 540	Film History
LLC #551	Comparative Literature: Masterpieces of World Literature I
LLC 552	Comparative Literature: Masterpieces of World Literature II
LLC 595	Language Practicum
LLC 791	Methods of Foreign Language Teaching
Capstone <sup>3</sup>	
LLC 790	World Languages Capstone
Study Abroad	
An approved foreign study experience in a French-speaking country is required, although an approved equivalent high-impact experience may be substituted for study abroad with a compelling justification	

- <sup>1</sup> While the major may start counting as early as the Intermediate I level (FREN 503), those who enter the major at a higher level (FREN 504, FREN 631, or FREN 632) will replace the courses they skip from the four in the intermediate and advanced language category with additional electives in the Culture, Linguistics, and Literature category.
- <sup>2</sup> More electives required if fewer language credits were completed due to proficiency level and placement.
- No limit on the number of classes in English allowed. Students taking no classes in the target language in a given semester will be strongly encouraged to enroll in one credit of conversation hour to maintain their language skills, and many of the courses taught in English will allow students the option to (or even require students to) do some work in the target language.
- <sup>3</sup> Or approved equivalent 700-level course taken at UNH, approved study abroad equivalent, or approved high-impact experience (such as internship with a robust target language/culture component).

Transfer students must earn a minimum of 12 major credits at the Durham campus.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

French majors may use two major-required courses to satisfy two Discovery category requirements.



## Student Learning Outcomes

Upon completion of the French Major, our students are expected to master:

- **SLO 1: Communicative Proficiency** Students communicate in the target language, having mastered the four basic communicative skills at the advanced level according to the ACTFL Proficiency Guidelines. They are able to narrate and describe in past, present and future time, use a variety of communication strategies (such as circumlocution, paraphrasing), support their opinions and hypothesize. They can be understood without difficulty by a native interlocutor and carry conversations on a wide variety of topics. They are able to understand native speakers in a variety of situations (academic, everyday life, radio, television).
- **SLO 2: Intercultural Competence** During and after their experiences abroad, students are led to reflect on cultural differences and develop cross-cultural competencies. They develop awareness of what it means to interact appropriately and effectively within diverse social and cultural contexts.
- **SLO 3: Knowledge and Understanding** Students grasp complex or unfamiliar texts (literary, journalistic, etc.), have an awareness of the esthetic properties of language and literary style, and have developed tools to assess and analyze different linguistic registers. They are able to contextualize and have knowledge of a representative selection of figures, works, and tendencies in the literature and other cultural productions from the Francophone world.
- **SLO 4: Critical Thinking** Students are able to critically analyze texts and other cultural artifacts from various areas of the Francophone world, are able to define a position about them, and to substantiate it using research. They are able to establish connections between different areas of knowledge, and are able to collaborate to answer questions and solve problems through task-based activities.

## French Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/french>

### Description

The minor in French provides students with the components of a well-rounded education: a solid understanding of grammar and pronunciation, intercultural awareness, exposure to Francophone literatures and cultures, and a sufficient command of the language to enhance their chosen field of study, and countless career opportunities across the public, private and nonprofit sectors, including government, international development, journalism, law, communications and business.

Students in the French minor program at UNH are encouraged to complete some portion of their undergraduate study abroad through the Study Abroad in Dijon. Given the increasing globalization of our world, living abroad enhances cross-cultural awareness, competency, and adaptability. Students find that living and studying abroad expands their perspective, improves critical thinking, increases independence and better prepares them for a career in an increasingly global marketplace.

## Requirements

A minor in French consists of 20 credits in French courses numbered FREN 503 Intermediate French I and above.

Code	Title	Credits
Select 5 French courses numbered 503 and above		20
<b>Total Credits</b>		<b>20</b>

- No fewer than three courses have to be taken at UNH.
- No more than one course conducted in English (e.g., FREN 525 A Road Trip Through France: Baguette, Brie, Bordeaux, and Beyond) will be counted toward the minor, although students may elect to take more than one such course provided they earn more than 20 credits.
- Those entering the minor at FREN 504 Intermediate French II or higher will be expected to complete FREN 651 Love, War, and Power in French Literature or FREN 652 Greatest Hits of French.
- After completing the five required courses, students submit a [Certification of Completion of Minor](#) form.

## Geography (GEOG)

Geography, as the study of place, space and environment, addresses the “why of where” by uniting social and biophysical sciences, humanities and technology to examine the factors that make a place or environment unique. Connecting academic inquiry to real-world problem solving, our courses teach critical thinking skills that prepare students to transfer classroom and field experience into a wide range of careers. With interests ranging from globalization to climate change and sustainability, urbanization to community development at home and abroad, geography majors gain the knowledge, techniques and perspectives needed to meet current and future challenges.

Geography at UNH is an undergraduate-only department offering both major and minor degree programs. With small class sizes, personalized advising by department faculty, and opportunities for independent study, our students receive a high degree of individual attention. UNH geography graduates are prepared to enter a variety of careers or professional and graduate degree programs.

<https://cola.unh.edu/geography>

### Programs

- [Geography Major \(B.A.\)](#) (p. 79)
- [Geography Minor](#) (p. 80)

### Faculty

<https://cola.unh.edu/geography/faculty-staff-directory>

## Geography Major (B.A.)

<https://cola.unh.edu/geography/program/ba/geography>

### Description

The geography major provides undergraduates with a solid foundation in geography by uniting social and biophysical sciences, humanities and

technology to examine the factors that make a place or environment unique. Connecting academic inquiry to real-world problem solving, you will develop critical thinking skills and be prepared to transfer classroom and field experience into a wide range of careers.

With interests ranging from globalization to climate change and sustainability, urbanization to community development at home and abroad, UNH geography graduates have gone on to careers in urban, regional and transportation planning, community development, environmental conservation and natural resources management, sustainability science, geographic information science, market research, locational analysis, population studies, foreign aid, international diplomacy and education.

## Requirements

To earn a bachelor of arts in geography, students must complete 10 geography courses with a minimum grade of C-minus:

Code	Title	Credits
Select three foundation courses.		
Select two skills courses.		
Select five elective courses.		

### Foundation Courses

Foundation courses are intended to provide students a basic understanding of human, physical, and world regional geography. It is recommended they be taken as early as possible in a student's program.

All geography majors must complete three foundation courses:

Code	Title	Credits
GEOG 401	World Regions: Europe and the Americas	4
or GEOG 402	World Regions: Asia and Africa	
GEOG 572	Geography of the Natural Environment	4
GEOG 581	Society, Environment and Justice	4
Total Credits		12

### sKills Courses

Skills courses are required of all majors. Skills courses provide students with basic analytical and technical skills used in geography.

Code	Title	Credits
Select two skills courses		
GEOG 590	Field Research	4
or GEOG #595	Statistics for Spatial Science	
GEOG 658	Introduction to Geographic Information Systems <sup>1</sup>	4
Total Credits		8

<sup>1</sup> Students are encouraged to complete GEOG #595 Statistics for Spatial Science, or another statistics course approved by their advisor before enrolling in GEOG 658 Introduction to Geographic Information Systems.

### Elective Courses

Code	Title	Credits
Select five elective courses		
Select four courses from the electives list below (may be any geography courses, excluding 401 or 402) <sup>2</sup>		
Discovery Program Capstone:		
Select one 600+ writing intensive course from electives list below (these are GEOG 670, GEOG 673, GEOG 685, GEOG #686)		
Total Credits		20

<sup>2</sup> Independent study courses including GEOG 695 Internship and GEOG 795 Special Project may be applied to the major elective requirement once if taken for a total of four credit hours.

### Electives List

Code	Title	Credits
GEOG 405	There Is No Planet B	4
GEOG 473	Elements of Weather	4
GEOG 530	China: People, Politics and Economy	4
GEOG 540	Geography of the Middle East	4
GEOG 550	Sub-Saharan Africa: Environmental Politics and Development	4
GEOG 560	Natural Hazards and Human Disasters	4
GEOG 572	Geography of the Natural Environment	4
GEOG 574	Global Landscapes and Environmental Processes	4
GEOG 581	Society, Environment and Justice	4
GEOG 582	Global Trade and Local Development	4
GEOG 584	Political Geography	4
GEOG 591	Making Maps: GIS Fundamentals	4
GEOG 670	Climate and Society	4
GEOG 673	Political Ecology	4
GEOG 685	Population and Development	4
GEOG #686	World Economy and Globalization	4
GEOG 757	Remote Sensing of the Environment	4
GEOG 759	Digital Image Processing for Natural Resources	4
GEOG #760	Geographic Information Systems in Natural Resources	4

### Geotechniques

Students interested in geographic information systems, remote sensing, locational analysis and other geographic techniques may specialize in Geotechniques by completing three 700-level methods courses in Geography (GEOG 750-769).

## Additional Requirements

Major department courses may be used to satisfy two Discovery category requirements excluding courses taken for foundation course credit and unlimited in the case of a second major.

The university's foreign language requirement may not be fulfilled by American Sign Language except by petition.

Students intending to major in geography should consult with the department chairperson.

## Student Learning Outcomes

- Integrate biophysical and socio-cultural disciplinary traditions to explain the complex interrelationships between and among human-natural systems spanning local to global scales.
- Communicate geographic concepts, research, and methods of analysis professionally and effectively through written products, oral presentations, and visualizations appropriate for the intended audience.

## Geography Minor

<https://cola.unh.edu/geography/program/minor/geography>

## Description

The geography minor allows undergraduates to explore one or more of the three main areas of geography — human geography, environmental

geography and geotechniques. Studying geography prepares students to pursue a wide variety of careers or enter graduate school.

## Requirements

To minor in geography, you must complete any **five geography courses (at least 20 credit hours)** with a grade of **at least C-**.

Code	Title	Credits
Select five geography courses		20
Total Credits		20

Courses taken Pass/Fail cannot be used for the minor. All minor courses can be used to fulfill Discovery Program requirements.

At the beginning of your final semester at UNH you should complete a Certification of Completion of Minor form. The minor must be approved by your major and minor supervisors. The completed form is then presented to the college dean for approval and, finally, forwarded to the Registrar.

Please direct questions about minoring in geography to the department chairperson.

## German (GERM)

German is the most widely spoken language in Europe, and Germany plays a leading role in a number of areas: EU and global trade and policy, fine arts, alternative energy and sustainability, engineering, philosophy. With their rich cultural and intellectual history, as well as one of the world's primary export-driven economies, the German-speaking countries offer unique career opportunities for globally minded students and citizens.

### Summer Study in Berlin, Germany

The UNH German Program manages a summer program in Berlin, Germany. During their study in Berlin, students can earn between 4 and 12 credits. The program provides students with an immersion experience in the German language and culture. Students receive language instruction at the appropriate level (elementary, intermediate, or advanced) at the BSI Private Language School in central Berlin. No prior German language study is required. On designated weekday afternoons, students participate in cultural excursions and discussions with the on-site UNH faculty member. Through the UNH Berlin summer program, students receive UNH credit and can fulfill the World Cultures Discovery requirement. In line with UNH's goals to educate students to become global citizens, this immersion program gives students insight into what it means to experience a different culture and language. For more information, contact Charles Vannette or visit the COLA Center for Study Abroad.

### Other Programs

The University allows students to attend approved study abroad programs for UNH credit at schools in Germany and Austria. Students may attend accredited one- or two-semester programs at universities in cities like Munich, Vienna, Berlin, Heidelberg, Freiburg or Salzburg. Most study abroad programs require a minimum of two years of college German. For details, see the coordinator of German or the foreign studies coordinator at the UNH Global Education Center. Internships with a German firm or organization may also be taken for credit (see GERM 595 Internship (p. 83)). Internships must be approved ahead of time

in collaboration with an advisor in the German program. Financial aid applies to all approved programs.

<https://cola.unh.edu/languages-literatures-cultures>

## Programs

- German Major (B.A.) (p. 81)
- German Minor (p. 83)

## Faculty

<https://cola.unh.edu/languages-literatures-cultures/faculty-staff-directory>

## German Major (B.A.)

<https://cola.unh.edu/languages-literatures-cultures/program/ba/german-major>

## Description

The German major is offered by the Department of Languages, Literatures and Cultures. This program is of interest to the following groups of students:

- Those who have a special interest in the German language, literature and culture.
- Those who intend to enter fields in which a background in foreign languages and cultures is desirable, such as business, engineering, the sciences, law, international affairs, government service and international service.
- Those who plan to teach German in secondary schools. Since most secondary schools require their teachers to teach more than one subject, students planning to enter teaching at this level should plan their programs carefully. They should combine a major in one culture and language with a minor or at least a meaningful sequence of courses in another subject. Dual majors also are possible. For certification requirements, see the section coordinator.

All German majors are strongly encouraged to double major or include a relevant minor in their studies.

## Requirements

All students must complete at least 10 classes (40 credits). All coursework required for German major must be completed with a grade C- or better. Specific course requirements are:

Code	Title	Credits
<b>Language Courses <sup>1</sup></b>		
Students entering major at a higher language level will replace the language courses with additional electives.		
GERM 401	Elementary German I	
GERM 402	Elementary German II	
GERM 503	Intermediate German I	
GERM 504	Intermediate German II	
GERM 631W	Advanced Communications Skills I	
GERM 632	Advanced Communications Skills II	
<b>Electives <sup>2</sup></b>		
Select a minimum of three courses from the following Culture, Linguistics, and Literature category		
GERM 521	Major German Authors in English	

GERM 525	Introduction to German Culture and Civilization
GERM 586	Study in Berlin
GERM 728	Modern German Literature
GERM 732	Public Discourse and Current Affairs
GERM 795	Independent Study
GERM 797	Special Studies in German Language and Literature
GERM 798	Special Studies in German Language and Literature
LLC 535A	Professional Culture in European Union - - Case Study: Germany
LLC 540	Film History
LLC #551	Comparative Literature: Masterpieces of World Literature I
LLC 552	Comparative Literature: Masterpieces of World Literature II
LLC 560	Divine Madness and Dangerous Minds! - Mental Health in Literature and Art
LLC 791	Methods of Foreign Language Teaching

**Capstone<sup>3</sup>**

LLC 790	World Languages Capstone
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**Study Abroad**

Study abroad is a requirement for the German major, although an approved equivalent high-impact experience may be substituted for study abroad with a compelling justification.

<sup>1</sup> While the major may start counting as early as the Elementary I level (GERM 401), those who enter the major at a higher level (GERM 503, GERM 504, GERM 631W or GERM 632) will replace the courses they skip from the elementary, intermediate and advanced language category with additional courses from the electives category.

<sup>2</sup> More electives required if fewer language credits were completed due to proficiency level and placement.

Students are encouraged to take as many of the culture, linguistics, and literature elective in the German language as possible, but there is no limit on the number of classes conducted in English from electives category. Students taking no classes in the target language in a given semester will be strongly encouraged to enroll in one credit of conversation hour to maintain their language skills, and many of the courses taught in English will allow students the option to (or even require students to) do some work in the target language.

<sup>3</sup> Or approved equivalent 700-level course taken at UNH, approved study abroad equivalent, or approved high-impact experience (such as internship with a robust target language/culture component).

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

German majors may use two major-required courses to satisfy two Discovery category requirements.

## Student Learning Outcomes

Specific outcomes for Linguistic Competency The German Program applies the ACTFL Proficiency Guidelines to evaluate the linguistic competency of its graduates.

- **Speaking Proficiency:** Graduates of the program achieve a speaking proficiency of Intermediate High to Advanced Mid, with the majority of students achieving the level of Advanced Low. Students demonstrate an ability to speak clearly and with precision about personal, professional, and academic topics.
- **Writing Proficiency:** Graduates of the program achieve a written proficiency of Intermediate High to Advanced Mid, with the majority of students achieving the level of Advanced Low. Students demonstrate an ability to write clearly about professional or

academic topics, including introductory research in the area of literature and culture studies.

- **Listening Proficiency:** Graduates of the program achieve a listening proficiency of Advanced Low to Advanced High, with the majority of students achieving the level of Advanced Mid. Students demonstrate an ability to understand conventional as well as complex narratives that may use uncommon vocabulary or address difficult topics, such as theater plays in the target language.
- **Reading Proficiency:** Graduates of the program achieve a reading proficiency of Advanced Low to Advanced Mid. Students demonstrate an ability to read and interpret conventional quotidian texts as well as complicated narratives from the 18th-21st centuries, addressing a wide range of topics and genres, including literary, scientific, and cultural theory.

II. Specific outcomes for Integrative Knowledge Accompanying the acquisition of German language skills is the study of cultural phenomena, which provides German majors with a breadth of knowledge as found in a traditional liberal arts program. The acquired knowledge helps students engage with various additional fields of study across the UNH campus. Through transferable practice in abstract reasoning, critical examination, and constructive articulation, students extend their intellectual curiosity and learn to aspire to life-long learning.

- **Interpretive Reasoning** Particularly in the advanced courses that analyze art in its various forms – literature, film, painting, performance art, et. al. -, we (students and faculty alike) wrestle with interpretation and contextualization. In these courses, we are invested in humanistic inquiry and address tough questions – those concerning value and meaning, realms of knowledge ungraspable by natural science alone. Patterns of narrative, traditions of rhetoric, and history all inform the analyses of the cultural artifacts under study. By fostering the skills of close reading and listening, German majors become more articulate (both in German and their native language) and more proficient in analyzing and synthesizing the various types of knowledge.
- **Critical-Constructive Thinking** In the analysis of cultural artifacts, students learn to consider a multitude of perspectives. In addition to critical thinking skills, German majors become better versed at the constructive synthesis. Term papers and presentations in the target language are the culmination of linguistic comprehension and production as well as of interpretation and critique. In assembling such larger projects, German majors learn to construct well-informed arguments that are based on interpretation and scholarly critique.
- **Interdisciplinarity** Language study entails a wide range of applications, both personal and professional. It opens up possibilities for travel, genuine encounter, and the fostering of diplomatic and business relationships. German is of particular interest for political, economic, historical, and cultural reasons. With strengths in engineering and heavy manufacturing, Germany is of vital political-economic importance. Our students are encouraged to explore the connections in various scientific fields, the business world, and the humanities at large.
- **Transformative Education** Close mentoring of our German majors leads to relevant study-abroad opportunities in which our students make tangible use of their intellectual skillsets in the target culture. Of equal importance, however, is the notion that the actual application of the skillsets during the study abroad experience (but also in our classrooms) offers an opportunity for students to achieve meaningful personal growth by realizing their own cultural underpinnings. As a result of their study of German, some students choose to go to or to

return to Germany for work or travel. Thus, the study of German can result in transformative moments in the lives of our students.

## German Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/german>

### Description

The German minor is offered by the Department of Languages, Literatures and Cultures. This program is of interest to the following groups of students:

- Those who have a special interest in the German language, literature and culture.
- Those who intend to enter fields in which a background in foreign languages and cultures is desirable, such as business, engineering, the sciences, law, international affairs, government service and international service.

### Requirements

A minor consists of five courses in German numbered 503 and above.

Code	Title	Credits
Five electives selected from GERM 503 or above		20
<b>Total Credits</b>		<b>20</b>

The minor may include one course taught in English but not LLC 791 Methods of Foreign Language Teaching.

Students wishing to minor are expected to meet with a faculty member from the German program to discuss their course of study.

At the beginning of your final semester of study, you should fill out a [certification of completion of minor form](#), obtain the necessary signatures, and submit it to your Dean's Office.

## History (HIST)

The Department of History is one of the top history departments in the country, with an internationally recognized faculty in American, European, and World and Ancient history. History professors have won some of the most important prizes in the profession, and they often appear on television and other media outlets. But what really distinguishes the department's faculty is that we love to teach. Our courses cover a wide range of times, places and subjects, from ancient history to the history of the modern world.

History is a flexible major, which makes it a good choice for students who want to complete a double major in another discipline. Popular double majors include communication, justice studies, economics and international affairs.

The Education Department's 4+1 graduate program is also available to history majors. Students who complete that program receive their social studies teacher certification in five years and graduate with a B.A. and M.Ed. or M.A.T.

The Department offers a major and minor in history. We also administer an interdisciplinary minor, the social studies of science and technology.

The History Department at UNH has approximately 200 undergraduate majors; about 50 students graduate with a history major every year.

## Five-Year BA/MA Program

The History Department offers our majors an opportunity to complete an accelerated Master's Degree in history in as little as one additional year of study. Eligible seniors and juniors are able to take up to 12 credits in graduate history courses, which will count both toward the completion of the history B.A. requirements, and the history M.A. requirements. This accelerated option is available for both the standard track M.A. and the museum studies track.

To be eligible for the program students must have a GPA of 3.2 or higher. Students also must have completed 96 credits by the time they enter the accelerated M.A. program.

**Students should apply before April 10th of their junior year.** Students interested in applying must complete the [UNH graduate studies application](#). Applications will include two letters of recommendation, a cover letter, a writing sample and a UNH transcript. GRE scores are NOT required. Students should also submit a cover letter and an endorsement from a member of the History Department directly to the graduate director, Professor [David Bachrach](#) ([david.bachrach@unh.edu](mailto:david.bachrach@unh.edu)).

If you are interested in applying for the accelerated M.A. program, or would like additional information about the program, please contact Professor David Bachrach.

<https://cola.unh.edu/history>

### Programs

- [History Major \(B.A.\)](#) (p. 83)
- [History Major: Law 3+3 Option \(B.A.\)](#) (p. 85)
- [History Minor](#) (p. 88)
- [Social Studies of Science and Technology Minor](#) (p. 88)

### Faculty

<https://cola.unh.edu/history/faculty-staff-directory>

## History Major (B.A.)

<https://cola.unh.edu/history/program/ba/history>

### Description

The study of history gives students the analytical and communication skills necessary to succeed in today's workplace. It is also essential for being an informed citizen. The history major covers an array of subjects: the Roman Empire, modern U.S. foreign policy, China's Cultural Revolution, medieval Islam, the American Revolution and many, many others. Every major takes an introductory seminar on historical writing and analysis, and the major concludes with a senior colloquium that allows students to conduct in-depth research on a topic of their choosing. History is a flexible major. That makes history an excellent choice for students who plan to study abroad or who want to complete a double major in another discipline.



Students sometimes ask, “what can you do with a history major?” The answer is practically anything you want. History majors have attended some of the top graduate programs in the country. Many become teachers, but history majors also go into law, medicine and business, as well as careers in technology, international relations, politics and the media. Majoring in history prepares students well for the intellectual flexibility and ability to think outside the box that today’s job market demands.

## Undergraduate Awards for Majors

The Philip M. Marston Scholarship, an award of \$500, is available to students who are interested in colonial or New England history and have demonstrated financial need. There are course requirements for this scholarship. More details are available from the history office.

Each spring, the members of the departmental undergraduate committee choose history majors to receive the following prizes in history:

- The William Greenleaf Prize is given for the best senior colloquium paper. Award candidates must have a minimum grade-point average of 3.2 in history courses. Individuals may nominate themselves or may be nominated by faculty members.
- The Allen Linden Prize for the best senior history thesis is funded by the Signal Fund.
- The Charles Clark Prize is for the best essay or research paper submitted by a history major and is funded by the Signal Fund.

Phi Alpha Theta, the history honor society, is an international scholastic organization dedicated to promoting historical study on the undergraduate and graduate levels. Admission to the UNH Psi Pi chapter is open to undergraduates with an overall grade-point average of 3.0, a grade-point average of 3.4 or better in history courses, and completion of HIST 500 Introduction to Historical Thinking.

## Five-Year BA/MA Program

The History Department offers our majors an opportunity to complete an accelerated Master’s Degree in history in as little as one additional year of study. Eligible seniors and juniors are able to take up to 12 credits in graduate history courses, which will count both toward the completion of the history B.A. requirements, and the history M.A. requirements. This accelerated option is available for both the standard track M.A. and the museum studies track.

To be eligible for the program students must have a GPA of 3.2 or higher. Students also must have completed 96 credits by the time they enter the accelerated M.A. program.

**Students should apply before April 10th of their junior year.** Students interested in applying must complete the [UNH graduate studies application](#). Applications will include two letters of recommendation, a cover letter, a writing sample and a UNH transcript. GRE scores are NOT required. Students should also submit a cover letter and an endorsement from a member of the History Department directly to the graduate director, Professor David Bachrach at [david.bachrach@unh.edu](mailto:david.bachrach@unh.edu).

If you are interested in applying for the accelerated M.A. program, or would like additional information about the program, please contact Professor David Bachrach.

## Requirements

To complete a major in history, students must take ten (10) 4-credit history courses or their equivalent. Students who enter the University as history majors, or who declare a major in history, should take the first required course, HIST 500 Introduction to Historical Thinking, as soon as possible. To declare a major in history, students must have completed or be enrolled in two history courses. HIST 500 Introduction to Historical Thinking is a prerequisite for the second required course, HIST 797 Colloquium, which fulfills the Discovery Program capstone requirement for history majors and is taken during the senior year. Students should consult the list of topics for HIST 797 Colloquium advertised each semester.

## History Major Requirements

Code	Title	Credits
HIST 500	Introduction to Historical Thinking	4
HIST 797	Colloquium	4
At least eight (8) additional courses, following the guidelines below. No more than two (2) may be at the 400-level and a minimum of three (3) must be at the 600-level or above.		32
<b>Total Credits</b>		<b>40</b>

A student’s program of study must include two parts:

1. An area of specialization. A student must select at least four courses to serve as an area of specialization within the major. Up to two courses (each four credits or their equivalent) in the area of specialization may be taken in other departments; such courses must be 500-level or above and have the approval of the student’s advisor. The area of specialization may be in a nation, region, a time period, global history, or one of the following:
  - \* ancient and pre-modern worlds
  - \* cultural and intellectual history
  - \* empires and colonialism
  - \* international and diplomatic history
  - \* politics, law, and government
  - \* race, gender, and sexuality
  - \* religion
  - \* revolution and social change
  - \* science, technology, medicine, and the environment
  - \* war and society
  - \* world economy
  - \* design your own (with advisor’s permission)
2. Complementary courses. A student must select, in consultation with his or her advisor, at least three history courses in fields outside the area of specialization, chosen to broaden his or her understanding of the range of history. Each major should take at least one course from each of Groups I, II, and III. Group I contains all American history courses, Group II contains all European history courses, and Group III contains all other history courses.

The program must be planned in consultation with an advisor. A copy of the program, signed by the advisor, must be placed in a student’s file no later than the second semester of the student’s junior year. Courses at the 700-level will be judged by the advisor as to their applicability for area of specialization. The program may be modified with the advisor’s approval.

Only one HIST 695 Independent Study may be used to fulfill the 600-level requirement, and no more than two Independent Study courses may count toward the ten-course requirement. No more than two 400-level courses may be counted toward the major requirements. Students must

receive at least a C in HIST 500 Introduction to Historical Thinking and at least a C- in the other nine courses. Majors must maintain a 2.0 or better in all history courses.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of Arts (B.A.) candidates must also satisfy the foreign language proficiency requirement.

History majors may use history courses to fulfill Discovery category requirements but may not double-count history courses for major and Discovery category requirements.

History majors must satisfy the language requirement for the B.A. degree in an international language that they could use for historical research. That list includes Arabic, Chinese, French, German, Greek, Italian, Japanese, Latin, Portuguese, Russian, and Spanish. Students may petition the department curriculum committee for exceptions.

For transfer students, a minimum of five (5) of the semester courses used to fulfill the major requirements must be taken at the University. One upper-level course may be transferred to satisfy the requirement that a major must take at least three courses numbered 600 or above. Transfer students must complete both HIST 500 Introduction to Historical Thinking (or its equivalent) and HIST 797 Colloquium.

Students intending further work in history beyond the bachelor's degree are urged to take HIST 775 Historical Methods.

Students intending to major in history should consult with the department administrative assistant. Suggested programs for students with special interests or professional plans are available in the department office.

## Student Learning Outcomes

History students can:

### Build historical knowledge.

- Gather and contextualize information in order to convey both the particularity of past lives and the scale of human experience.
- Recognize how humans in the past shaped their own unique historical moments and were shaped by those moments.
- Develop a body of historical knowledge with breadth of time and place—as well as depth of detail—in order to discern context.
- Distinguish the past from our very different present.

### Develop historical methods.

- Recognize history as an interpretive account of the human past—one that historians create in the present from surviving evidence.
- Collect, sift, organize, question, synthesize, and interpret complex material.
- Practice ethical historical inquiry that makes use of and acknowledges sources from the past as well as the scholars who have interpreted that past.
- Develop empathy toward people in the context of their distinctive historical moments.

**Recognize the provisional nature of knowledge, the disciplinary preference for complexity, and the comfort with ambiguity that history requires.**

- Welcome contradictory perspectives and data, which enable us to provide more accurate accounts and construct stronger arguments.
- Describe past events from multiple perspectives.
- Explain and justify multiple causes of complex events and phenomena using conflicting sources.
- Identify, summarize, appraise, and synthesize other scholars' historical arguments.

**Apply the range of skills it takes to decode the historical record because of its incomplete, complex, and contradictory nature.**

- Consider a variety of historical sources for credibility, position, perspective, and relevance.
- Evaluate historical arguments, explaining how they were constructed and might be improved.
- Revise analyses and narratives when new evidence requires it.

**Create historical arguments and narratives.**

- Generate substantive, open-ended questions about the past and develop research strategies to answer them.
- Craft well-supported historical narratives, arguments, and reports of research findings in a variety of media for a variety of audiences.

**Use historical perspective as central to active citizenship.**

- Apply historical knowledge and historical thinking to contemporary issues.
- Develop positions that reflect deliberation, cooperation, and diverse perspectives.

## History Major: Law 3+3 Option (B.A.)

<https://cola.unh.edu/history/program/ba/history-major-law-33-option>

### Description

The Law 3+3 option offers highly motivated UNH undergraduates the opportunity to complete their bachelor's degree (B.A.) with a history major and their law degree (J.D.) at UNH in six years, rather than the usual seven years. It promises significant savings in both time and money. Students apply to the UNH Law School in their junior year (by Jan. 1), following the approved process below, and after taking the LSAT exam. If admitted, undergraduates begin their first year of law school in their senior year. The credits earned upon successful completion of the law school courses will be applied to both the J.D. degree and as elective courses for the B.A. degree. After four years, students receive a B.A. with a history major. After six years, students, having completed all law school requirements successfully, will receive their J.D.

### Eligibility and Admission Process

1) **Phase I: applying to the Law 3+3 option.** Students apply to the program either when they submit their applications to UNH by selecting the History/J.D. option on the online application, or after they are admitted, applying directly to the History Department's History/Law 3+3 Committee. In both cases, undergraduate applicants must fulfill the general requirements for admission to the History major.

a. Students applying at time of admission to UNH will typically present the following high school (HS) credentials:

- a 3.5 GPA in HS
- a rigorous HS curriculum defined as the following:
  - 4 years of college prep (CP) or higher English
  - 4 years of CP or higher mathematics
  - 4 years of CP or higher social studies/history
  - Completed at least level 3 of a foreign language
  - 3 or more years of CP or higher laboratory sciences
- a score of 1200 or better (combined Math and Verbal) on the SAT or a 29 on the ACT)

b. Currently enrolled UNH students applying to the program must:

- have a 3.5 GPA in college courses at time of application.
- The History/Law 3+3 Committee governing admission to the program will also consider past SAT scores, maturity, and ability to complete a highly demanding program of study based on performance thus far.

For both groups, it is important to note that satisfying these requirements does not guarantee admission to this program. The review process is holistic (meaning all parts of the application carry weight and influence the final decision) and other components of the application will influence any admission decisions. Available space will also influence who is admitted to the program and how many students can be accepted.

2) **Phase 2: applying to UNH Law School.** To be eligible, students must:

- Complete all Discovery and major requirements, and accrue at least 98 credits before beginning law school in their senior year
- Maintain at least a 3.5 grade point average (including transfer credits) at time of application to law school, and at end of junior year
- Take the LSAT no later than December of the final undergraduate year (i.e. the junior year) and have a **score of 157 or above**
- Submit the law school application through the Law School Admissions Council by Jan. 1 of the calendar year in which the student wishes to enroll in law school
- If, for some reason, students are not admitted to UNH Law, they will complete their final, fourth year at UNH, following the typical undergraduate program.

## Requirements

Students in the History/Law 3+3 option complete the requirements of the history major. See the Degree Plan for the recommended path through the major.

To complete a major in history, students must take ten (10) 4-credit history courses or their equivalent. Students who enter the University as history majors, or who declare a major in history, should take the first required course, HIST 500 Introduction to Historical Thinking, as soon as possible. To declare a major in history, students must have completed or be enrolled in two history courses. HIST 500 Introduction to Historical Thinking is a prerequisite for the second required course, HIST 797 Colloquium, which fulfills the Discovery Program capstone requirement for history majors and is taken during the senior year. Students should consult the list of topics for HIST 797 Colloquium advertised each semester.

## History Major Requirements

Code	Title	Credits
HIST 500	Introduction to Historical Thinking	4
HIST 797	Colloquium	4
At least eight (8) additional courses, following the guidelines below. No more than two (2) may be at the 400-level and a minimum of three (3) must be at the 600-level or above.		32
<b>Total Credits</b>		<b>40</b>

A student's program of study must include two parts:

1. An area of specialization. A student must select at least four courses to serve as an area of specialization within the major. Up to two courses (each four credits or their equivalent) in the area of specialization may be taken in other departments; such courses must be 500-level or above and have the approval of the student's advisor. The area of specialization may be in a nation, region, a time period, global history, or one of the following:
  - \* ancient and pre-modern worlds
  - \* cultural and intellectual history
  - \* empires and colonialism
  - \* international and diplomatic history
  - \* politics, law, and government
  - \* race, gender, and sexuality
  - \* religion
  - \* revolution and social change
  - \* science, technology, medicine, and the environment
  - \* war and society
  - \* world economy
  - \* design your own (with advisor's permission)
2. Complementary courses. A student must select, in consultation with his or her advisor, at least three history courses in fields outside the area of specialization, chosen to broaden his or her understanding of the range of history. Each major should take at least one course from each of Groups I, II, and III. Group I contains all American history courses, Group II contains all European history courses, and Group III contains all other history courses.

The program must be planned in consultation with an advisor. A copy of the program, signed by the advisor, must be placed in a student's file no later than the second semester of the student's junior year. Courses at the 700-level will be judged by the advisor as to their applicability for area of specialization. The program may be modified with the advisor's approval.

Only one HIST 695 Independent Study may be used to fulfill the 600-level requirement, and no more than two Independent Study courses may count toward the ten-course requirement. No more than two 400-level courses may be counted toward the major requirements. Students must receive at least a C in HIST 500 Introduction to Historical Thinking and at least a C- in the other nine courses. Majors must maintain a 2.0 or better in all history courses.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of Arts (B.A.) candidates must also satisfy the foreign language proficiency requirement.

History majors may use history courses to fulfill Discovery category requirements but may not double-count history courses for major and Discovery category requirements.

History majors must satisfy the language requirement for the B.A. degree in an international language that they could use for historical research. That list includes Arabic, Chinese, French, German, Greek,

Italian, Japanese, Latin, Portuguese, Russian, and Spanish. Students may petition the department curriculum committee for exceptions.

For transfer students, a minimum of five (5) of the semester courses used to fulfill the major requirements must be taken at the University. One upper-level course may be transferred to satisfy the requirement that a major must take at least three courses numbered 600 or above. Transfer students must complete both HIST 500 Introduction to Historical Thinking (or its equivalent) and HIST 797 Colloquium.

## Degree Plan

### Undergraduate Courses

Below is a suggested course outline. There might be other possible plans.

**NOTE:** Students should **plan early and work closely with their advisors** if they want to pursue the fast track program. It may be possible to include study abroad and other programs, if desired, but only with careful planning. They are also strongly encouraged to consult with the pre-law advisor on campus (Paula DiNardo, [paula.dinardo@unh.edu](mailto:paula.dinardo@unh.edu), 603-862-2064.)

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
Discovery Course		4
Discovery Course		4
History 400-level Course		4
Foreign Language Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Discovery Course		4
Discovery Course		4
History 500-level Course (may be taken in Sem. 1 of sophomore year)		4
Foreign Language or Elective Course (if Foreign Language is completed in one semester)		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
Discovery Course		4
Discovery Course		4
History 500-level Course		4
History 600-level Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Discovery Course		4
Discovery Course		4
History 500-level Course		4
History 600-level Course		4
PLUS one 2-credit course or two 1-credit courses. LAW 475 Getting Ready to Succeed in Law School is recommended (can be taken fall semester of junior year instead). <sup>1</sup>		2
<b>Credits</b>		<b>18</b>

### Third Year

#### Fall

Discovery Course	4
Discovery Course	4
History 600-level Course	4
History Course Elective any level (no more than two 400-level courses may be counted towards major)	4
If not taken sophomore year, one 2-credit course or two 1-credit courses must be taken. LAW 475 Getting Ready to Succeed in Law School is recommended. <sup>1</sup>	

**Credits** **16**

#### Spring

HIST 797 Colloquium	4
History Elective Course any level (no more than two 400-level courses may be counted towards major)	4
Elective Course	4
Elective Course	4

**Credits** **16**

**Total Credits** **98**

### TOTAL UNDERGRADUATE CREDITS REQUIRED - 98 cr.

40 total Discovery Program credits; 40 history credits; 4-8 foreign language credits; 8-12 elective credits; and two 1-credit courses OR one 2-credit course<sup>1</sup>. In addition to fulfilling the Discovery Program and history major requirements, students need to fulfill the Bachelor of Arts foreign language requirement and take four (4) writing intensive courses. HIST 500 Introduction to Historical Thinking and HIST 797 Colloquium fulfill two (2) WI courses.

<sup>1</sup> **Clarification:** to earn 98 credits in 3 years, **students will need to take one (1) 2-credit course or two (2) 1-credit courses**. The 2-credit course, LAW 475 Getting Ready to Succeed in Law School, is recommended and is best taken in the spring semester of sophomore year or the fall semester of the junior year as it will include LSAT prep. Other 2-credit options include JUST 550 Mock Trial and JUST 551 Mock Trial. For other possible 1-2 credit courses, see the Time & Room Schedule. The 1-2 credit courses can be completed at any point in your first 3 years at UNH-Durham. You can also complete them during the January term [see, e.g., THDA 531 The London Experience: Discovery, a 2-credit study abroad program] or in the summer.

## Law School Course Outline

### Fourth Year/First Year Law (31 credits)

Course	Title	Credits
<b>Fourth Year</b>		
<b>Fall</b>		
LGP 920	Contracts	3
LGP 909	Civil Procedure	4
LGP 960	Torts	3
LSK 919	Legal Analysis and Writing 1	2
LSK 900	Legal Research and Information Literacy	2
LGP 900	The Legal Profession	1
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
LGP 969	Article II Sales	2

LGP 916	Constitutional Law	4
LGP 952	Property	4
LSK 920	Legal Analysis and Writing 2	3
LIP 944 or LPI 912	Fundamentals of Intellectual Property or Fundamentals of Law Practice	3
Credits		16
Total Credits		31

LAW SCHOOL COURSES

After completing the first year courses (above), the schedule and track of the second and third years of law school are directed by each student with careful advising from the law faculty. The following summarizes the required curriculum and bar-recommended curriculum. 85 credits are required for graduation.

Required courses include:

- Administrative Process
- Criminal Procedure
- Professional Responsibility
- Upper Level Writing Course
- Upper Level Skills Course

Bar-recommended courses include:

- Personal Taxation
- Business Associations
- Wills, Trusts, and Estates
- Evidence

Student Learning Outcomes

History students can:

Build historical knowledge.

- Gather and contextualize information in order to convey both the particularity of past lives and the scale of human experience.
- Recognize how humans in the past shaped their own unique historical moments and were shaped by those moments.
- Develop a body of historical knowledge with breadth of time and place—as well as depth of detail—in order to discern context.
- Distinguish the past from our very different present.

Develop historical methods.

- Recognize history as an interpretive account of the human past—one that historians create in the present from surviving evidence.
- Collect, sift, organize, question, synthesize, and interpret complex material.
- Practice ethical historical inquiry that makes use of and acknowledges sources from the past as well as the scholars who have interpreted that past.
- Develop empathy toward people in the context of their distinctive historical moments.

Recognize the provisional nature of knowledge, the disciplinary preference for complexity, and the comfort with ambiguity that history requires.

- Welcome contradictory perspectives and data, which enable us to provide more accurate accounts and construct stronger arguments.

- Describe past events from multiple perspectives.
  - Explain and justify multiple causes of complex events and phenomena using conflicting sources.
  - Identify, summarize, appraise, and synthesize other scholars’ historical arguments.
- Apply the range of skills it takes to decode the historical record because of its incomplete, complex, and contradictory nature.

- Consider a variety of historical sources for credibility, position, perspective, and relevance.
- Evaluate historical arguments, explaining how they were constructed and might be improved.
- Revise analyses and narratives when new evidence requires it.

Create historical arguments and narratives.

- Generate substantive, open-ended questions about the past and develop research strategies to answer them.
- Craft well-supported historical narratives, arguments, and reports of research findings in a variety of media for a variety of audiences.

Use historical perspective as central to active citizenship.

- Apply historical knowledge and historical thinking to contemporary issues.
- Develop positions that reflect deliberation, cooperation, and diverse perspectives.

History Minor

<https://cola.unh.edu/history/program/minor/history>

Description

The study of history is an essential element of the liberal education. Studying history provides both an awareness of the past and the tools to evaluate and express one’s knowledge.

Requirements

A minor in history consists of 20 semester credits with C- or better and at least a 2.0 grade-point average in courses that the Department of History approves.

Code	Title	Credits
Five elective HIST courses		20
Total Credits		20

- Courses taken on a pass/fail basis may not be used for the minor.
- No more than 12 credits in 400-level courses may be used for this minor.
- For transfer students, no more than two transfer courses, or 8 transfer credits, may be used toward the minor.

Social Studies of Science and Technology Minor

<https://cola.unh.edu/history/program/minor/social-studies-science-technology>



## Description

How are our lives being changed by technology? Why is science so influential in our society? Is modern science superior to traditional ways of knowing nature? Are science and technology doing more harm than good? The minor in social studies of science and technology enables students to seek answers to such questions through the perspectives of the humanities and social sciences. In this minor, students select courses from a range of disciplines, including anthropology, history, communication, sociology and philosophy, all of which shed light on the role of science and technology in modern society.

The minor presupposes no specialized scientific background and may be combined with any undergraduate major. Students must pass five 4-credit courses, chosen from the list of approved courses, with a grade of C- or better. No more than three courses should be chosen from any one department.

Students interested in taking the minor should contact the coordinator, **Fredrik Meiton** ([Fredrik.Meiton@unh.edu](mailto:Fredrik.Meiton@unh.edu)), Department of History, Horton Social Science Center.

## Requirements

To complete a minor in social studies of science and technology, students must complete five courses (20 credits) with a grade of C- or better, choosing no more than three courses from a single department.

Code	Title	Credits
Select five courses from the following:		20
ANTH 440A	Honors/Medicine and Culture: Science, Technology and the Body	
BIOL 444A	Biotechnology and Society	
CEE 520	Environmental Pollution and Protection: A Global Context	
CHE 410	Energy and Environment	
CMN 696W	Seminar in Media Studies <sup>1</sup>	
CMN 772	Seminar in Media Theory (topic: Critical Approaches to New Media)	
ENGL 415C	Literature and Medicine	
GEOG 405	There Is No Planet B	
GEOG 590	Field Research <sup>1</sup>	
GEOG 670	Climate and Society	
HIST 425	Foreign Cultures (topic: Energy and Society: A Global History)	
HIST 440B	Honors/Medicine, Society, Science, and the Law: Who Makes Your Health Care Decisions?	
HIST 440G	Honors/Revolutions in Science	
HIST 498	Explorations of Historical Perspectives (topic: History of Animals)	
HIST 521	Origins of Modern Science	
HIST 522	Science in the Modern World	
HIST 595	Explorations <sup>1</sup>	
HIST 600	Explorations (topic: Oil and Water of the Middle East)	
HIST 618	American Environmental History	
HIST 621	History of American Thought <sup>1</sup>	
HIST #622	History of American Thought <sup>1</sup>	
HIST 654	Topics in History of Science	
HIST 690	Seminar: Historical Expl <sup>1</sup>	
PHIL 424	The Future of Humanity: Science, Technology, and Society	
PHIL 435	Human Nature and Evolution	
PHIL 447	Artificial Intelligence, Robots, and People	
PHIL 450	Environmental Ethics	
PHIL 630	Neuroscience and Philosophy	
PHIL 780	Special Topics <sup>1</sup>	
POLT #444	Politics and Policy in a Warming World	
POLT 751	Comparative Environmental Politics and Policy	
PSYC 571	Pioneers of Psychology	
PSYC 791W	Special Topics <sup>1</sup>	

SOC 565

Environment and Society

Total Credits

20

<sup>1</sup> with approval of topic by the coordinator

## Homeland Security

- [Homeland Security Major \(B.S.\)](#) (p. 89)

## Homeland Security Major (B.S.)

<https://manchester.unh.edu/program/bs/homeland-security-major>

## Description

Fully available on both Durham and Manchester campuses, the UNH Homeland Security program is built upon the expertise and advice of subject matter experts from around the Nation. Its proven curriculum includes practical experiences, service and experiential learning opportunities, and consulting opportunities that together empower students to manage programs and to lead people. HLS provides students with an impressive array of tools including how to do strategic planning, how to build emergency management and continuity plans, how to perform an organization-wide security and risk assessments, and how to design and evaluate exercises. The 4-year curriculum is flexible and incorporates the ability for students to take 40 credits of "breadth" as either two minors, a double major, or a dual degree. Students transferring with an associate's degree automatically satisfy the breadth requirement. Ultimately, the Homeland Security program empowers students to be successful on the job market or in graduate school.

Homeland security is a broad-field, applied liberal arts degree teaching students critical thinking, writing and analysis skills. As a result, HLS creates several graduate school opportunities and opens students to dozens of career paths in both the public sector (i.e., local, state or federal government), and the private sector or the military. Students will find diverse and rewarding career opportunities in cyber security/information assurance, intelligence analysis, civil or Foreign Service, diplomatic security, law enforcement at the local, state or federal levels, emergency and disaster management, immigration, border and transportation security, policy making, corporate security, risk management, critical infrastructure protection, human security and more.

## Requirements

Students must complete 128 credits to graduate. All courses within the major, fully available on both Durham and Manchester campuses, must be completed with a grade of C- or above and an overall GPA of 2.0 or above in major courses.

Code	Title	Credits
<b>Core Major Requirements</b>		
HLS 410	Introduction to Homeland Security	4
HLS 415	Fundamentals of Corporate Security	4
HLS 455	Introduction to Cybersecurity	4
HLS 480	Professional Skills in Homeland Security	4
HLS 505	Political Violence and Terrorism	4
HLS 510	Fundamentals of Emergency Management	4
HLS 515	Critical Infrastructure Security and Resilience	4
HLS 520	Homeland Security Law and Policy	4
HLS 580	Environmental and Human Security	4
JUST 501	Research Methods	4

or PSYC 502	Research Methods in Psychology	
or PS 595	Research for Political and Policy Action	
HLS 650	Intelligence Systems and Structures in Homeland Security	4
HLS 760	Strategic Planning and Decision Making	4
HLS 770	Internship in Homeland Security	4
or HLS 799	Senior Thesis in Homeland Security	
HLS 790	Capstone in Homeland Security	4
<b>Total Credits</b>		<b>56</b>

### Breadth Requirement

In addition to the core HLS courses, students must complete 40 additional credits from either Durham or Manchester campuses, or both, in one of five ways:

1. two minors;
2. a minor and a "coherent block"/self-designed concentration (i.e., ROTC credits, or credits earned from another major). The coherent block needs to be approved by the HLS coordinator;
3. a second major or a UNH dual degree;
4. an associate's degree transferred in to UNH;
5. some other combination of coursework with consent of the HLS program coordinator.

For additional information, contact [James Ramsay](mailto:james.ramsay@unh.edu) ([james.ramsay@unh.edu](mailto:james.ramsay@unh.edu)), HLS Program Coordinator, or the [UNH Manchester Office of Admissions](mailto:unhm.admissions@unh.edu) ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)) at (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. Undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ENGL 401	First-Year Writing	4
HLS 410	Introduction to Homeland Security	4
Discovery Course		4
Breadth Area Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
PSYC 402	Statistics in Psychology	4
HLS 415	Fundamentals of Corporate Security	4
HLS 455	Introduction to Cybersecurity	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
PSYC 502 or PS 595	Research Methods in Psychology or Research for Political and Policy Action	4
HLS 480	Professional Skills in Homeland Security	4
HLS 505	Political Violence and Terrorism	4

<b>Breadth Area Course</b>		<b>4</b>
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
HLS 510	Fundamentals of Emergency Management	4
HLS 515	Critical Infrastructure Security and Resilience	4
<b>Breadth Area Course</b>		<b>4</b>
<b>Discovery Course</b>		<b>4</b>
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
HLS 520	Homeland Security Law and Policy	4
HLS 650	Intelligence Systems and Structures in Homeland Security	4
<b>Discovery Course</b>		<b>4</b>
<b>Breadth Area Course</b>		<b>4</b>
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
HLS 580	Environmental and Human Security	4
HLS 770	Internship in Homeland Security	4
<b>Discovery Course</b>		<b>4</b>
<b>Breadth Area Course</b>		<b>4</b>
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
HLS 760	Strategic Planning and Decision Making	4
<b>Breadth Area Course</b>		<b>4</b>
<b>Discovery Course</b>		<b>4</b>
<b>Breadth Area Course</b>		<b>4</b>
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
HLS 790	Capstone in Homeland Security	4
<b>Breadth Area Course</b>		<b>4</b>
<b>Breadth Area Course</b>		<b>4</b>
<b>Breadth Area Course</b>		<b>4</b>
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>128</b>

## Student Learning Outcomes

- Conduct research and work collaboratively to deliver professional, written papers, presentations, and briefs.
- Demonstrate knowledge of contemporary or emergent threats, challenges or issues including natural manmade and technological hazards.
- Apply knowledge and tools gained throughout the HLS program to complete a capstone project.
- Complete an internship in HLS (or a senior thesis in HLS).
- Recognize the concepts of ethics and professionalism in the homeland security enterprise.

## Humanities (HUMA)

The humanities program examines the fundamental questions and issues of human civilization. Through studying diverse texts in the arts, music, literature, history, philosophy and science, students seek answers to questions that thoughtful human beings must address in the course of their lives. Whether these questions come from Socrates (What is justice?), from Sir Thomas More (What is obligation to God?), from Raphael (What is beauty?), from Newton (What are the laws of nature?) or from Martin Luther King, Jr. (What is freedom?), they direct our attention to enduring human concerns and to texts that have suggested or illustrated the most profound and powerful answers. The humanities program is housed in the Department of Classics, Humanities and Italian Studies.

<https://cola.unh.edu/classics-humanities-italian-studies>

### Programs

- [Humanities Dual Major](#) (p. 91)
- [Humanities Minor](#) (p. 91)

### Faculty

<https://cola.unh.edu/classics-humanities-italian-studies/faculty-staff-directory>

## Humanities Dual Major

<https://cola.unh.edu/classics-humanities-italian-studies/program/ba/humanities-dual-major>

### Description

The dual major in humanities is structured in such a way that students can focus on a chosen primary major while taking advantage of the humanities program curriculum and its emphasis on analytical writing, critical thinking and well-rounded interdisciplinary cultural knowledge. Students combine our curriculum with another, disciplinary major that allows them to pursue a narrower field of study in some depth. The dual major in interdisciplinary humanities offers students a set of tools and skills so they can understand and forge our 21st century world. Its curriculum provides structure, progression, and rigor. Citizens of the 21st century need to know how to analyze texts and navigate cultures. That is why the humanities are essential to the lives of educated people.

### Requirements

The humanities dual major consists of a minimum of 32 credits of academic work, with a minimum grade of C-. Students cannot declare the dual major until they have declared a primary major. They must have a GPA of 2.75 to be accepted to the dual major program.

Code	Title	Credits
<b>Core Requirements: Four Core Courses (16 Credits)</b>		
HUMA 500	Critical Methods in the Humanities <sup>1</sup>	
Select EITHER two of the following team-taught courses		
HUMA 510A/510B/510C/510D	Ancient Humanities: Cultures and Empires	

HUMA 511A/511B/511C	Medieval Humanities: Rise of Global Empires
HUMA 512A/512B/512C/512D	Modern Humanities: Colonies, Constitutions, and Capital
HUMA 513A/513B/513C/513D	Global Humanities
OR one team-taught course PLUS	
HUMA 401/401W	Introduction to the Humanities
<b>Discovery Program Capstone</b>	
Select EITHER	
HUMA 700	Seminar (preferably during junior or senior year) <sup>2</sup>
OR	
HUMA 798 & HUMA 799	Research Seminar and Research Seminar <sup>3</sup>
<b>Additional Requirements (16 Credits)</b>	
Select four area courses in HUMA (500 level or above) from at least three of five areas of disciplinary focus <sup>4</sup>	

- <sup>1</sup> Students will be made acquainted with the methods and technology required for research in humanities.
- <sup>2</sup> This seminar provides an opportunity for in-depth reading, viewing, and/or listening to texts and artifacts. The emphasis is on the multiple perspectives and methodologies that can be brought to bear upon these works from several humanistic disciplines.
- <sup>3</sup> Each student participates in the research tutorial (for a total of 6 credits) throughout the senior year. The tutorial provides a context within which students may discuss and receive direction in the course of completing a major research paper, the senior thesis. At the end of the second semester, students present their research to the faculty and their fellow students.
- <sup>4</sup> Selected with the advice and approval of each student's major adviser or the program coordinator. These offerings should bear some relation to the student's particular interests and senior research paper, as seems appropriate in each individual case.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

### Student Learning Outcomes

- Demonstrate the ability to find and evaluate primary and secondary source material necessary for humanistic research.
- Demonstrate the ability to propose, conduct, and present interdisciplinary humanistic research in a written, oral, or other forms. Identify and interpret creative and cultural forms from a given historical period.
- Compare and contrast the meanings of major texts and other significant cultural productions.

## Humanities Minor

<https://cola.unh.edu/classics-humanities-italian-studies/program/minor/humanities>

### Description

There has never been a more exciting time to be human—or has there? What exactly does it mean to be a human being in the twenty-first century? How can you get the most out of your humanity? Find out by

minoring in the humanities. It can help prepare you for a life you may not have considered, in ways you've never imagined.

## Requirements

The humanities minor consists of the following courses:

Code	Title	Credits
Select two courses (8 credits) of the following sequence:		
HUMA 510A/510B/510C/510D	Ancient Humanities: Cultures and Empires	8
HUMA 511A/511B/511C	Medieval Humanities: Rise of Global Empires	
HUMA 512A/512B/512C/512D	Modern Humanities: Colonies, Constitutions, and Capital	
HUMA 513A/513B/513C/513D	Global Humanities	
Select two courses (8 credits) from other humanities program courses, one of which should be at the 600 level		
HUMA 700	Seminar (or another approved course)	4
<b>Total Credits</b>		<b>20</b>

## International Affairs (IA)

The International Affairs Program offers undergraduate students the opportunity to pursue a dual major or a minor in international affairs (IA). The dual major and minor pair with any primary major in any college at UNH. The IA program adds an international dimension to the primary major and expands career opportunities in a global, interdependent world. IA core courses are interdisciplinary and are taught by faculty with expertise in international studies from around the university. Required IA courses and electives help students appreciate complex interconnections among nations and peoples and equip them with the analytical skills, cultural competence and global perspectives needed for careers in the public, private and nonprofit sectors.

<https://cola.unh.edu/international-affairs>

## Programs

- [International Affairs Dual Major](#) (p. 92)
- [International Affairs Minor](#) (p. 94)

## Faculty

<https://cola.unh.edu/international-affairs/people>

## International Affairs Dual Major

<https://cola.unh.edu/international-affairs/program/international-affairs-dual-major>

## Description

The international affairs (IA) dual major can complement and add a global dimension to any other major at UNH. The completion of the dual major requires no additional credits for graduation beyond the 128 required of all UNH students. All coursework required for international affairs must be completed with a grade of C or better. For more information, contact the [international affairs senior program assistant](#) ([michael.cole@unh.edu](mailto:michael.cole@unh.edu)).

Students who wish to declare the international affairs dual major must earn a C or better in [IA 401](#), have declared a primary major, and have a 2.5 cumulative grade-point average. Students are expected to maintain at least a 2.5 grade-point average, the minimum required for study abroad at UNH.

Note:

Participation in the international affairs dual major and minor is open to ALL students at UNH. For instance, the Department of Civil Engineering has developed a dual-major program in civil engineering and international affairs. Students do not need to have pre-existing skills in a foreign language before coming to UNH. For more information about the civil engineering/IA program, contact Ray Cook at [ray.cook@unh.edu](mailto:ray.cook@unh.edu).

## Requirements

Code	Title	Credits
<b>Required Core Courses</b>		
IA 401	International Perspectives	4
IA 501	Global Issues in International Affairs	4
IA 701	Exploring International Challenges and Opportunities	4
Select one of the following:		
ECON 401	Principles of Economics (Macro)	
ECON 402	Principles of Economics (Micro)	
EREC 411	Environmental and Resource Economics Perspectives	
International Affairs Language Requirement <sup>1</sup>		variable
International Experience - Study Abroad <sup>2</sup>		variable
<b>Electives - see list below</b>		
Select one course from each category list, plus one more course from either category (3 courses total):		12
Politics, Culture, & History		
Science, Environment, Economy, & Health		

### <sup>1</sup> International Affairs Language Requirement

IA majors must demonstrate functional reading, writing, and speaking ability equivalent to a second-year, second-semester college level (504). Students may take placement tests to establish proficiency. Native second language speakers are exempt from this requirement - speak to an IA advisor. Language study may be pursued at UNH; through study abroad in the summer, J-term, or academic year; or through transfer credits from other institutions with the permission of an IA advisor.

### <sup>2</sup> International Experience - Study Abroad

Minimum of eight weeks. The IA international experience is typically conducted in a country or region that uses the student's second language. Students may pursue their international experience elsewhere after consultation with an IA advisor.

The international experience (typically completed in the junior year) is completed before taking IA 701 in the senior year. Students may spend an academic year, semester, or summer in an academic institution, in an internship with a private or public organization, or in purposeful travel/research. Students must meet with the Study Abroad Advisors at the [Global Education Center](#) to plan their international experience, typically a year in advance of study abroad.

## Electives (three total)

IA Dual Majors take three electives, one course from each category list: Politics, Culture, and History and from Science, Environment, Economy and Health. IA dual majors choose their 3<sup>rd</sup> elective from either list.

IA electives are offered across the university and may be used to fulfill Discovery, Honors Program and/or other minor requirements. Up to 8 credits may be double counted between your primary major and IA. Additional courses taken in the primary major may count for IA if

these courses do not count toward your primary major requirements. Electives may be taken at UNH, on the international experience, or transferred from another university with the permission of your IA advisor.

Code	Title	Credits
<b>Politics, Culture, &amp; History Electives</b>		
ANTH 411	Global Perspectives on the Human Condition: An Introduction to Anthropology (or ANTH 411H)	
or ANTH 411W	Global Perspectives on the Human Condition: An Introduction to Anthropology	
ANTH 500	Peoples and Cultures of the World (area specific) <sup>1</sup>	
ANTH 501	World Archaeological Cultures	
ANTH #616	Religion, Culture, and Society	
ANTH 640	Anthropology of Islam: Muslims' Everyday Lives in Contemporary Communities	
ANTH 697	Special Topics	
ANTH 750	Islam and Gender: Gendered Lives of Muslims	
ARTH 674	Greek Art and Architecture	
ARTH 675	Roman Art and Architecture	
ARTH 678	Romanesque and Gothic Art	
ARTH 679	Northern Renaissance Art I	
ARTH 680	Iconoclasm and Collecting: The Art of Early Modern Northern Europe	
ARTH 681	Early Renaissance Art	
ARTH 682	The High Renaissance	
ARTH 684	Baroque Art in Northern Europe	
ARTH 688	Histories of Late 19th & 20th Century European Modernism	
ARTH 695	Topics in Art History	
CHIN 425	Introduction to Chinese Culture	
CHIN 521	What does it Mean to be Modern? Lenses of Modern Chinese Literature and Film	
CLAS 403	Introduction to Greek Civilization	
CLAS 404	Introduction to Roman Civilization	
CLAS 510	Building Rome	
CLAS 520D	Classical Society, Politics and Ethics: Greek and Roman Religion	
CLAS 550A	Identities and Difference in the Ancient World: Greek and Roman Women	
FREN 525	A Road Trip Through France: Baguette, Brie, Bordeaux, and Beyond	
FREN 651	Love, War, and Power in French Literature	
FREN 652	Greatest Hits of French	
FREN 676	Topics in Francophone Culture	
FREN #677	France in the European Union	
FREN 765	Rebellion and Upheaval in 18th-Century Literature and Culture	
GCHS 710	Conflict & Human Security	
GCHS 720	Global Governance	
GEOG 401	World Regions: Europe and the Americas	
GEOG 402	World Regions: Asia and Africa	
GEOG 530	China: People, Politics and Economy	
GEOG 540	Geography of the Middle East	
GEOG 550	Sub-Saharan Africa: Environmental Politics and Development	
GEOG 584	Political Geography	
GERM 521	Major German Authors in English	
GERM 525	Introduction to German Culture and Civilization	
GERM 797	Special Studies in German Language and Literature	
GERM 798	Special Studies in German Language and Literature	
HIST 421	World History to the 16th Century	
HIST 422	World History in the Modern Era	
HIST 425	Foreign Cultures (area specific; or HIST 425H) <sup>1</sup>	
HIST 435	Origins of European Society (or HIST 435H)	
or HIST 435W	Origins of European Society	
HIST 436	Europe and the Modern World (or HIST 436H)	
or HIST 436W	Europe and the Modern World	
HIST 440D	Honors/Citizens and Persons	
HIST 440F	Honors/Islam, Art, and the Past	
HIST 444D	Slavery and Society in Pre-Colonial Africa	
HIST 444J	Honors/Global Citizenship: In Pursuit of Liberty	
HIST 483	History of World Religions	
HIST 498	Explorations of Historical Perspectives	
HIST 532	Modern Latin America	
HIST 537	Espionage and History	
HIST 538	Modern European War and Society: The Napoleonic Wars to World War II	
HIST 560	Modern Britain	
HIST 563	Introduction to Russian Culture and Civilization	

HIST #564	Russia and the Soviet Union in World War II
HIST 565	Women in Modern Europe
HIST 566	Comparative Revolutions: How to Make a Revolution in the World before Marx
HIST 575	Ancient Near East
HIST 579	History of China in Modern Times
HIST 580	History of Japan in Modern Times
HIST 585	Medieval Islam
HIST 586	Islam in the Modern Age, 15th Century to present
HIST 587	History of Africa from the Earliest Times to 1870
HIST 588	History of Modern Africa: 1870 to the Present
HIST 595	Explorations
HIST 600	Explorations <sup>1</sup>
HIST 609	Special Topics in American Legal History
HIST 619	Foreign Relations of the United States
HIST 620	Foreign Relations of the United States
HIST 632	Latin American History: Topics <sup>1</sup>
HIST 633	Medieval England 800-1300
HIST 640	Holy War in the Holy Land: The Medieval Crusades
HIST 641	Europe after the Black Death
HIST 642	Saints, Sinners, and Heretics: Europe in the Age of Religious Reform
HIST #656	Twentieth Century Europe
HIST 662	England in the Tudor and Stuart Periods
HIST #664	Russia: Modernization through Soviet Empire
HIST 675	History of Ancient Greece
HIST 676	Topics in Ancient Greek History
HIST 677	History of Ancient Rome
HIST 678	Topics in Ancient Roman History
HIST 690	Seminar: Historical Expl
HIST 797	Colloquium
HUMA 510A	Ancient Humanities: Cultures and Empires
HUMA 510B	Ancient Humanities: Cultures and Empires
HUMA 510C	Ancient Humanities: Cultures and Empires
HUMA 510D	Ancient Humanities: Cultures and Empires
HUMA 511A	Medieval Humanities: Rise of Global Empires
HUMA 511B	Medieval Humanities: Rise of Global Empires
HUMA 511C	Medieval Humanities: Rise of Global Empires
HUMA 512A	Modern Humanities: Colonies, Constitutions, and Capital
HUMA 512B	Modern Humanities: Colonies, Constitutions, and Capital
HUMA 512C	Modern Humanities: Colonies, Constitutions, and Capital
HUMA 512D	Modern Humanities: Colonies, Constitutions, and Capital
HUMA 513A	Global Humanities
HUMA 513B	Global Humanities
HUMA 513C	Global Humanities
HUMA 513D	Global Humanities
HUMA 700	Seminar
ITAL 425	Introduction to Italian Studies
ITAL 444A	Italians Come to America: Representing Emigration and Immigration on Both Sides of the Atlantic
ITAL 444B	Mamma Mia! Italian Motherhood from the Virgin Mary to Carmela Soprano
ITAL 521	Medieval and Renaissance Italian Culture
ITAL 522	Modern and Contemporary Italian Culture
ITAL 525	Italian Cinema
ITAL 651	Introduction to Italian Culture and Civilization I: Middle Ages, Renaissance, Baroque
ITAL 652	Introduction to Italian Culture and Civilization II: Age of Enlightenment, Romanticism, Modernism
ITAL 681A	Ancient and Medieval Italy
ITAL 681B	Ancient and Medieval Italy
LING 606	Languages of the World
LLC 535A	Professional Culture in European Union - - Case Study: Germany
LLC 535B	Professional Culture in Latin America - Case Study: Mexico and Brazil
LLC #535C	Professional Culture in Asia - Case Study: China and Japan
PHIL 520	Introduction to Eastern Philosophy
PHIL #620	20th Century European Philosophy
POLT 403	United States in World Affairs
POLT 544	Of Dictators and Democrats
POLT 545	People and Politics in Asia
POLT 546	Wealth and Politics in Asia
POLT 550	Comparative Government and Society



POLT 552	Contemporary European Politics
POLT 554	Revolution and Protest in Latin America
POLT 556	Politics in China
POLT 559	Comparative Politics of the Middle East
POLT 560	World Politics
POLT 562	Strategy and National Security Policy
POLT 565	United States Policy in Latin America
POLT 569	The Rise of China
POLT #570	Counterterrorism: Nation states' responses to terrorist activity
POLT #588	Selected Topics in Comparative Politics
POLT 592	Selected Topics in International Politics
POLT 740	States and Societies in the Middle East
POLT 748	Food and Wine Politics
POLT 760	Theories of International Relations
POLT 778	International Organization
POLT 797E	Seminar in International Politics
RUSS 521W	Devils, Deities, and Madness in Russian Literature
RUSS 525	Russia: Mythology and Propaganda
or RUSS #525M	Russia: Mythology and Propaganda in Moscow
SOC 444A	Honors/Society in the Arctic
SOC #656	Terrorism
SOC 693	Global Social Change
SPAN 525	Introduction to Spanish Cultures
SPAN 526	Introduction to Latin American Cultures
SPAN 647	Topics in Hispanic Cultural Studies
SPAN 651	Introduction to Spanish Literature and Thought
SPAN #652	Introduction to Spanish Literature and Thought
SPAN 653	Introduction to Latin American Literature and Thought
SPAN 654	Introduction to Latin American Literature and Thought

**Science, Environment, Economy, & Health Electives**

ANTH 440A	Honors/Medicine and Culture: Science, Technology and the Body
ANTH 610	Medical Anthropology: Illness and Healing
ANTH 685	Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa
ANTH 695	Globalization and Global Population Health
BIOL 520	Our Changing Planet
CEE 520	Environmental Pollution and Protection: A Global Context
CHE 410	Energy and Environment
CLAS 540A	Environment, Technology and Ancient Society: Sustaining Ancient Rome Ecology and Empire
CLAS 540B	Environment, Technology and Ancient Society: Roman Houses, Domestic Space and Public Life
CLAS 540C	Environment, Technology and Ancient Society: Tech, Tools and Engineering in the Ancient World
CMN 670	From Silicon Valley to Foxconn: Global Digital Capitalism
CMN 696W	Seminar in Media Studies
ECON 645	International Economics
ECON 655	Innovation in the Global Economy
ECON 668	Economic Development
ECON #746	International Finance
ENGL/LING 606	Languages of the World
EREC 444	The New Pirates of the Caribbean
ESCI 405	Global Environmental Change
GEOG 560	Natural Hazards and Human Disasters
GEOG 581	Society, Environment and Justice
GEOG 582	Global Trade and Local Development
or GEOG #582W	Global Trade and Local Development
GEOG 590	Field Research
GEOG #595	Statistics for Spatial Science
GEOG 670	Climate and Society
GEOG 673	Political Ecology
GEOG 685	Population and Development
GEOG #686	World Economy and Globalization
HIST 522	Science in the Modern World
HIST 654	Topics in History of Science
HMG 570	International Food and Culture
HMG/MKTG 756	International Franchising
HMG 771	International Wine and Beverage
HMP #440A	Honors/Global Public Health Issues
HMP #444A	Global Public Health Issues

HMP 715	Environmental Health
ITAL 635	Italian Food Studies
ITAL 675	Special Topics in Italian Studies
JUST 405	Technology, Crime, and Society: A Forensic Exploration of High-Tech and Digital Crime
LING 779	Linguistic Field Methods
MGT 755	Global Mindset for Sustainable Business
MKTG/HMG 756	International Franchising
MKTG 760	International Marketing
NR 415	Natural Resources Field Methods
NR 435	Contemporary Conservation Issues and Environmental Awareness
or NR 435H	Honors/Contemporary Conservation Issues and Environmental Awareness
NR 502	Forest Ecosystems and Environmental Change
NR 606	International Energy Topics
NR 720	International Environmental Politics and Policies for the 21st Century
NR 784	Sustainable Living - Global Perspectives
NURS 794	Special Topics
or NURS 794W	Special Topics
PHIL 424	The Future of Humanity: Science, Technology, and Society
or PHIL 424H	Honors/The Future of Humanity: Science, Technology, and Society
POLT #444	Politics and Policy in a Warming World
POLT #561	Introduction to International Political Economy
POLT #563	The Global Information Grid's Disruptive Impact on Government, Politics, and Society
POLT 568	International Security
POLT 592	Selected Topics in International Politics
POLT 751	Comparative Environmental Politics and Policy
POLT 762	International Political Economy
SOC 565	Environment and Society
SOC 665	Environmental Sociology
SW 625	Social Welfare Policy in a Global Context
TOUR 510	Tourism and Global Understanding

<sup>1</sup> Check with IA Program Assistant

## Student Learning Outcomes

- Demonstrate intermediate level proficiency in a foreign language;
- Apply different disciplinary approaches to the study of international affairs, including key themes and theoretical frameworks employed in these disciplines;
- Use critical thinking skills to analyze and discuss important global issues;
- Engage with cultural diversity and complexity through the international experience;
- Demonstrate familiarity with different types of data and sources and their appropriate use in analyzing selected topics in international affairs;
- Demonstrate competence in research design. Students will develop inquiry-based research questions, conduct a literature review, employ appropriate methods and data collection, and interpret their findings accurately.

## International Affairs Minor

<https://cola.unh.edu/international-affairs/program/minor/international-affairs>

### Description

The international affairs (IA) minor adds a recognized distinction and global context to any primary major in any college at UNH. It was

developed for those students who, due to the demands of their primary majors, are unable to complete the more rigorous requirements of the IA dual major.

Students who wish to declare the international affairs minor must earn a C or better in all IA course requirements and have a 2.5 cumulative grade-point average. The minor is declared when the fifth course is being taken. The student should obtain the minor completion form from the [IA senior program assistant \(michael.cole@unh.edu\)](mailto:michael.cole@unh.edu).

## Requirements

Code	Title	Credits
<b>Required Core Courses</b>		
IA 401	International Perspectives	4
Select one of the following:		4
ECON 401	Principles of Economics (Macro)	
ECON 402	Principles of Economics (Micro)	
EREC 411	Environmental and Resource Economics Perspectives	
International Affairs Language Requirement <sup>1</sup>		4
International Experience - Study Abroad <sup>2</sup>		
<b>Electives</b>		
Choose one course from each category list (2 courses total): <sup>3</sup>		8
Politics, Culture, & History		
Science, Environment, Economy, & Health		
<b>Total Credits</b>		<b>20</b>

### <sup>1</sup> International Affairs Language Requirement

Functional reading, writing, and speaking ability equivalent to a first-year, second-semester college level (402). Students may take placement tests to establish equivalency, include language study during the international experience, or transfer credits from other institutions.

### <sup>2</sup> International Experience - Study Abroad

Minimum of three weeks (or 4 credits). The international experience may include study, directed research, internship or service/volunteer experience abroad. Students should plan with the [study abroad advisors \(study.abroad@unh.edu\)](mailto:study.abroad@unh.edu) to plan for their international experience well in advance.

<sup>3</sup> See elective category lists under the IA dual major heading. Elective courses may count toward Discovery, Honors, Writing Intensive and major requirements.

## Italian Studies (ITAL)

The Italian studies program offers courses in Italian language, culture, literature, history and cinema, as well as courses on Italian American culture. Italian courses can also be used to fulfill Discovery Program requirements and the bachelor of arts foreign language proficiency requirement. In addition to the Italian studies major, an Italian studies minor is available.

The program provides opportunities both to achieve high competence in Italian language and culture and to apply these knowledge skills to other disciplines. The Italian studies program encourages independent and innovative thinking and research so that students may pursue and achieve individualized goals while they prepare for the challenges of thriving in the world community.

## Study Abroad

The Italian studies program allows students to register for approved study abroad programs through the University.

<https://cola.unh.edu/classics-humanities-italian-studies>

## Programs

- [Italian Studies Major \(B.A.\)](#) (p. 95)
- [Italian Studies Minor](#) (p. 96)

## Faculty

<https://cola.unh.edu/classics-humanities-italian-studies/faculty-staff-directory>

## Italian Studies Major (B.A.)

<https://cola.unh.edu/classics-humanities-italian-studies/program/ba/italian-studies-major>

## Description

The Italian studies program offers courses in Italian language, culture, literature, history and cinema, as well as courses on Italian American culture. Italian courses can also be used to fulfill Discovery Program requirements and the Bachelor of Arts foreign language proficiency requirement. The program provides opportunities both to achieve high competence in Italian language and culture and to apply these knowledge skills to other disciplines. The Italian studies program encourages independent and innovative thinking and research so that students may pursue and achieve individualized goals while they prepare for the challenges of thriving in the world community.

## Requirements

The Italian studies major curriculum consists of 10 courses (40 credits) that include:

Code	Title	Credits
Select 16 credits at 600-level or above		16
Select 24 credits in ITAL course electives (up to two courses in Classics (CLAS), Humanities (HUMA) or from the list of approved electives may substitute for two of these courses.)		24
Select one of the following Discovery capstone requirements:		
Honors Thesis (ITAL 796)		
Senior Thesis (ITAL 795)		
ITAL course at the 700-level (ITAL 733 or ITAL 775)		
Advisor approved 4-credit internship (ITAL 595)		
Advisor approved semester immersion experience in Italy (INCO 685 or INCO 686)		
<b>Total Credits</b>		<b>40</b>

## Additional Requirements

- The minimum grade for each major course is a C.
- Once students declare the Italian studies major, they must maintain a 2.5 cumulative grade point average in order to fulfill the study abroad requirement.
- Italian studies majors may use two major-required courses to satisfy two Discovery category requirements.

## List of Elective Courses

All CLAS and HUMA courses are acceptable electives. Approved courses from other disciplines are listed below. Approval by the Italian studies advisor is required for courses not listed below.

Code	Title	Credits
ANTH 411	Global Perspectives on the Human Condition: An Introduction to Anthropology	4
ANTH 500	Peoples and Cultures of the World	4
ARTH 444	Mona Lisa to Much Ado About Nothing: An Introduction to Renaissance Culture	4
ARTH 474	Introduction to Architectural History	4
ARTH 480	Introduction to Art History	4
ARTH 583	Baroque Art: Realism, Caricature, Shock	4
ARTH 675	Roman Art and Architecture	4
ARTH 677	Early Medieval Art	4
ARTH 678	Romanesque and Gothic Art	4
ARTH 681	Early Renaissance Art	4
ARTH 682	The High Renaissance	4
ARTH 685	Graphic Art of the Renaissance and Baroque Periods	4
ECON 645	International Economics	4
EDUC 500	Exploring Teaching	4
ENGL 403W	Exploring Literature	4
ENGL 419	How to Read Anything	4
ENGL 510	Introduction to the Digital Humanities	4
ENGL 533	Introduction to Film Studies	4
ENGL 618	Film Theory	4
ENGL 714	Critical Skills	4
GEOG 401	World Regions: Europe and the Americas	4
GEOG 581	Society, Environment and Justice	4
HIST 435	Origins of European Society	4
HIST 436	Europe and the Modern World	4
HIST 500	Introduction to Historical Thinking	4
HIST 501	Medieval Military History	4
HIST 521	Origins of Modern Science	4
HIST 540	Foundations of Medieval History: 300-1300 CE	4
HIST 565	Women in Modern Europe	4
HIST 640	Holy War in the Holy Land: The Medieval Crusades	4
HIST 641	Europe after the Black Death	4
HIST 642	Saints, Sinners, and Heretics: Europe in the Age of Religious Reform	4
IA 401	International Perspectives	4
IA 501	Global Issues in International Affairs	4
LLC #551	Comparative Literature: Masterpieces of World Literature I	4
LLC 552	Comparative Literature: Masterpieces of World Literature II	4
LLC 791	Methods of Foreign Language Teaching	4
LING 405	Introduction to Linguistics	4
LING 605	Intermediate Linguistic Analysis	4
MKTG 756	International Franchising	4
MKTG 760	International Marketing	4
MUSI 501	The Western Musical Canon	3
MUSI 502	Musics in Context	3
MUSI #715	Survey of Opera	3
NUTR 595	Mediterranean Diet and Culture	4
PHIL 401	Introduction to Philosophy	4
PHIL 430	Ethics and Society	4
PHIL 560	Philosophy Through Fiction	4
PHIL 570	Ancient Philosophy	4
PHIL 580	Modern Philosophy from Descartes to Kant	4
PHIL #620	20th Century European Philosophy	4
POLT 520	Politics, Justice, and Morality	4
POLT 550	Comparative Government and Society	4
POLT 551	Ethnicity, Violence, Democracy	4
POLT 552	Contemporary European Politics	4
POLT 560	World Politics	4
SUST 401	Exploring Sustainability	4
THDA 436	History of Theatre I	4
THDA 438	History of Theatre II	4

## Student Learning Outcomes

- Demonstrate speaking proficiency in Italian: Students speak Italian at the Advanced Level per standard guidelines established by the American Council on the Teaching of Foreign Languages (ACTFL).
- Demonstrate listening proficiency in Italian: Students' aural comprehension is at the Advanced Level per standard guidelines established by ACTFL.
- Demonstrate reading proficiency in Italian: Students' read at the Advanced Level per standard guidelines established by ACTFL.
- Demonstrate writing proficiency in Italian: Students' write at the Advanced Level per standard guidelines established by ACTFL.
- Exhibit contemporary cultural competency: Demonstrate knowledge of contemporary aspects of Italian culture and the ability to interact appropriately and effectively within diverse social and cultural contexts.
- Exhibit historical cultural competency: Identify the major movements in Italian cultural history and analyze critically Italian cultural production from the 13th century to the present through close readings and audio and visual texts (e.g., literature, cinema, music, visual arts, traditional and social media) to provide critical insight on a range of topics in Italian culture.
- Exhibit intercultural competency: Present a global perspective through the articulation of cultural differences as well as shared values between cultures, societies, and nations.
- Exhibit research competency: Demonstrate ability to conduct research in both Italian and English: to produce coherent analyses utilizing primary and secondary sources, applying critical thinking and methodologies of argumentation, and integrating disparate areas of knowledge.

## Italian Studies Minor

<https://cola.unh.edu/classics-humanities-italian-studies/program/minor/italian-studies>

## Description

The Italian studies minor provides students with the opportunity to explore the language, culture, and society of Italy through an interdisciplinary program. The minor is advantageous for applicants to graduate and professional schools in Italian, modern languages, linguistics, film, history, theater, philosophy and law. It is also a valuable asset for careers in economics, international affairs, international business, fashion, teaching, communications, translation, interpretation, government and Foreign Service.

The Italian studies minor is offered by the Department of Classics, Humanities and Italian Studies.

## Requirements

The minor consists of five courses.

Code	Title	Credits
Five ITAL elective courses <sup>1</sup>		20
Demonstrate linguistic proficiency at the level of intermediate Italian (ITAL 504 Intermediate Italian II or equivalent).		
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> One course from a related field of study may be counted towards the minor, subject to the approval of the Italian studies advisor.

- All courses for the Italian studies minor must be completed with a minimum grade of C.
- New students will be assigned to the proper course in consultation with the program coordinator.

## Justice Studies (JUST)

Justice studies students think critically about issues that are part of the national conversation concerning justice: race and policing, cybercrime, the opioid crisis, juvenile delinquency, sexual and interpersonal violence, immigrants and refugees, wrongful convictions and bullying. All majors do applied or research internships in New England or Washington, D.C. Many spend a semester studying in Budapest and participating in Mock Trial. Our graduates excel in various positions including FBI agents, federal probation and patrol, police officers from local to federal levels, victim/witness advocates, prison wardens, police prosecutors, attorneys and juvenile justice advocates.

<https://cola.unh.edu/justice-studies>

### Programs

- [Justice Studies Dual Major](#) (p. 97)
- [Justice Studies Minor](#) (p. 98)
- [Forensics Minor](#) (p. 99)

### Faculty

<https://cola.unh.edu/justice-studies-program/faculty-staff-directory>

## Justice Studies Dual Major

<https://cola.unh.edu/justice-studies/program/justice-studies-dual-major>

### Description

The justice studies dual major is an interdisciplinary area that blends topics from humanities departments (e.g., philosophy), social science departments (e.g., psychology, sociology, women's and gender studies), departments that include both humanities and social science faculty (history, political science), and professionally oriented departments (education, family studies, social work). Topics studied include courts, family violence, rights, substance abuse, juvenile justice, school law, children as witnesses, hate crimes and community policing. Students will be required to choose a first major before they will be able to declare justice studies as a second major. The goal is to produce graduates who have a higher level of knowledge about law and justice in American society and in the world so that they will mature into more knowledgeable and effective citizens. The justice studies dual major is intended for students who are looking for careers in the justice system or who seek graduate training in law or social sciences and humanities related to the law.

Students are strongly encouraged to contact the Justice Studies Office and to declare the dual major as soon as they develop an interest in

majoring. Once a student has been accepted to the JS dual major, they will be assigned an advisor.

### Requirements

The dual major in justice studies requires students to take a minimum of eight courses (32 credits), each completed with a grade of a C- or better. Students are required to have a grade-point average of a 2.5 or better before they can be accepted into the program. The dual major cannot be declared until after a first major has been declared. Students can count no more than two courses for both the first major and dual major, and students are not allowed to take more than two courses from any one department (except for JUST). An unlimited number of dual major courses can be used to satisfy Discovery requirements.

Code	Title	Credits
<b>Required Courses</b>		
JUST 401	Introduction to Justice Studies	4
JUST 501	Research Methods	4
JUST 601 or JUST 602	Internship (seniors only for 601 and 602) Research Internship	4
JUST 701	Senior Seminar (writing-intensive course) <sup>1</sup>	4
Select one of the following:		
POLT 507	Politics of Crime and Justice	
POLT 508	Supreme Court and the Constitution	
SOC 515	Introductory Criminology	
<b>Elective Courses</b>		
Select three elective courses from the justice studies approved course list		12
<b>Total Credits</b>		<b>32</b>

<sup>1</sup> This course fulfills the program capstone requirement.

### Elective Courses

This list is approved and published yearly by the Justice Studies Executive Committee.

Code	Title	Credits
<b>Elective Courses</b>		
ACC 747	Business Law	4
ANTH 550	Introduction to Forensic Anthropology	4
ANTH 697	Special Topics (must be approved by Justice Studies)	4
BIOL 420	Introduction to Forensic Sciences	4
CMN 637	Controversy and Reasoning in Law	4
EDUC 767	Students, Teachers, and the Law	4
HDFS 776	Children, Adolescents and the Law	4
HDFS 794	Families and the Law	4
HIST 440A	Martin Luther King, Jr., and the Struggle for Racial Justice	4
HIST 440D	Honors/Citizens and Persons	4
HIST 498	Explorations of Historical Perspectives (must be approved by Justice Studies)	4
HIST 509	Law in American Life	4
HIST 609	Special Topics in American Legal History (must be approved by Justice Studies)	4
HIST 797	Colloquium (must be approved by Justice Studies)	4
HLS 410	Introduction to Homeland Security	4
HLS 415	Fundamentals of Corporate Security	4
HLS 580	Environmental and Human Security	4
HLS 760	Strategic Planning and Decision Making	4
HMG 625	Hospitality and Employment Law (only HMG majors allowed)	4
HUMA 444E	What is a Criminal?	4
HUMA 525	Humanities and the Law	4
HUMA 550	Budapest Spring Semester: Special Studies in Comparative Ideas	4
HUMA 551	Budapest Spring Semester: Field Studies in Art and Culture	6
JUST 405	Technology, Crime, and Society: A Forensic Exploration of High-Tech and Digital Crime	4
JUST 410	Sexual Harassment and Rape Prevention (SHARPP) Peer Advocacy	4
JUST 415	SHARPP Advocacy II	2

JUST 520	Girls Gone Bad: Delinquent Girls in Cultural Context	4
JUST 550 & JUST 551	Mock Trial and Mock Trial (must take 2 semesters to count as a JS elective)	4
JUST 591	Forensic Psychology	4
JUST 595	Special Topics (no more than two courses) <sup>2</sup>	4
JUST #650 & JUST #651	Special Studies in Comparative Justice Systems and Field Studies in the Hungarian Justice System	10
JUST 795	Reading and Research (variable credit/permission required)	1-4
LLC 540	Film History (Terrorism(s) A Humanistic and Cinematic Outlook)	4
LAW 460	Sports Law & Current Controversies	4
PHIL 420	Introduction to Philosophy of Law and Justice	4
PHIL 436	Social and Political Philosophy	4
PHIL #635	Advanced Topics in Philosophy of Law and Justice	4
PHIL 660	Law, Medicine, and Ethics	4
PHIL 701	Topics in Value Theory	4
POLT 440A	Honors/Global Justice (Global Justice)	4
POLT 444B	Cruel and Unusual in a Federal System	4
POLT 507	Politics of Crime and Justice	4
POLT 508	Supreme Court and the Constitution	4
POLT 513	Civil Rights and Liberties	4
POLT 520	Politics, Justice, and Morality	4
POLT 548	Drug Wars	4
POLT 568	International Security	4
POLT #701	Courts and Public Policy	4
POLT #765	Security Intelligence Study	4
POLT 798B	Seminar in American Politics (must be approved by Justice Studies )	4
PSYC 755	Psychology and Law	4
PSYC 756	Psychology of Crime and Justice	4
PSYC 791W	Special Topics (Psychology of Delinquency)	4
RMP 772	Law and Public Policy in Leisure Services (must have junior/senior status)	4
SOC #440A	Honors/Drug Addiction in American Society	4
SOC 515	Introductory Criminology	4
SOC 450	Contemporary Social Problems (only when taught by Professor Abbott)	4
SOC 525	Juvenile Crime and Delinquency	4
SOC 535	Homicide	4
SOC 620	Drugs and Society	4
SOC #655	Sociology of Law and Justice	4
SOC #656	Terrorism	4
or POLT #570	Counterterrorism: Nation states' responses to terrorist activity	
SOC 697	Special Topics (Social Psychology of Justice)	4
SOC #715	Criminological Theory	4
SOC 720	Sociology of Drug Use	4
SW 525	Social Welfare Policy: History of Social and Economic Justice	4
SW 705	Child and Adolescent Risks and Resiliency: Program, Policy and Practice	4

<sup>2</sup> Bill of Rights and Law & Society are allowed to count as the JS SOC/ POLT requirement.

The required minimum overall GPA in major coursework is 2.5.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Students who are interested in a dual major in justice studies will need to officially declare in Webcat (my.unh.edu). Program offices are located in Hamilton Smith Hall and are open Monday through Friday from 8 a.m. to 12 p.m. and 1 p.m. to 4:30 p.m. For more information, please contact Molly Dorsey at (603) 862-0703, e-mail [marion.girard.dorsey@unh.edu](mailto:marion.girard.dorsey@unh.edu); or Deb Briand at (603) 862-1716, e-mail [deborah.briand@unh.edu](mailto:deborah.briand@unh.edu).

## Student Learning Outcomes

- Demonstrate knowledge of fundamental theoretical approaches and key disciplinary concepts of Justice Studies.
- Demonstrate understanding of justice studies methods of research design, data gathering, and analysis.
- Exhibit critical thinking skills in evaluating justice studies research, including the background assumptions, appropriateness of methods used and the strength of explanatory evidence.
- Communicate justice studies knowledge in appropriate oral, written and graphic forms.
- Experience justice studies either in the real world through an internship or in a research lab through a research internship.

## Justice Studies Minor

<https://cola.unh.edu/justice-studies/program/minor/justice-studies>

## Description

The justice studies minor is an interdisciplinary program that blends topics from humanities departments (e.g., philosophy), social science departments (e.g., psychology, sociology, women's and gender studies), departments that include both humanities and social science faculty (history, political science) and professionally oriented departments (education, family studies, social work). Topics studied include courts, family violence, rights, substance abuse, juvenile justice, school law, children as witnesses, hate crimes and community policing.

## Requirements

The minor in justice studies requires students to take a total of five courses (20 credits) each with a grade of C- or better in order to complete the program. Students are allowed to "double count" no more than two courses toward their major and minor, and are not allowed to take more than two courses from any one department (except for justice studies).

In order to officially declare the minor in justice studies, students will need to submit an intent to minor form to Deb Briand in the Justice Studies Office. This form can be found on our website.

Code	Title	Credits
<b>Required Courses</b>		
JUST 401	Introduction to Justice Studies	4
Select one of the following:		
POLT 507	Politics of Crime and Justice	
POLT 508	Supreme Court and the Constitution	
SOC 515	Introductory Criminology	
<b>Elective Courses</b>		
Select three elective courses from the justice studies approved course list <sup>1</sup>		12
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> This list is approved and published yearly by the Justice Studies Executive Committee. Departmental offerings that are currently accepted for the minor are listed on the [Justice Studies major page](#) (p. 97).

For program information on the forensics minor, see the Forensics Minor program page.



## Forensics Minor

<https://cola.unh.edu/justice-studies/program/minor/forensics>

### Description

The forensics minor provides students with the opportunity to explore the different components of forensics through the interdisciplinary study of biology, psychology, sociology and justice studies. This well-rounded curriculum will enable students to build upon their interests in justice studies by specializing in an area of increasing importance. Once students have decided to pursue the minor, they are required to meet with the coordinator, academic counselor or appropriate affiliated faculty adviser at least once per semester for regular review and assessment of their program, learning outcomes and progress toward the degree.

### Requirements

The forensic minor requires five courses (20 credits) drawn from a list of approved courses. Students must receive a grade of a C- or better for a course to count toward the minor requirements. The five courses include:

Code	Title	Credits
<b>Required Courses</b>		
JUST 401	Introduction to Justice Studies	4
BIOL 420	Introduction to Forensic Sciences	4
<b>Additional Courses</b>		
Select three of the following:		12
ANTH 550	Introduction to Forensic Anthropology	
ANTH 697	Special Topics (The only special topic allowed is Cold Cases)	
JUST 405	Technology, Crime, and Society: A Forensic Exploration of High-Tech and Digital Crime	
JUST 591	Forensic Psychology	
SOC 515	Introductory Criminology	
SOC 535	Homicide	
<b>Total Credits</b>		<b>20</b>

Two courses can double count toward your justice studies dual major. These courses are most commonly JUST 401 Introduction to Justice Studies, and SOC 515 Introductory Criminology.

In order to officially declare the forensic minor, students will need to submit an intent to minor form to Deb Briand in the Justice Studies Office. This form can be found on our website.

## Latin American, Latinx and Caribbean Studies

- [Latin American, Latinx and Caribbean Studies Minor](#) (p. 99)

## Latin American, Latinx and Caribbean Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/latin-american-latinx-caribbean-studies>

### Description

Latin American, Latinx and Caribbean studies is an interdisciplinary minor encompassing anthropology, communications, economics,

geography, history, linguistics, political science and Spanish. Knowledge of Latin America is especially valuable for students who plan to work in education, international organizations, government, social services, and business or for graduate studies related to Latin America.

For more information on the Latin American, Latinx and Caribbean studies minor (LALACS) contact [Lori Hopkins](#) ([lori.hopkins@unh.edu](mailto:lori.hopkins@unh.edu)).

### Requirements

Students can complete the minor by selecting any five courses (20 credits) representing at least three disciplines.

Code	Title	Credits
HIST 532	Modern Latin America <sup>1</sup>	4
SPAN 504	Intermediate Spanish II <sup>2</sup>	4
Elective courses (see list below)		12-16

<sup>1</sup> An equivalent course as approved by a LALACS advisor can replace HIST 532 Modern Latin America.

<sup>2</sup> Minimum of high-intermediate level proficiency in Spanish. Equivalent courses or equivalent testing may be counted here.

Enrollment in these five courses must follow the guidelines below to count for the minor:

1. At least three courses must be taken in residence.
2. All coursework required for the minor must be completed with a grade of C or better.
3. Courses for the minor may not be taken pass/fail.

Academic study in Latin America is strongly recommended: Speak with faculty to help you find the study abroad program that best fits your interests. UNH and its affiliates offer several short- and long-term programs throughout Latin America.

### Elective Course List

Students should consult with an advisor or the course instructor to ensure that the majority of this coursework concentrates on Latin America.

Code	Title	Credits
ANTH 500	Peoples and Cultures of the World (Topic: Latin America)	4
ANTH 501	World Archaeological Cultures (Topic: Mesoamerica)	4
ANTH 674	Archaeological Survey and Mapping in Belize	4
CMN 515	Analysis of News	4
ECON 668	Economic Development	4
ENGL 560	Introduction to Latinx Literature and Culture	4
ENGL 650	I Hear America Singing: Studying American Literature and Culture (Topic: Latina/o Literature)	4
HIST 425	Foreign Cultures (Topic: Women in Latin America)	4
HIST 532	Modern Latin America	4
HIST 632	Latin American History: Topics	4
LING 790	Special Topics in Linguistics Theory (Topic: Sustainable Languages)	4
POLT 403	United States in World Affairs	4
POLT 548	Drug Wars	4
POLT 565	United States Policy in Latin America	4
POLT 795	Advanced Study (Topic: The Politics of Poverty)	1-4
SPAN 526	Introduction to Latin American Cultures	4
SPAN 631	Advanced Conversation and Composition I	4
SPAN 632	Advanced Conversation and Composition II	4
SPAN 641	Spanish Language Variation & Change	4
SPAN 647	Topics in Hispanic Cultural Studies	4
SPAN 648	The Hispanic World Today	4

SPAN 650	Hispanic Literature and Popular Culture	4
SPAN 653	Introduction to Latin American Literature and Thought	4
SPAN 654	Introduction to Latin American Literature and Thought	4
SPAN 797	Topics in Hispanic Literary and Cultural Studies	4
SPAN 798	Topics in Hispanic Linguistics and Cultural Studies	4
SW 697	Special Topics in Social Welfare (Topic: Social Action in the Dominican Republic)	4
SW 797	Special Topics in Social Welfare (Topic: Social Action in the Dominican Republic)	4

## Linguistics (LING)

Linguistics is the study of one of the most important characteristics of human beings—language. It cuts across the boundaries between the sciences and the humanities. The program is an excellent liberal arts major or preprofessional major for education, law, medicine, clergy and others. It is a particularly appropriate major for students who want to teach English as a second language. Dual majors with a foreign language, international affairs, business administration and the like are quite feasible.

Students interested in the major or the minor should consult with the program coordinator or with any professor who teaches linguistics courses. To declare a major in linguistics, a student must meet with the linguistics coordinator to design a course of study. Information is available from the University Advising Center, 101 Hood House, and at [cola.unh.edu/linguistics](https://cola.unh.edu/linguistics).

<https://cola.unh.edu/linguistics>

### Programs

- [Linguistics Major \(B.A.\)](#) (p. 100)
- [Linguistics Minor](#) (p. 101)
- [TESOL Minor](#) (p. 101)

### Faculty

<https://cola.unh.edu/linguistics/faculty-staff-directory>

## Linguistics Major (B.A.)

<https://cola.unh.edu/linguistics/program/ba/linguistics>

### Description

Linguistics is the study of one of the most important characteristics of human beings—language. It cuts across the boundaries between the sciences and the humanities. The program is an excellent liberal arts major or preprofessional major for education, law, medicine, clergy and others. It is a particularly appropriate major for students who want to teach English as a second language. Dual majors with a foreign language, international affairs, business administration and the like are quite feasible.

Students interested in the major should consult with the program coordinator or with any professor who teaches linguistics courses. To declare a major in linguistics, a student must meet with the linguistics coordinator to design a course of study. Information is available from the University Advising Center, 101 Hood House, and at [cola.unh.edu/linguistics](https://cola.unh.edu/linguistics).

## Requirements

Code	Title	Credits
LING 405	Introduction to Linguistics	4
LING 605	Intermediate Linguistic Analysis	4
LING 793	Phonetics and Phonology	4
LING 794	Syntax	4
Select one course in historical linguistics or sociolinguistics from the following:		4
ENGL 752	History of the English Language	
ITAL 733	History and Development of the Italian Language	
LING/ENGL 719	Sociolinguistics Survey	
RUSS 733	History of Slavic Languages and Culture	
SPAN 798	Topics in Hispanic Linguistics and Cultural Studies (Subtopic A)	
Two years of college study (or equivalent) of one foreign language		4-16
Select one of the following cognate specialties:		8
One year study (or equivalent) of a second foreign language from a different language family or subfamily <sup>1</sup>		
PSYC 712	Psychology of Language <sup>2</sup>	
Select two elective courses from list below, one of which must be a 600- or 700- level LING or ENGL course <sup>3</sup>		8
Discovery Program Capstone Experience:		
LING 779	Linguistic Field Methods	4
or LING 695	Senior Honors	
<b>Total Credits</b>		<b>44-56</b>

- <sup>1</sup> Old English may count as the second foreign language if the first foreign language is not in the Germanic family.
- <sup>2</sup> With its prerequisite, either PSYC 512 Psychology of Primates or PSYC 513 Cognitive Psychology
- <sup>3</sup> History of the English Language or Sociolinguistics can be used as an elective if the other one is used for the Variation/Historical requirement.

## Elective Courses

Code	Title	Credits
<b>Anthropology</b>		
ANTH 795	Reading and Research (Subtopic B)	1-8
ANTH 796	Reading and Research (Subtopic B)	1-8
<b>Communication</b>		
CMN 572	Analysis of Language and Social Interaction	4
CMN 666	Conversation Analysis	4
<b>English</b>		
ENGL 606	Languages of the World	4
ENGL 715	Teaching English as a Second Language: Theory and Methods	4
ENGL 716	Curriculum, Materials and Assessment in English as a Second Language	4
ENGL 717	Languages in Contact	4
ENGL 718	Morphology	4
ENGL 719	Sociolinguistics Survey	4
ENGL 727	Issues in Second Language Writing	4
ENGL 728	Language and Gender	4
ENGL 752	History of the English Language	4
ENGL 790	Special Topics in Linguistics	4
ENGL 791	English Grammar	4
<b>LLC</b>		
LLC 791	Methods of Foreign Language Teaching	4
<b>Italian</b>		
ITAL 733	History and Development of the Italian Language	4
<b>Linguistics</b>		
LING 606	Languages of the World	4
LING 717	Languages in Contact	4
LING 718	Morphology	4
LING 719	Sociolinguistics Survey	4
LING 728	Language and Gender	4
LING 790	Special Topics in Linguistics Theory	4
LING 795	Independent Study	1-4
<b>Psychology</b>		

PSYC 512	Psychology of Primates <sup>1</sup>	4
PSYC 513	Cognitive Psychology <sup>1</sup>	4
PSYC 712	Psychology of Language	4
<b>Russian</b>		
RUSS 733	History of Slavic Languages and Culture	4
<b>Spanish</b>		
SPAN 641	Spanish Language Variation & Change	4
SPAN 645	Intro to Spanish Linguistics	4
SPAN 798	Topics in Hispanic Linguistics and Cultural Studies (Subtopic A)	4

<sup>1</sup> Students may count either PSYC 512 Psychology of Primates or PSYC 513 Cognitive Psychology toward the linguistics major or minor, but not both.

Other courses may be substituted, with the permission of the student's adviser and the linguistics committee, when they are pertinent to the needs of the student's program.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Linguistics majors may use one major-required course to satisfy one Discovery category requirement.

## Student Learning Outcomes

Students will understand and be able to deploy the analytical tools, modes of critical thinking, and types of writing that are used in studying languages and linguistics. Students will be able to analyze sets of data and make arguments concerning the theoretical analysis of those data. Core areas:

- **Phonetics:** Students will understand the acoustic and articulatory properties of speech sounds both for English and for other languages. Students will be able to transcribe and read the International Phonetic Alphabet.
- **Phonology:** Students will display knowledge of phonological analysis including identifying phonemes and allophones in languages, writing phonological rules using distinctive features, and understanding phonological processes such as assimilation, epenthesis, vowel harmony, etc.
- **Morphology:** Students will be able to analyze word structure (inflection, derivation, compounding) both in English and in unfamiliar languages. They will understand key concepts concerning the mental lexicon.
- **Syntax:** Students will be able to analyze the structural properties of sentences in English and in other languages and be familiar with the principles of generative grammar.
- **Sociolinguistics, Historical Linguistics, and Typology:** Students will understand processes of language change over time, language variation according to region, social class, gender, and education, and the effects of language contact.
- **Field Methods:** Students will be able to work with a native speaker of an unfamiliar language to collect and analyze data from that language. They will understand the ethical and logistical issues involved in documenting languages.
- **Applications:** Students will have an understanding of practical applications of linguistic knowledge to daily life, including political

issues regarding language (e.g., bilingual education, official languages), language acquisition, disorders that can affect language.

## Linguistics Minor

<https://cola.unh.edu/linguistics/program/minor/linguistics>

### Description

Linguistics is the study of one of the most important characteristics of human beings—language. It cuts across the boundaries between the sciences and the humanities. Students interested in the minor should consult with the program coordinator or with any professor who teaches linguistics courses.

### Requirements

Code	Title	Credits
LING/ENGL 405	Introduction to Linguistics	4
Select any four linguistics courses approved by the linguistics coordinator		16
<b>Total Credits</b>		<b>20</b>

## TESOL Minor

<https://cola.unh.edu/linguistics/program/minor/tesol>

### Description

The TESOL minor is a set of courses that are related to teaching English to speakers of other languages. This minor primarily is for students who are interested in teaching English to speakers of other languages, whether that be teaching English abroad or teaching ESL students in U.S. public schools (K-12). It is also appropriate for students who are going into social work or other professions that require regular interaction with nonnative English speakers.

The TESOL minor will not certify students to teach in New Hampshire public schools (K-12). For that purpose, students must complete the ESL certification program that is offered at the graduate level by the Education and English departments. However, the coursework in this minor will provide a very good foundation for students who want to later pursue ESL certification or an M.A. in TESOL at UNH or another institution. English Teaching majors may double-count ENGL 791 towards both their teaching major and the TESOL minor. Teaching majors who intend to later get dual certification in English and ESOL may use ENGL 719/LING 719 and its pre-requisite ENGL 405/LING 405 to satisfy their race requirement.

### Requirements

The TESOL minor requires the following five courses:

Code	Title	Credits
ENGL 715	Teaching English as a Second Language: Theory and Methods	4
ENGL 716	Curriculum, Materials and Assessment in English as a Second Language	4
Select one of the following courses on the structure of English:		4
ENGL 791	English Grammar	
ENGL/LING 405	Introduction to Linguistics	
Select two of the following approved TESOL electives:		8
EDUC 550	Language and Linguistic Diversity in Schools	
ENGL 791	English Grammar <sup>1</sup>	

ENGL/LING 405	Introduction to Linguistics <sup>1</sup>
ENGL/LING 719	Sociolinguistics Survey
ENGL 727	Issues in Second Language Writing (WI)
ENGL 752	History of the English Language (WI)
ENGL/LING 790	Special Topics in Linguistics (when offered on a TESOL-related topic (WI))
LLC 791	Methods of Foreign Language Teaching
Special topics courses that are related to TESOL <sup>2</sup>	
<b>Total Credits</b>	<b>20</b>

<sup>1</sup> Whichever was not taken before

<sup>2</sup> The TESOL coordinator can provide you with a list of available courses for a particular semester.

Students must receive a C- or better in each course and achieve a 2.0 GPA in the five courses.

No more than eight transfer credits will be accepted.

For more information about the TESOL minor, please contact Soo Hyon Kim, [soohyon.kim@unh.edu](mailto:soohyon.kim@unh.edu), 603-862-5290.

## Medical Humanities, Society & Ethics

- [Medical Humanities, Society & Ethics Minor](#) (p. 102)

## Medical Humanities, Society & Ethics Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/medical-humanities-society-ethics>

### Description

As an interdisciplinary minor, medical humanities, society and ethics (MHSE) teaches students to use methods from the humanities and social sciences to examine issues related to illness, health, healthcare, the body and the mind in their social, cultural and historical contexts.

MHSE takes as its starting point the dual claim that the central human experiences of health and illness as well as the systems of knowledge that have emerged to classify them are culturally shaped phenomena. Bodies and minds experience illness; people suffer; they age; they die. But the meanings people attach to these processes are not givens in the natural world. They are rather forged within a particular society's attitudes, values, beliefs and practices expressed through language, behavior, ritual and art. They are, moreover, contingent on time and place. Even the modern scientific discipline of medicine, its truth claims, and its terms are embedded in historical cultural domains. They have as much to do with attitudes to gender, race, socioeconomic status, relations of power, structures of authority and social hierarchies as they do with biology.

MHSE aims to bridge the gulf that exists between science and experience, biology and culture by challenging students to examine critically the origins and nature of their beliefs and values about illness and health as well as the beliefs and values embedded in their society's social, cultural, educational, legal and political institutions.

MHSE students will learn that humanistic interpretive practices make cross-cultural and comparative studies of health and illness possible. The minor encourages students to take a broad community and global

perspective on experiences of health and illness that address equity, policy and resource allocation.

## Requirements

Students are required to take 20 credits in courses that are on the approved list (see below) or that are approved by the minor advisory committee through a petition process. Independent studies, practica and transfer credits may also count for the minor with the approval of the committee.

- At least 4 credits must be at the 600 or 700 level.
- No more than 12 credits may come from the same department.
- At least 12 credits must be taken in residence at UNH.
- No more than 4 credits may be taken from courses outside of the College of Liberal Arts.

## List of Approved Courses

Code	Title	Credits
ANTH 525	Anthropology of the Body: Fat, Fitness and Form	4
ANTH 610	Medical Anthropology: Illness and Healing	4
ANTH 685	Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa	4
ANTH 695	Globalization and Global Population Health	4
CLAS 550C	Identities and Difference in the Ancient World: Sex and Desire in Greece and Rome	4
ENGL 415C	Literature and Medicine	4
ENGL 787	English Major Seminar (Only topic: Literature and Medicine)	4
GERM 798	Special Studies in German Language and Literature (Only topic: Narrating Madness in German Literature)	4
HIST 437H	Honors/The Mad Among Us: A Global History of Mental Disorder	4
HIST 440B	Honors/Medicine, Society, Science, and the Law: Who Makes Your Health Care Decisions?	4
HIST 498	Explorations of Historical Perspectives (Only topics: Pandemic! From the Black Death to Coronavirus or Childhood in Global History)	4
HIST 500	Introduction to Historical Thinking (Only topic: Landscape, Environment and Disease)	4
HUMA 526	Humanities and Science (Only topics: The Undead Humanities and Cognitive Science of Religion)	4
PHIL 410	Happiness, Well-Being, and a Good Life	4
PHIL 424	The Future of Humanity: Science, Technology, and Society	4
PHIL 440B	Honors/Who's Human Now?	4
PHIL 447	Artificial Intelligence, Robots, and People	4
PHIL 630	Neuroscience and Philosophy	4
PHIL 660	Law, Medicine, and Ethics	4
PHP 908	Public Health Ethics (undergrads allowed with special permission)	3
PSYC 531	Psychobiology	4
PSYC 733	Drugs and Behavior	4
PSYC 736	Attention Disorders	4
SOC 570	Sexual Behavior	4
SOC 620	Drugs and Society	4
SOC 625	Mental Health and Society	4
SOC 635W	Medical Sociology	4
SOC 720	Sociology of Drug Use	4
SOC 788	Advanced Medical Sociology	4

- Students must receive a grade of C- or better for a course to count toward the minor requirements.
- Once students have declared the minor, they are required to meet with the coordinator or appropriate core faculty advisor at least once per year for regular review and assessment of their program, learning outcomes and progress toward the degree.

# Middle Eastern Studies

## Programs

- [Middle Eastern Studies Minor](#) (p. 103)

## Middle Eastern Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/middle-eastern-studies>

## Description

The minor in Middle Eastern studies introduces students to the many facets of Middle Eastern cultures and societies through the interdisciplinary study of languages, history, politics, geography, and anthropology. Minor coursework enables students' understanding of the Middle East as a dynamic region in a global and comparative context. This minor therefore encompasses not only the study of the region itself, but also the flows and circulation of migration, diasporas, refugees, ideas, literatures, social movements, war and natural resources that make the region pivotal to world history and the global economy. In addition, participation in the minor prepares students for study abroad experiences, helps them acquire skills and qualifications for graduate study, and enhances employment opportunities.

Students interested in the minor should contact the coordinator and/or affiliated faculty to discuss their program of study.

## Requirements

The Middle Eastern studies minor requires five courses (20 credits) drawn from the list of approved courses or from exceptional courses and opportunities approved by the affiliate faculty in respective disciplines. The five-course requirement must include one non-language course.

Code	Title	Credits
<b>Elective Courses</b>		
Select five of the following:		20
ANTH 500	Peoples and Cultures of the World (only topic C)	
ANTH 640	Anthropology of Islam: Muslims' Everyday Lives in Contemporary Communities	
ANTH 700	Internship (only topic A: Preserving Cultural Heritage in Syria and Iraq)	
ANTH 750	Islam and Gender: Gendered Lives of Muslims	
ARBC 401	Elementary Arabic I	
ARBC 402	Elementary Arabic II	
ARBC 503	Intermediate Arabic	
ARBC 504	Intermediate Arabic	
ARBC 631	Advanced Arabic I	
ARBC 632	Advanced Arabic II	
GEOG 540	Geography of the Middle East	
HIST 425	Foreign Cultures	
HIST 575	Ancient Near East	
HIST 585	Medieval Islam	
HIST 586	Islam in the Modern Age, 15th Century to present	
HIST 640	Holy War in the Holy Land: The Medieval Crusades	
HUMA 444F	Travelers in the Premodern World	
HUMA 730	Special Studies (Symbols of Islam in America)	
POLT 559	Comparative Politics of the Middle East	
POLT #588	Selected Topics in Comparative Politics (Ethnic Violence, Politics, and Identity)	
POLT 740	States and Societies in the Middle East	

POLT #798C	Seminar in Comparative Politics (The Politics of Afghanistan, Pakistan, and India)
Total Credits	20

Students must receive a grade of C- or better for a course to count toward the minor. Courses for the minor may not be taken on a pass/fail basis.

**Foreign Language Study:** The study of a Middle Eastern language or language relevant to Middle Eastern studies is strongly encouraged but not required. Students are encouraged and permitted to count Arabic toward the five-course requirement. Students who have studied Hebrew, Turkish, Farsi, or other Middle Eastern languages at other institutions may apply for transfer of their credit toward the minor. Through petition to the minor coordinator and with support of affiliate faculty in the respective discipline, students may apply for European languages, such as French and Italian, to count toward minor requirements, provided these are relevant to their research and study interests in the region.

**Transfer or Articulation Agreements with other Institutions:** Transfer of credits may be approved by the coordinator to count toward the minor if the transfer is accepted by the University and fits within the scope of the minor.

Students interested in the minor should contact the coordinator and/or affiliated faculty to discuss their program of study. At the beginning of their final semester of study at UNH, students should fill out a completion of minor form and submit it to their Dean's Office.

## Music (MUSI, MUED)

The Department of Music offers two degree programs: the bachelor of arts in music and the bachelor of music.

The University of New Hampshire Department of Music is an accredited institutional member of the National Association of Schools of Music. All programs have final approval from NASM.

Prospective majors in music are advised to contact the department for information on acceptance into the major.

All music students must earn grades of C- or better in all required music and music education courses. The required minimum overall GPA in required music and music education coursework is 2.0.

## Bachelor of Arts in Music

The bachelor of arts in music program offers students an opportunity to major in music within the liberal arts curriculum. This program is intended for those who wish to pursue the serious study of music and to acquire at the same time a broad general education; it is recommended for those considering graduate study leading to master's or doctoral degrees.

To be admitted formally to the B.A. program, students must give evidence of satisfactory musical training by taking an admission audition. Students must declare music as a major before the beginning of the junior year, but it is highly recommended that they declare as early as possible, considering the large number of required courses.

The bachelor of arts degree is offered with three options: music liberal studies, performance study and composition.

## Bachelor of Music Degree Program

The bachelor of music degree program is offered to students who wish to develop their talent in performance, composition or music education



to a high professional level. The program is recommended to those considering graduate study leading to the M.M. or D.M.A. degrees. The music education option is part of the undergraduate certification program (see the Department of Education).

To be admitted to the B.M. program, students must demonstrate a high degree of musical competence or significant creative ability during an audition or examination. Selection is made on the professional requirements appropriate to each option. Students must formally declare the B.M. as a degree program before the beginning of the sophomore year. Continuation into the upper level of the program is subject to review by the department faculty.

Four degrees are offered in the bachelor of music curriculum: bachelor of music in music education; bachelor of music in performance; bachelor of music in composition, and bachelor of music pre-teaching.

<https://cola.unh.edu/music>

## Programs

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- [Music Major: Music Liberal Studies Option \(B.A.\)](#) (p. 105)
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## Faculty

<https://cola.unh.edu/music/faculty-staff-directory>

# Music Major: Composition Option (B.A.)

<https://cola.unh.edu/music/program/ba/music-major-composition-option>

## Description

Students wanting to declare composition as their option must submit a music portfolio in addition to an audition on their major instrument.

The Discovery Program capstone requirement is fulfilled by a final project or a public performance given during the senior year. For students in the composition option, there is a choice of completing a half lecture, half lecture-recital or a half recital including at least one original composition.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second major. B.A. in music majors may use MUSI 502 Musics in Context (a required core course for the major) to satisfy the Inquiry Discovery requirement.

## Requirements

### Bachelor of Arts in Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I <sup>1</sup>	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II <sup>1</sup>	2
MUSI 501 & MUSI 502	The Western Musical Canon and Musics in Context	6
MUSI 515	Music in World Cultures	4
MUSI 540	Recital Attendance	0
Advanced Music History: select one of the following		3
MUSI 703	Music of the Renaissance	
MUSI 705	Music of the Baroque	
MUSI 707	Music of the Classical Period	
MUSI 709W	Music of the Romantic Period	
MUSI 711	Music of the 20th and 21st Centuries	
MUSI 713	Art Song	
MUSI #715	Survey of Opera	
Select one of the following:		3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI #782W	Analysis: Form and Structure	
Performance Study (Applied Lessons): select from the following courses		
MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764		
Performing Ensemble: select variable credits from the following courses <sup>2</sup>		
MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464		
<b>Total Credits</b>		<b>36</b>

<sup>1</sup> Students will be given the opportunity to test out of MUSI 475 Functional Piano I, MUSI 476 Functional Piano I and MUSI 575 Functional Piano II, MUSI 576 Functional Piano II.

<sup>2</sup> A maximum of 8 ensemble credits may count toward graduation for all bachelor of arts in music students.

## Music Composition Option Requirements

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
Select 6 credits of the following:		6
MUSI 771	Counterpoint	
MUSI 779	Reading and Writing Musical Scores	
MUSI 781W	Analysis: Form and Structure	
MUSI #782W	Analysis: Form and Structure	
Select 8 credits of the following:		8
MUSI 775	Composition	
MUSI 776	Composition	
MUSI 777	Advanced Composition	
MUSI 731	Conducting	
Performance Study (Applied Lessons): select from the following courses		4

MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764

Performing Ensemble: select from the following courses 8

MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464

Total Credits 26

Students in the composition option, if not in a lesson studio, will attend composition seminar.

## Student Learning Outcomes

- Demonstrate the ability to perform a specialization instrument or voice at an appropriate solo level and/or in small ensemble and large ensemble.
- Aurally identify, analyze, and work conceptually with the elements of music in a variety of musical styles.
- Students will demonstrate familiarity with musical literature from the formal concert repertory and from musical traditions outside of that repertory.
- Demonstrate the ability to develop and defend musical judgments in writing and in oral presentation.
- Demonstrate collegiate-level skills in the English language, competence in written and oral communication in English, and fluency in communicating and synthesizing musical, historical and analytical concepts in writing.
- Demonstrate the ability to create substantial original compositions for solo instrument(s), chamber ensemble, or large ensemble.
- Present at least one substantial original composition in performance of a lecture, lecture-recital, or recital.

## Music Major: Music Liberal Studies Option (B.A.)

<https://cola.unh.edu/music/program/ba/music-major-music-liberal-studies-option>

### Description

Students enrolling in the B.A. music liberal studies program — a program that stresses the development of skills in analysis, writing and critical thinking about a wide variety of musics and the larger connection with history, culture and society — are required to submit a writing sample and interview with one of the music liberal studies program faculty members. The writing sample should be non-fiction, preferably an assignment for a course in English, history or a similar subject, 500 words or more in length.

The Discovery Program capstone requirement is fulfilled by a final project or a public performance given during the senior year. For students in the music liberal studies option, there is a choice of completing a half recital or comparable final project.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second major. B.A. in music majors may use MUSI 502 Musics in Context (a required core course for the major) to satisfy the Inquiry Discovery requirement.

## Requirements

### Bachelor of Arts in Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I <sup>1</sup>	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II <sup>1</sup>	2
MUSI 501 & MUSI 502	The Western Musical Canon and Musics in Context	6
MUSI 515	Music in World Cultures	4
MUSI 540	Recital Attendance	0
Advanced Music History: select one of the following		3
MUSI 703	Music of the Renaissance	
MUSI 705	Music of the Baroque	
MUSI 707	Music of the Classical Period	
MUSI 709W	Music of the Romantic Period	
MUSI 711	Music of the 20th and 21st Centuries	
MUSI 713	Art Song	
MUSI #715	Survey of Opera	
Select one of the following:		3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI #782W	Analysis: Form and Structure	
Performance Study (Applied Lessons): select from the following courses		
MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764		
Performing Ensemble: select variable credits from the following courses <sup>2</sup>		
MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464		
Total Credits		36

<sup>1</sup> Students will be given the opportunity to test out of MUSI 475 Functional Piano I, MUSI 476 Functional Piano I and MUSI 575 Functional Piano II, MUSI 576 Functional Piano II.

<sup>2</sup> A maximum of 8 ensemble credits may count toward graduation for all bachelor of arts in music students.

## Music Liberal Studies Option Requirements

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
Select 12 credits of the following: <sup>1</sup>		12
MUSI 771	Counterpoint	
MUSI 775	Composition	
MUSI 776	Composition	
MUSI 777	Advanced Composition	

MUSI 779	Reading and Writing Musical Scores
MUSI 781W	Analysis: Form and Structure
MUSI #782W	Analysis: Form and Structure
MUSI 703	Music of the Renaissance
MUSI 705	Music of the Baroque
MUSI 707	Music of the Classical Period
MUSI 709W	Music of the Romantic Period
MUSI 711	Music of the 20th and 21st Centuries
MUSI 713	Art Song
MUSI #715	Survey of Opera
Performance Study/Ensemble: select 8 credits of the following: <sup>2</sup>	
8	
Performance Study courses:	
MUSI 540, MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764	
Performance Ensemble courses:	
MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464	
Total Credits	20

<sup>1</sup> Any combination of advanced theory and history (12 credits) in addition to the core curriculum.

<sup>2</sup> Any combination of performance and/or ensemble study (8 credits total).

## Student Learning Outcomes

- Demonstrate the ability to perform a specialization instrument or voice at an appropriate solo level and/or in small ensemble and large ensemble.
- Aurally identify, analyze, and work conceptually with the elements of music in a variety of musical styles.
- Students will demonstrate familiarity with musical literature from the formal concert repertory and from musical traditions outside of that repertory.
- Demonstrate the ability to develop and defend musical judgments in writing and in oral presentation.
- Demonstrate collegiate-level skills in the English language, competence in written and oral communication in English, and fluency in communicating and synthesizing musical, historical and analytical concepts in writing.
- Demonstrate the ability to conduct original research on music with faculty mentoring and independently.
- Demonstrate in writing the ability to integrate concepts from adjacent disciplines—history, aesthetics, sociology, cultural studies—with musical and stylistic analysis.

## Music Major: Performance Study Option (B.A.)

<https://cola.unh.edu/music/program/ba/music-major-performance-study-option>

### Description

The Discovery Program capstone requirement is fulfilled by a final project or a public performance given during the senior year. For students in the performance study option, a full recital is required.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Major department courses may not be used to satisfy Discovery category requirements except in the case of a second major. B.A. in music majors may use MUSI 502 Musics in Context (a required core course for the major) to satisfy the Inquiry Discovery requirement.

## Requirements

### Bachelor of Arts in Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I <sup>1</sup>	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II <sup>1</sup>	2
MUSI 501 & MUSI 502	The Western Musical Canon and Musics in Context	6
MUSI 515	Music in World Cultures	4
MUSI 540	Recital Attendance	0
Advanced Music History: select one of the following		3
MUSI 703	Music of the Renaissance	
MUSI 705	Music of the Baroque	
MUSI 707	Music of the Classical Period	
MUSI 709W	Music of the Romantic Period	
MUSI 711	Music of the 20th and 21st Centuries	
MUSI 713	Art Song	
MUSI #715	Survey of Opera	
Select one of the following:		3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI #782W	Analysis: Form and Structure	
Performance Study (Applied Lessons): select from the following courses		
MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764		
Performing Ensemble: select variable credits from the following courses <sup>2</sup>		
MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464		
Total Credits		36

<sup>1</sup> Students will be given the opportunity to test out of MUSI 475 Functional Piano I, MUSI 476 Functional Piano I and MUSI 575 Functional Piano II, MUSI 576 Functional Piano II.

<sup>2</sup> A maximum of 8 ensemble credits may count toward graduation for all bachelor of arts in music students.

Degree program has final approval from the National Association of Schools of Music.

### Performance Study Option Requirements

Code	Title	Credits
Instrumental Performance Concentration		
MUSI 731	Conducting	2

Performance Study (Applied Lessons): select from the following courses <sup>1</sup>

MUSI 541, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564	8
MUSI 741, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764	8

Performing Ensemble: select from the following courses

MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464	8
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**Total Credits** 26

Code	Title	Credits
<b>Vocal Performance Concentration</b>		
MUSI 731	Conducting	2
MUSI 520	Diction for Singers I	2
MUSI #521	Diction for Singers II	2
Performance Study (Applied Lessons) <sup>1</sup>		
MUSI 545	Voice	8
MUSI 745	Voice	8
Performing Ensemble: select from the following courses		
MUSI 441	Concert Choir	
MUSI 442	Chamber Singers	
MUSI 448	Vocal Arts Project	
Language Requirement:		
FREN 401 & FREN 402	Elementary French I and Elementary French II	
or GERM 401 & GERM 402	Elementary German I and Elementary German II	
or ITAL 401 & ITAL 402	Elementary Italian I and Elementary Italian II	
<b>Total Credits</b>		<b>38</b>

<sup>1</sup> 2 credits per semester

## Student Learning Outcomes

- Demonstrate the ability to perform a specialization instrument or voice at an appropriate solo level and/or in small ensemble and large ensemble.
- Aurally identify, analyze, and work conceptually with the elements of music in a variety of musical styles.
- Students will demonstrate familiarity with musical literature from the formal concert repertory and from musical traditions outside of that repertory.
- Demonstrate the ability to develop and defend musical judgments in writing and in oral presentation.
- Demonstrate collegiate-level skills in the English language, competence in written and oral communication in English, and fluency in communicating and synthesizing musical, historical and analytical concepts in writing.
- Demonstrate the ability to perform a specialization instrument or voice at the level of an advanced undergraduate student, or young professional, including a high level of technical and artistic competence, and to work independently in both solo practicing and small ensemble rehearsals.
- Demonstrate maturity in musical performance, using performance and liberal-arts tools and insights to create an artistic product.
- Students will plan, prepare, and perform a solo recital in collaboration with faculty and staff that includes both organizational elements and artistic preparation.

## Composition Major (B.M.)

<https://cola.unh.edu/music/program/bm/composition-major>

### Description

All bachelor of music students are required to give a public performance during their senior year, which fulfills the Discovery Program capstone requirement:

- For students in the composition option, a full lecture, lecture-recital or recital including at least one original composition is required.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. B.M. in music majors may use MUSI 502 Musics in Context (a required core course for the major) to satisfy the Inquiry Discovery category requirement, and MUSI 515 Music in World Cultures (a required core course for the major) to satisfy the World Cultures Discovery category requirement.

### Requirements

## Bachelor of Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I <sup>1</sup>	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II <sup>1</sup>	2
MUSI 501 & MUSI 502	The Western Musical Canon and Musics in Context	6
MUSI 515	Music in World Cultures	4
MUSI 540	Recital Attendance	0
MUSI 731	Conducting	2
Select one of the following:		3
MUSI 703	Music of the Renaissance	
MUSI 705	Music of the Baroque	
MUSI 707	Music of the Classical Period	
MUSI 709W	Music of the Romantic Period	
MUSI 711	Music of the 20th and 21st Centuries	
MUSI 713	Art Song	
MUSI #715	Survey of Opera	
Select one of the following:		3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI #782W	Analysis: Form and Structure	
Performance Study (Applied Lessons): select from the following courses		Variable
MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764		Variable
Performing Ensemble: select from the following courses		Variable
MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464		
<b>Total Credits</b>		<b>38</b>

<sup>1</sup> Students will be given the opportunity to test out of MUSI 475 Functional Piano I, MUSI 476 Functional Piano I and MUSI 575 Functional Piano II, MUSI 576 Functional Piano II.

## Bachelor of Music in Composition

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
Select 9 credits of MUSI 771, MUSI 795 (Independent Study/Advanced Counterpoint), MUSI 781W, and MUSI #782W		9
Select 4 credits of MUSI 775, MUSI 776		4
Select 12 credits of MUSI 777		12
MUSI 779	Reading and Writing Musical Scores	3
MUSI 795	Special Studies (Advanced Music Theory) <sup>1</sup>	3
MUSI 795	Special Studies (Electronic Music)	2
Advanced Music History: select one of the following <sup>2</sup>		3
MUSI 703	Music of the Renaissance	
MUSI 705	Music of the Baroque	
MUSI 707	Music of the Classical Period	
MUSI 709W	Music of the Romantic Period	
MUSI 711	Music of the 20th and 21st Centuries	
MUSI 713	Art Song	
MUSI #715	Survey of Opera	
Performance Study (Applied Lessons): select from the following courses		8
MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764		
Performing Ensemble: select from the following courses		8
MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464		
<b>Total Credits</b>		<b>52</b>

<sup>1</sup> This is in addition to the other 700-level theory classes outlined above.

<sup>2</sup> This is in addition to the core required 700-level music history class.

Students in the bachelor of music in composition degree program may use a maximum of 8 ensemble credits toward graduation.

Students in the bachelor of music in composition degree are required to attend 8 semesters of composition seminar.

## Student Learning Outcomes

- Students will exhibit the skills necessary for artistic expression at the highest possible level as defined by their particular area of concentration in solo and small ensemble (not conducted) and large ensemble (conducted) settings.
- Students will exhibit competency in musicianship and analysis through: their understanding of musical forms and processes aural, verbal and visual analyses skill in performance, academic, pedagogical, and compositional applications rudimentary ability to create derivative or original music.
- Students will demonstrate familiarity with musical literature from the formal concert repertory and from musical traditions outside of that repertory. Students will demonstrate the ability to place music in historical, cultural, and stylistic contexts.
- Students will demonstrate collegiate-level skill in the English language and competence in written and oral communication in English.

- Demonstrate the ability to use technologies current to their area of specialization for professional development and entrepreneurship, and career preparation and promotion.
- Demonstrate skill in the use of standard concepts, tools, techniques, and procedures to develop a composition from concept to finished product.
- Manage a formal performance of a finished product.

## Music Education Major (B.M.)

<https://cola.unh.edu/music/program/bm/music-education-major>

### Description

The B.M. music education is the traditional program of choice for students seeking a career as a school music teacher. The bachelor of music degree in music education provides a route to undergraduate certification leading to state of New Hampshire teacher certification in music, grades K-12 (cert. #612.13). New Hampshire also participates in a reciprocal agreement with many other states: the Interstate Certification Compact.

Successful applicants must demonstrate a high degree of musical competence and promise of future growth as a performer. A firm commitment to leading school musicians to artistic success is expected, as is a willingness to acquire the breadth of skills required for K-12 music certification. Continuation in the B.M. music education program is made with the recommendation of the appropriate faculty members and contingent upon personal commitment to the teacher licensure program.

Students interested in a five-year, bachelor/masters degree program typically complete the B.M pre-teaching (described elsewhere) as an undergraduate and apply to the UNH Department of Education for admission to the Master of Arts in Teaching (Secondary) degree program.

Students in music education must maintain an overall minimum 2.8 grade-point average at the time of application for student teaching (February 15 of junior year). Any education course taken for a teacher licensure requirement must be completed with a B- or better.

B.M. music education majors may use MUSI 501 The Western Musical Canon (a required core course for the major) to satisfy the Fine and Performing Arts Discovery category requirement. In addition, they may use MUSI 502 Musics in Context (a required core course for the major) to satisfy the Inquiry Discovery category requirement, and MUSI 515 Music in World Cultures (a required core course for the major) to satisfy the World Cultures Discovery category requirement.

All bachelor of music students are required to give a public performance during their senior year, which fulfills the Discovery Program capstone requirement:

- For students in the music education option, a half recital is required.

The four-year bachelor of music in music education curriculum is highly structured due to the number of required courses to complete. In the table below is the list of additional classes required to earn a degree and a certificate to teach. Students may elect a vocal/choral or instrumental emphasis. See curriculum chart for differing requirements.



## Requirements

### Bachelor of Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I <sup>1</sup>	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II <sup>1</sup>	2
MUSI 501 & MUSI 502	The Western Musical Canon and Musics in Context	6
MUSI 515	Music in World Cultures	4
MUSI 540	Recital Attendance	0
MUSI 731	Conducting	2
Select one of the following:		3
MUSI 703	Music of the Renaissance	
MUSI 705	Music of the Baroque	
MUSI 707	Music of the Classical Period	
MUSI 709W	Music of the Romantic Period	
MUSI 711	Music of the 20th and 21st Centuries	
MUSI 713	Art Song	
MUSI #715	Survey of Opera	
Select one of the following:		3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI #782W	Analysis: Form and Structure	
Performance Study (Applied Lessons): select from the following courses		Variable
MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764		
Performing Ensemble: select from the following courses		Variable
MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464		
<b>Total Credits</b>		<b>38</b>

<sup>1</sup> Students will be given the opportunity to test out of MUSI 475 Functional Piano I, MUSI 476 Functional Piano I and MUSI 575 Functional Piano II, MUSI 576 Functional Piano II.

### Bachelor of Music in Music Education Curriculum

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
MUED 741	Techniques and Methods in Choral Music	2
MUED 745	Techniques and Methods in String Instruments	2
MUED 747	Techniques and Methods in Woodwind Instruments <sup>1</sup>	2-3
MUED 749	Techniques and Methods in Brass Instruments	2
MUED 751	Techniques and Methods in Percussion Instruments	2
MUED 755	Vocal Pedagogy <sup>2</sup>	2
MUED 765	Instrumental Music Methods <sup>3</sup>	2
MUED 790	Teaching Elementary School Music	3
MUED 791	Teaching Secondary School Music	2
MUSI 520	Diction for Singers I <sup>4</sup>	2
MUSI 732	Conducting	2
MUSI 779	Reading and Writing Musical Scores	3

Performance Study (Applied Lessons): select from the following courses		8
MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764		
Performing Ensemble: select from the following courses <sup>5</sup>		8
MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464		
EDUC 500	Exploring Teaching	4
EDUC 605	Educational Perspectives in Critical Times	4
EDUC 701	Human Development & Learning: Cultural Perspectives	4
EDUC 751B	Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions	4
EDUC 694	Courses in Supervised Teaching	8
<b>Total Credits</b>		<b>66-67</b>

- <sup>1</sup> Vocal track students take 2 credits. Instrumental track students take 3 credits.
- <sup>2</sup> Required for Vocal track.
- <sup>3</sup> Required for Instrumental track.
- <sup>4</sup> Required for Vocal track.
- <sup>5</sup> Students in the bachelor of music in music education degree program may use a maximum of 8 ensemble credits toward graduation. Of the 8 credits in ensemble performance (MUSI 441 Concert Choir-MUSI 464 Guitar Ensemble) required during the course of study, it is required that at least 4 credits will be from the following: Concert Choir (MUSI 441 Concert Choir), Symphony (MUSI 450 Symphony), Wind Symphony (MUSI 452 Wind Symphony), Symphonic Band (MUSI 453 Symphonic Band), and/or Concert Band (MUSI 451 Concert Band). At least 1 credit of performance in a jazz ensemble (MUSI 460 Jazz Band) and 1 credit of Marching Band (MUSI 454 UNH Marching Band) are highly desirable.

### Junior Standing in Music Education

Recognition of adequate completion of fundamental academic and musical competencies shall earn students declared for the Bachelor of Music: Music Education the title Junior Standing. Students will not receive permission to register for the upper-level music education methods courses (MUED 765, MUED 790, MUED 791) without such recognition. Two of the steps required for recognition are the submission of passing scores on the PRAXIS: Core Academic Skills for Educators tests (scores will be sent directly to the Department of Education) and clearance of the Criminal Background Check as conducted by the State of New Hampshire Department of Safety. Results will be sent directly to the music education coordinator in the Department of Music. There is a charge for each of these steps assessed by the providers. Current students may follow the catalog corresponding to their matriculation year or follow the proposed changes.

#### Junior Standing Requirements

1. Criminal Background Check
2. Academic Standing
  - a. 2.8 overall grade point average
  - b. Pass PRAXIS Core Academic Skills for Educators Test
3. Aural Skills: Complete MUSI 574 Ear Training II with a grade of C- or better and a departmental followup assessment
4. Music Performance Skills
  - a. Pass Sophomore Performance Jury with a grade of C- or better
  - b. Perform for at least 3 semesters as a regular member of at least one of the designated core ensembles
  - c. Complete MUSI 576 Functional Piano II with a C- or better and a departmental followup assessment

5. Complete EDUC 500 Exploring Teaching and a departmental followup assessment

## Student Learning Outcomes

- Students will exhibit the skills necessary for artistic expression at the highest possible level as defined by their particular area of concentration in solo and small ensemble (not conducted) and large ensemble (conducted) settings.
- Students will exhibit competency in musicianship and analysis through: their understanding of musical forms and processes aural, verbal and visual analyses skill in performance, academic, pedagogical, and compositional applications rudimentary ability to create derivative or original music.
- Students will demonstrate familiarity with musical literature from the formal concert repertory and from musical traditions outside of that repertory. Students will demonstrate the ability to place music in historical, cultural, and stylistic contexts.
- Students will demonstrate collegiate-level skill in the English language and competence in written and oral communication in English.
- Demonstrate the ability to use technologies current to their area of specialization for professional development and entrepreneurship, and career preparation and promotion.
- Students demonstrate ability to lead students to increased musical knowledge and advancing musical performance.
- Students demonstrate knowledge of age-appropriate vocal and instrumental pedagogy.
- Students demonstrate an understanding of best practices and applicable learning theories in music education.
- Students demonstrate the ability to prepare classes and rehearsals via score study and lesson planning that includes awareness of needed modifications.
- Students aurally discern accuracy and expressive elements in student performances.
- Students demonstrate the ability to assess their pupils' learning and progress in conjunction with best educational practices.
- Students are able to assess the success of their own class teaching and rehearsals.

## Performance Major (B.M.)

<https://cola.unh.edu/music/program/bm/performance-major>

### Description

All bachelor of music students are required to give a public performance during their senior year, which fulfills the Discovery Program capstone requirement:

- For students in the performance option, a full recital is required. Students in the bachelor of music in performance degree program are required to perform a half junior recital.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. B.M. in music majors may use MUSI 502 Musics in Context (a required core course for the major) to satisfy the Inquiry Discovery category requirement, and MUSI 515 Music in World

Cultures (a required core course for the major) to satisfy the World Cultures Discovery category requirement.

## Requirements

### Bachelor of Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I <sup>1</sup>	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II <sup>1</sup>	2
MUSI 501 & MUSI 502	The Western Musical Canon and Musics in Context	6
MUSI 515	Music in World Cultures	4
MUSI 540	Recital Attendance	0
MUSI 731	Conducting	2
Select one of the following:		3
MUSI 703	Music of the Renaissance	
MUSI 705	Music of the Baroque	
MUSI 707	Music of the Classical Period	
MUSI 709W	Music of the Romantic Period	
MUSI 711	Music of the 20th and 21st Centuries	
MUSI 713	Art Song	
MUSI #715	Survey of Opera	
Select one of the following:		3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI #782W	Analysis: Form and Structure	
Performance Study (Applied Lessons): select from the following courses		Variable
MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764		
Performing Ensemble: select from the following courses		Variable
MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464		
<b>Total Credits</b>		<b>38</b>

<sup>1</sup> Students will be given the opportunity to test out of MUSI 475 Functional Piano I, MUSI 476 Functional Piano I and MUSI 575 Functional Piano II, MUSI 576 Functional Piano II.

### Bachelor of Music in Performance (Voice)

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
MUED 741	Techniques and Methods in Choral Music	2
MUED 755	Vocal Pedagogy	2
MUSI 520 & MUSI #521	Diction for Singers I and Diction for Singers II	4
MUSI 713 or MUSI #715	Art Song Survey of Opera	3
MUSI 545/745	Voice (voice lessons) <sup>1</sup>	25
Select 8 credits of the following:		8
MUSI 441	Concert Choir <sup>2</sup>	
MUSI 442	Chamber Singers	
MUSI 448	Vocal Arts Project	

Select one of the following:	8
ITAL 401 & ITAL 402	Elementary Italian I and Elementary Italian II
GERM 401 & GERM 402	Elementary German I and Elementary German II
FREN 401 & FREN 402	Elementary French I and Elementary French II
<b>Total Credits</b>	<b>52</b>

- <sup>1</sup> Three credits of lessons each semester until the student's senior recital semester; then it is 4 credits.
- <sup>2</sup> Four credits must be MUSI 441 Concert Choir; the remaining 4 credits must be MUSI 441 Concert Choir, MUSI 442 Chamber Singers, or MUSI 448 Vocal Arts Project.

## Bachelor of Music in Performance (Piano)

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
MUED 743	Materials and Methods in Piano Music	2
Select one of the following:	<sup>1</sup>	3
MUSI 771	Counterpoint	
MUSI 781W	Analysis: Form and Structure	
MUSI #782W	Analysis: Form and Structure	
Select 3 credits of the following:	<sup>2</sup>	3
MUSI 775	Composition	
MUSI 776	Composition	
MUSI 777	Advanced Composition	
MUSI 779	Reading and Writing Musical Scores	
Any 700-level advanced music history or advanced music theory course	<sup>2</sup>	3
MUSI 795	Special Studies (Topic V) advanced piano pedagogy)	2
MUSI 795	Special Studies (Topic E) piano literature)	1-2
MUSI 455	Collaborative Piano	<sup>3</sup> 4
MUSI 541/741	Piano (piano lessons)	<sup>4</sup> 25
Performing Ensemble: select from the following		4
MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464		
<b>Total Credits</b>		<b>47-48</b>

- <sup>1</sup> A B.M. piano performance major must take a total of two of these three courses: MUSI 771 Counterpoint, MUSI 781W Analysis: Form and Structure, and MUSI #782W Analysis: Form and Structure.
- <sup>2</sup> A B.M. piano performance major must take an additional 700-level music history or music theory course.
- <sup>3</sup> This course will be taken a total of 4 times.
- <sup>4</sup> Three credits of lessons each semester until the semester of the senior recital; then it is 4 credits.

## Bachelor of Music in Performance (All other Instruments)

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
Techniques & Methods: select from the following	<sup>1</sup>	2-3
MUED 745	Techniques and Methods in String Instruments	
MUED 747	Techniques and Methods in Woodwind Instruments	
MUED 749	Techniques and Methods in Brass Instruments	
MUED 751	Techniques and Methods in Percussion Instruments	
Select 3 credits of MUSI 700-level Advanced Music History or Advanced Music Theory	<sup>2</sup>	3
Performance Study (Applied Lessons): select from the following	<sup>3</sup>	25

MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764	
Performing Ensemble: select from the following	12
MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464	
<b>Total Credits</b>	<b>42-43</b>

- <sup>1</sup> B.M. instrumental performance majors take one methods class in the appropriate instrumental family, e.g., a trumpet player would take MUED 749 Techniques and Methods in Brass Instruments, to fulfill this requirement.
- <sup>2</sup> This is in addition to the advanced music history and advanced music theory class already required.
- <sup>3</sup> Three credits of lessons are taken each semester until the student's senior recital semester; then it is 4 credits.

## Student Learning Outcomes

- Students will exhibit the skills necessary for artistic expression at the highest possible level as defined by their particular area of concentration in solo and small ensemble (not conducted) and large ensemble (conducted) settings.
- Students will exhibit competency in musicianship and analysis through: their understanding of musical forms and processes aural, verbal and visual analyses skill in performance, academic, pedagogical, and compositional applications rudimentary ability to create derivative or original music.
- Students will demonstrate familiarity with musical literature from the formal concert repertory and from musical traditions outside of that repertory. Students will demonstrate the ability to place music in historical, cultural, and stylistic contexts.
- Students will demonstrate collegiate-level skill in the English language and competence in written and oral communication in English.
- Demonstrate the ability to use technologies current to their area of specialization for professional development and entrepreneurship, and career preparation and promotion.
- Students will demonstrate an understanding of the fundamentals of pedagogy as required in the particular field of study.
- Students in vocal studies will demonstrate competencies in diction and language, as well as interpretive skills, physicality, and stage deportment.
- Students will plan, prepare, and perform a solo recital in collaboration with faculty and staff that includes both organizational elements and artistic preparation.

## Pre-Teaching Major (B.M.)

<https://cola.unh.edu/music/program/bm/pre-teaching-major>

### Description

The B.M. pre-teaching degree is the program of choice for most students seeking a five-year, combined bachelor's and master's degree program that includes certification to teach music in the public schools. Students will complete all of the skill and knowledge content requirements in

this undergraduate program leaving a year-long internship and some advanced study in music and education for the fifth year.

Students applying to the Master of Arts in Teaching program need a cumulative undergraduate grade point average of 3.2 or better to ensure admission to the graduate school. Therefore, students typically apply first to UNH as a B.M. music education major and switch to this B.M. pre-teaching degree in their junior or senior year.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. B.M. in music majors may use MUSI 502 Musics in Context (a required core course for the major) to satisfy the Inquiry Discovery category requirement, and MUSI 515 Music in World Cultures (a required core course for the major) to satisfy the World Cultures Discovery category requirement. Additionally, B.M. music education and pre-teaching majors may use MUSI 501 The Western Musical Canon to satisfy the Fine and Performing Arts Discovery category requirement.

All bachelor of music students are required to give a public performance during their senior year, which fulfills the Discovery Program capstone requirement:

- For students in the pre-teaching option, a half recital is required.

## Requirements

### Bachelor of Music Core Curriculum

Code	Title	Credits
MUSI 471 & MUSI 472	Theory I and Theory I	6
MUSI 473 & MUSI 474	Ear Training I and Ear Training I	2
MUSI 475 & MUSI 476	Functional Piano I and Functional Piano I <sup>1</sup>	2
MUSI 571 & MUSI 572	Theory II and Theory II	6
MUSI 573 & MUSI 574	Ear Training II and Ear Training II	2
MUSI 575 & MUSI 576	Functional Piano II and Functional Piano II <sup>1</sup>	2
MUSI 501 & MUSI 502	The Western Musical Canon and Musics in Context	6
MUSI 515	Music in World Cultures	4
MUSI 540	Recital Attendance	0
MUSI 731	Conducting	2
Select one of the following:		3
MUSI 703	Music of the Renaissance	Variable
MUSI 705	Music of the Baroque	
MUSI 707	Music of the Classical Period	
MUSI 709W	Music of the Romantic Period	
MUSI 711	Music of the 20th and 21st Centuries	
MUSI 713	Art Song	
MUSI #715	Survey of Opera	
Select one of the following:		3
MUSI 771	Counterpoint	Variable
MUSI 781W	Analysis: Form and Structure	
MUSI #782W	Analysis: Form and Structure	
Performance Study (Applied Lessons): select from the following courses		Variable
MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764		
Performing Ensemble: select from the following courses		Variable

MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464
Total Credits 38

<sup>1</sup> Students will be given the opportunity to test out of MUSI 475 Functional Piano I, MUSI 476 Functional Piano I and MUSI 575 Functional Piano II, MUSI 576 Functional Piano II.

## Bachelor of Music Pre-Teaching Curriculum

Degree program has final approval from the National Association of Schools of Music.

Code	Title	Credits
MUED 741	Techniques and Methods in Choral Music	2
MUED 745	Techniques and Methods in String Instruments	2
MUED 747	Techniques and Methods in Woodwind Instruments <sup>1</sup>	2-3
MUED 749	Techniques and Methods in Brass Instruments	2
MUED 751	Techniques and Methods in Percussion Instruments	2
MUED 755	Vocal Pedagogy <sup>2</sup>	2
MUED 765	Instrumental Music Methods <sup>3</sup>	2
MUED 790	Teaching Elementary School Music	3
MUED 791	Teaching Secondary School Music	2
MUSI 520	Diction for Singers I <sup>4</sup>	2
MUSI 732	Conducting	2
MUSI 779	Reading and Writing Musical Scores	3
Performance Study (Applied Lessons): select from the following courses		8
MUSI 541, MUSI 545, MUSI 546, MUSI 547, MUSI 548, MUSI 549, MUSI 550, MUSI 551, MUSI 552, MUSI 553, MUSI 554, MUSI 555, MUSI 556, MUSI 557, MUSI 558, MUSI 559, MUSI 560, MUSI 561, MUSI 562, MUSI 563, MUSI 564, MUSI 741, MUSI 745, MUSI 746, MUSI 747, MUSI 748, MUSI 749, MUSI 751, MUSI 752, MUSI 753, MUSI 754, MUSI 755, MUSI 756, MUSI 757, MUSI 758, MUSI 759, MUSI 760, MUSI 761, MUSI 762, MUSI 763, MUSI 764		
Performing Ensemble: select from the following courses <sup>5</sup>		8
MUSI 441, MUSI 442, MUSI 448, MUSI 450, MUSI 451, MUSI 452, MUSI 453, MUSI 454, MUSI 455, MUSI 456, MUSI 457, MUSI 459, MUSI 460, MUSI 462, MUSI 463, MUSI 464		
EDUC 500	Exploring Teaching	4
EDUC 605	Educational Perspectives in Critical Times	4
EDUC 701	Human Development & Learning: Cultural Perspectives	4
EDUC 751B	Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions	4
Total Credits		58-59

<sup>1</sup> Vocal track students take 2 credits. Instrumental track students take 3 credits.  
<sup>2</sup> Required for Vocal track.  
<sup>3</sup> Required for Instrumental track.  
<sup>4</sup> Required for Vocal track.  
<sup>5</sup> Students in the bachelor of music pre-teaching degree program may use a maximum of 8 ensemble credits toward graduation. Of the 8 credits in ensemble performance (MUSI 441 Concert Choir-MUSI 464 Guitar Ensemble) required during the course of study, it is required that at least 4 credits will be from the following: Concert Choir (MUSI 441 Concert Choir), Symphony (MUSI 450 Symphony), Wind Symphony (MUSI 452 Wind Symphony), Symphonic Band (MUSI 453 Symphonic Band), and/or Concert Band (MUSI 451 Concert Band). At least 1 credit of performance in a jazz ensemble (MUSI 460 Jazz Band) and 1 credit of Marching Band (MUSI 454 UNH Marching Band) are highly desirable.

## Student Learning Outcomes

- Students will exhibit the skills necessary for artistic expression at the highest possible level as defined by their particular area of concentration in solo and small ensemble (not conducted) and large ensemble (conducted) settings.

- Students will exhibit competency in musicianship and analysis through: their understanding of musical forms and processes aural, verbal and visual analyses skill in performance, academic, pedagogical, and compositional applications rudimentary ability to create derivative or original music.
- Students will demonstrate familiarity with musical literature from the formal concert repertory and from musical traditions outside of that repertory. Students will demonstrate the ability to place music in historical, cultural, and stylistic contexts.
- Students will demonstrate collegiate-level skill in the English language and competence in written and oral communication in English.
- Demonstrate the ability to use technologies current to their area of specialization for professional development and entrepreneurship, and career preparation and promotion.
- Students demonstrate ability to lead students to increased musical knowledge and advancing musical performance.
- Students demonstrate knowledge of age-appropriate vocal and instrumental pedagogy.
- Students demonstrate an understanding of best practices and applicable learning theories in music education.
- Students demonstrate the ability to prepare classes and rehearsals via score study and lesson planning that includes awareness of needed modifications.
- Students aurally discern accuracy and expressive elements in student performances.
- Students demonstrate the ability to assess their pupils' learning and progress in conjunction with best educational practices.
- Students are able to assess the success of their own class teaching and rehearsals.

## Music Minor

<https://cola.unh.edu/music/program/minor/music>

### Description

A music minor is a great option for students who are passionate about the discipline of music but choose to major in another field. The minor includes required coursework in music theory and literature.

### Requirements

All students wishing to receive a minor in music must complete a minimum of 20 credits of coursework in music, of which the following are required:

Code	Title	Credits
Select one of the following options:		8
Option A:		
MUSI 471 & MUSI 472 & MUSI 473 & MUSI 474	Theory I and Theory I and Ear Training I and Ear Training I	
Option B:		
MUSI 411 & MUSI 412	Fundamentals of Music Theory and Fundamentals of Music Theory	
Select two of the following:		8
MUSI 401	Introduction to Music	
MUSI 402	Historical Survey of Western Classical Concert Music	
MUSI 403	Roots of Rock	

MUSI 404	An Introduction to Music, Media, and the Moving Image	
MUSI 405	Survey of Music in America	
MUSI 444	Music and Social Change	
MUSI 501	The Western Musical Canon	
MUSI 502	Musics in Context	
MUSI 515	Music in World Cultures	
Select 4 credits of MUSI electives		4
Total Credits		20

## Native American and Indigenous Studies (NAIS)

### Programs

- [Native American and Indigenous Studies Minor](#) (p. 113)

## Native American and Indigenous Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/native-american-indigenous-studies>

### Description

As an interdisciplinary minor, Native American and Indigenous studies (NAIS) offers a broad understanding of the history, lands, culture, literature, language and artistic expression, science and technology, race and identity, and social organization and political statuses of Native American and Indigenous peoples within and beyond North America. The minor provides an introduction to Indigenous values and a basis for understanding broad Indigenous issues.

NAIS complements a range of majors, including anthropology, English, history, political science, health and human services, music, psychology, biology, botany, natural resources and sustainability. The UNH Education Abroad program offers a variety of opportunities to UNH students to explore the NAIS minor overseas.

The minor will help students acquire the necessary skills and qualifications for a variety of graduate study and employment opportunities and enhance competitiveness for federal scholarships and programs, such as the Peace Corps, Teach for America or the National Parks Service. Students with NAIS training will be prepared for work with Tribal and Indigenous leaders and officials, public health practitioners and administrators, and/or working with institutions that require employees with cultural and historical sensitivity to Indigenous issues, such as museums or other public institutions. NAIS graduates may also go on to careers with organizations with Indigenous interests in the areas of education, business, arts, government and law, nonprofit and advocacy, and healthcare and science (e.g., the Native American Rights Fund, Native American Arts Council, American Indian Science and Engineering Society).



## Requirements

20 credits (5 courses) are required for the minor. Students must receive a grade of C or better in each course in order for the course to count toward the minor requirements.

**Choose one** of the following two options to complete the minor requirements.

Code	Title	Credits
<b>Option 1</b>		
NAIS 400	Introduction to Native American and Indigenous Studies <sup>1</sup>	4
	4 elective courses chosen from the list of approved courses below	16
<b>Total Credits</b>		<b>20</b>

Code	Title	Credits
<b>Option 2</b>		
NAIS 400	Introduction to Native American and Indigenous Studies <sup>1</sup>	4
	3 elective courses chosen from the list of approved electives below <sup>2</sup>	12
	1 credit-bearing internship (ANTH 700 or other approved internship)	4
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Also fulfills World Cultures Discovery requirement

<sup>2</sup> 2 of these courses can be from a UNH-approved education abroad program (see below)

## Approved Electives

Code	Title	Credits
AMST 444C	Picturing America: The Arts & Social Change	4
ANTH 500	Peoples and Cultures of the World (A: North America and B: Latin America)	4
ANTH 501	World Archaeological Cultures (B: Mesoamerica)	4
ANTH 513	Ethnographic Methods	4
ANTH 514	Method and Theory in Archaeology	4
ANTH 700	Internship	1-4
ANTH 785	The Anthropology of Dreams and Dreaming	4
BIOL 408	Plants and Civilization	4
ENGL 440A	On Race in Culture and Society	4
ENGL 550	Introduction to the Literature and Culture of Race	4
ENGL 729	Special Topics in Composition Studies (on an approved topic)	4
ENGL 739	American Indian Literature	4
HIST 405	History of Early America	4
HIST 511	History of New Hampshire	4
HIST 532	Modern Latin America	4
HIST 603	European Conquest of North America	4
HIST 632	Latin American History: Topics	4
MUSI 515	Music in World Cultures	4
NR 660	Ecology and Biogeography of New Zealand	5
PSYC 581	Child Development	4

## NAIS UNH-Approved Study Abroad Programs

Thailand-TEAN-Chang Mai; CIEE Khon Kaew

USAC-Southwest Minzu University (Southwest Universities for Nationalities). Among the courses offered:

- Buddhism and Culture (ANTH/SOC)
- Tibetan Culture and Society (ANTH/SOC)
- Guizhou Field Study (ANTH/WLL, 200-level, 1 credit)

Morocco - IES & CIEE. Courses offered:

- Gender and Society in North Africa and Beyond
- North African Cultural Identities
- Internship/Social Action Seminar
- Islam In Morocco And North Africa (English-taught)
- Arab Media and Issues of Politics and Culture

New Zealand - Otago. Courses offered:

- Maori Studies

Peru - SIT: Indigenous Peoples and Globalization. Courses offered:

- History of Indigenous Cultures in Peru
- Indigenous Peoples in Motion: Changes, Resistance, and Globalization
- Quechua
- Research Methods and Ethics
- Independent Study Project

Senegal -CIEE. Courses offered:

- Contemporary Senegalese Society and Culture
- Intercultural Communication and Leadership (English)
- Environment and Development in Senegal and Sub-Saharan Africa (English)
- Public Health Issues and Challenges in West Africa

Tanzania-CIEE. Courses offered:

- Kiswahili
- Field Research Seminar
- Pre-History, Myths, Legends, and Beliefs of East Africa
- Contemporary Educational Issues in East Africa
- Gender and Development
- History of East Africa
- Poverty Analysis for Socio-economic Development

Bhutan -API at Royal Thimphu College with internship. Courses offered:

- Anthropology of the Himalayas
- Ethnography of Bhutan
- Anthropology of Identity
- Anthropology of Gender
- Kinship and Family
- ASC201: Anthropology of Globalization
- ASC301: Anthropology of Development
- ASC303: Applied Anthropology
- ASC304: Contemporary Issues in Anthropology
- ATH101: Ecological Anthropology
- ATH102: Medical Anthropology
- ATH203: History and Theory of Anthropology
- ATH204: Political Anthropology
- ATH305: Anthropology of Religion and Rituals

## Neuroscience and Behavior (NSB)

Neuroscience is one of the fastest-growing scientific fields, and the discoveries that are being made today are having an immediate and significant impact on our society. The importance of understanding

animal behavior is likewise increasing, particularly in the face of a rapidly-changing environment. The B.S. in Neuroscience and Behavior is a great way for students to combine interests in neurobiology and animal behavior. The curriculum prepares students for various post-graduate degrees, including medical, veterinary, and graduate school, and we offer students a variety of opportunities to get hands-on research experience.

<https://cola.unh.edu/psychology/program/bs/neuroscience-behavior-major>

## Programs

- [Neuroscience and Behavior Major \(B.S.\)](#) (p. 115)

## Faculty

### College of Liberal Arts Faculty

<https://cola.unh.edu/psychology/faculty-staff-directory>

### College of Life Sciences & Agriculture Faculty

<https://colsa.unh.edu/biological-sciences/people>

# Neuroscience and Behavior Major (B.S.)

<https://cola.unh.edu/psychology/program/bs/neuroscience-behavior-major>

## Description

The major in neuroscience and behavior (NSB) offers an interdisciplinary approach to human and non-human behavior, focusing on the evolution and adaptiveness of certain behaviors, as well as their underlying neural mechanisms. Students who have always been fascinated by how the brain functions will be well served by this major, as will those who love wild animals and wish to better understand their behavior. The B.S. in neuroscience and behavior is based on a solid foundation in biology, chemistry, physics, statistics, and genetics (foundation courses). These are followed by a two-semester course sequence that covers the fundamentals of neuroscience and behavior. Students can then pick five or more electives focusing on areas of interest.

NSB students are encouraged to take advantage of research experiences in the laboratories of the psychology and biology faculty in the program. This provides valuable experience with cutting-edge equipment and techniques. Some students may share aspects of a larger project, whereas others may be relatively independent and design their own project under supervision. In either case, important skills are gained by the discipline of gathering data, analyzing and interpreting it, and presenting it to a broader audience.

The curriculum provides most of the requirements and recommended courses for students seeking admission to graduate school and to professional schools in medicine and veterinary medicine. Students who might choose not to go on to advanced degrees are well-prepared for employment as skilled technicians in research laboratories or, if their interests are in animal behavior, as field research assistants or animal trainers. With additional courses in education, the B.S. in NSB

also qualifies graduates to teach at the elementary, junior high, and high school levels.

Faculty participating in the NSB major combine a love of teaching and student mentoring with a passion for research, and encourage student participation. Research facilities that students can use include the Integrative Animal Behavior and Ecoacoustics laboratory, the confocal imaging center, the Hubbard Center for Genomic Studies, and the many marine, freshwater, and estuarine laboratories associated with UNH programs. Students can also take summer courses at the Shoals Marine Laboratory.

## Requirements

Students majoring in NSB are required to take foundation courses in basic science, core courses, and five electives from an extensive list of courses, including some offered by other departments including biochemistry, molecular and cellular biology, and natural resources. Minimum grade of D- or better is required in CHEM 403, CHEM 404, CHEM 545/CHEM 546, and PHYS 401; minimum grade of C- or better is required in all other courses. Finally, a capstone experience is required. This may be independent research, an advanced seminar, or other special student activity. It is meant to integrate prior experience and take the student to a new level in an area of special interest.

Code	Title	Credits
<b>NSB Foundation courses</b>		
NSB 400	Topics Neuroscience & Behavior	1
BIOL 411 & BIOL 412	Introductory Biology: Molecular and Cellular and Introductory Biology: Evolution, Biodiversity and Ecology (2 semesters)	8
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II (2 semesters)	8
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
PHYS 401	Introduction to Physics I	4
PSYC 402 or BIOL 528	Statistics in Psychology Applied Biostatistics I	4
GEN 604	Principles of Genetics	4
NSB 500 & NSB 501	Fundamentals of Neuroscience and Behavior I and Fundamentals of Neuroscience and Behavior I Laboratory	5
NSB 502 & NSB 503	Fundamentals of Neuroscience and Behavior II/Systems Neuroscience and Fundamentals of Neuroscience and Behavior II Laboratory	5
<b>Electives (Choose 5)</b>		<b>20-22</b>
BIOL 541	Ecology	
BIOL 675	Medical Botany	
BIOL 714	Model Organisms in Biological and Medical Research	
BMCB 605	Principles of Cell Biology	
BMCB 760	Pharmacology	
BMS 507 & BMS 508	Human Anatomy and Physiology I and Human Anatomy and Physiology II <sup>1</sup>	
BMS 702	Endocrinology	
BMS 711	Toxicology	
BMS 718	Mammalian Physiology	
GEN 706	Human Genetics	
KIN 706 & KIN 707	Neurology and Neurology Lab <sup>1</sup>	
MEFB 714	Field Animal Behavior (SML, C)	
NSB 705	Molecular and Cellular Neurobiology (C)	
NSB 727	Animal Communication (C)	
NSB #728	Research Methods in Animal Behavior (C)	
PHIL 630	Neuroscience and Philosophy	
PSYC 511	Sensation and Perception	
PSYC 512	Psychology of Primates	
PSYC 513	Cognitive Psychology	
PSYC 521	Behavior Analysis	

PSYC 710	Visual Perception (C)
PSYC 716	Cognitive Neuroscience (C)
PSYC 720	Animal Cognition (C)
PSYC 731	Brain and Behavior (C)
PSYC 733	Drugs and Behavior (C)
PSYC 735	Neurobiology of Mood Disorders (C)
PSYC 736	Attention Disorders (C)
PSYC 737	Behavioral Medicine (C)
ZOOL 613	Animal Behavior
PSYC 741W	Special Topics (Neuroscience of Memory, Behavioral Neuroscience, Science of Daydreaming (C)
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory (C) <sup>1</sup>
ZOOL 690	Evolution
ZOOL 726	Conservation Behavior (C)
ZOOL 733	Behavioral Ecology (C)
ZOOL 736	Genes and Behavior (C)
ZOOL 777	Neuroethology (C)
795/796 or 799 Independent Study, (C) <sup>2</sup>	
<b>Capstone</b> <sup>3</sup>	
Total Credits 69-71	

<sup>1</sup> Both must be taken to count as one of the 5 required major electives

<sup>2</sup> One experience totaling at least 4 credits, but can be earned over the course of two consecutive semesters provided the experience is with the same research mentor. Can only substitute for one elective.

<sup>3</sup> Courses that are eligible to fulfill the Capstone requirement are indicated with a (C) and must be taken senior year. You can: 1) designate a course as a Capstone course, with additional requirements as determined by the instructor; 2) complete one semester of Capstone Research (BIOL 795, PSYC 795, or INCO 790); 3) do an honors thesis in Neuroscience and Behavior (NSB 799H) or Biology or Psychology (BIOL 799 or PSYC 797/PSYC 799) or; 4) participate in an alternative activity with approval from the student's academic advisor.

NSB majors may use BIOL 411, BIOL 412, CHEM 403, CHEM 404, PHYS 401, PHYS 407 and either PSYC 402 or BIOL 528 to fulfill the Biological Sciences, Physical Sciences, Discovery Lab, and Quantitative Reasoning Discovery requirements. Students transferring into the NSB program from other UNH majors must hold a cumulative GPA of at least 3.2 at the time of requested major change.

## Student Learning Outcomes

Students demonstrate that they understand basic principles of neuroscience and behavior.

- Apply the core principles of biology, chemistry, physics, and statistics to more advanced concepts in neuroscience and behavior.
- Apply the principles of evolution and genetics to understand how genotype and phenotype affect the structure and function of animal nervous systems and behavior.
- Describe the basic features of animal nervous system development, organization, signaling, integration, and higher-level processing, and how these are altered in diseases of the nervous system.
- Explain the four levels of analysis emphasized in modern animal behavior research: causation, development, function, and evolution.
- Describe molecular and cellular approaches to the study of brain structure, function, and development, as well as behavioral and cognitive neuroscience approaches to studying higher level brain functions.

Students demonstrate that they can undertake scientifically valid methods of inquiry.

- Apply appropriate research methods, laboratory techniques, and statistical methods to investigate scientific questions in neuroscience and behavior.

Students demonstrate that they can think critically and analytically.

- Read and critique primary research literature related to the nervous system, how nervous system function generates behavior, and how behavior addresses fitness-related challenges across a diversity of species.

Students demonstrate that they can communicate effectively.

- Demonstrate scientific writing skills, and proficiency in delivering oral presentations related to both the primary literature and findings from student investigations in neuroscience and behavior.

Students practice science responsibly and ethically, and acknowledge the influence of cultural and historical biases in the sciences.

## Philosophy (PHIL)

Philosophy has always been at the heart of liberal education, deepening and enriching the lives of those who pursue it. The philosophy major provides students with the opportunity to confront a wide variety of questions, especially those that cannot be dealt with in the framework of other disciplines. Such questions include those about the ultimate nature of reality: Does God exist? Are minds distinct from bodies? Are there more things between heaven and Earth than are dreamed of in science? Other questions probe what it is to know: Do we know that material bodies external to our minds exist? What does it mean to justify a belief? Still other questions are about how we ought to be or act: What is a good person? Are there moral rules? How are they justified? Must we obey them?

Philosophy also concerns itself with other disciplines: What makes something a work of art? What distinguishes a scientific theory from a religious theory or myth? Is capitalism amoral? Is legal authority moral or political?

The Department of Philosophy offers a wide range of courses exposing students to the full scope of philosophical activity. Grappling with major primary texts from the history of philosophy is an important emphasis of the program, for philosophy today is the continuation of a conversation that extends back to the ancient Greeks and the Vedic scriptures. Philosophy also always has wrestled with cutting-edge topics emerging in the current culture. Some recent examples are: What are the prospects for machines with mental lives? What are the implications of new views in cosmology? How do we handle the pressing ethical dilemmas brought on by emerging medical technologies, or by the historically unparalleled rate of destruction of the Earth's environment? Are gender and race socially constructed concepts rather than biological concepts?

## Options in the Major

Students may select one of three options for the philosophy major, but are not required to do so. The options do not add additional requirements to the general philosophy major, but rather focus philosophy electives in a specific area.

- The [ethics and social responsibility \(ESR\) option](#) provides official recognition for those who choose to emphasize concern with moral

responsibility in personal and social contexts, including the political and corporate arenas. You will choose courses in environmental ethics, law, evolution, social and political philosophy, and feminism.

- The [business, innovation, and technology \(BIT\) option](#) provides official recognition for those who choose to emphasize the study of the relationships between markets, technology, and human well-being. You will choose courses in the philosophy of artificial intelligence, evolution, neuroscience, biotechnology, business ethics, economic policy, environmental ethics and other high-impact subjects.
- The [political and legal philosophy \(PLP\) option](#) provides official recognition for those who choose to emphasize the systematic study of the fundamental philosophical questions regarding politics, law and justice, and how they apply to contemporary issues. You will choose courses in the nature of justice, limits of state power, balancing liberty and equality, capitalism vs. socialism, authoritarian challenges to democracy, fascism and antifascism, privacy, freedom of expression, police ethics, justifications for punishment, racial and gender injustice, wealth inequality and crime, immigration, and other issues at the interface of ethics, justice, law and states.

## Research

Students are strongly encouraged to consider the possibility of presenting research at the [Philosophy Department Undergraduate Research Conference](#) and/or fulfilling an [undergraduate research grant](#). This is especially encouraged for students considering graduate school in philosophy.

## Graduate Preparatory Emphasis

This emphasis is strongly recommended for students who plan to do graduate work in philosophy. Beyond the ten (10) courses required for the major, such students should select, with their adviser's approval, two additional philosophy courses above the 400-level, for a total of twelve (12) courses. [Consult the Department of Philosophy website for additional graduate school planning information.](#)

## Honors in Philosophy

To graduate "With Honors" in philosophy, students will be expected to complete their philosophy capstone requirement; complete two additional 700-level PHIL courses (The 700-level course options will vary depending upon which departmental honors option [thesis or portfolio] the student fulfills; they will be expected to have an overall GPA of 3.5 or above; they will engage in independent study and research (under the supervision of a faculty member) beyond the requirements of their coursework; and, they will be expected to present and defend a culminating project to the department's faculty. [Consult the Department of Philosophy website for more details.](#)

## Distinction on Senior Thesis

Distinction on Senior Thesis is granted by a unanimous determination of the student's committee that the thesis exceeds A-level work and is worthy of special recognition.

<https://cola.unh.edu/philosophy>

## Programs

- [Philosophy Major \(B.A.\)](#) (p. 117)
- [Philosophy Major: Business, Innovation & Technology Option \(B.A.\)](#) (p. 118)
- [Philosophy Major: Ethics and Social Responsibility Option \(B.A.\)](#) (p. 120)
- [Philosophy Major: Political and Legal Philosophy Option \(B.A.\)](#) (p. 121)
- [Philosophy Minor](#) (p. 123)
- [Political and Legal Philosophy Cognate](#) (p. 124)

## Faculty

<https://cola.unh.edu/philosophy/faculty-staff-directory>

## Philosophy Major (B.A.)

<https://cola.unh.edu/philosophy/program/ba/philosophy-major>

## Description

UNH philosophy majors acquire the ability to think systematically and imaginatively about fundamental and enduring issues such as morality, justice, happiness, beauty, gender, race, nature, artificial intelligence, space, time, and the meaning of life and death. Our internationally-renowned professors emphasize discussion, debate and writing in our courses. Wrestling with the "big questions" from diverse and global perspectives will prepare you exceptionally well for a variety of fulfilling careers. A lively and nurturing community personally invested in the success of our high achieving students, we take pride in watching [our graduates excel in top law and graduate schools, innovative social justice programs, and various positions from Wall Street to Silicon Valley and beyond](#) that seek hard workers who can think rigorously and communicate clearly.

## Requirements

Majors must take a minimum of ten (10) philosophy courses, for a total of 40 credits. A single course can satisfy multiple requirements for the major. The required minimum overall GPA in major coursework is 2.00 and minimum grade of C- for all courses counting toward the major. Candidates for a degree must satisfy additional University requirements for graduation, such as:

1. University "Writing Intensive" Requirements,
2. Liberal Arts Foreign Language Requirement (B.A. candidates only),
3. minimum number of credits (128 credits for B.A. degree), and
4. University Discovery Requirements.

Consult with your adviser early and often to plan the optimal path for fulfilling major and University requirements.

Code	Title	Credits
Core Requirements		20
PHIL 412	Beginning Logic	
PHIL 500	Workshop	
PHIL 530	Ethics	

PHIL 570	Ancient Philosophy	
PHIL 580	Modern Philosophy from Descartes to Kant	
<b>Electives</b> <sup>1</sup>		12
Select three (3) additional philosophy courses of the student's choice.		
<b>Discovery Capstone Requirement</b>		8
Select two (2) 700-level philosophy courses (excluding PHIL 795, PHIL 798, and PHIL 799) of the student's choice, at least one of these should be taken in the senior year		
<b>Total Credits</b>		40

<sup>1</sup> PHIL 495 Tutorial Reading and PHIL 795 Independent Study normally do not count toward fulfilling major requirement credits; exceptions may be granted by special permission.

Note that it is in the nature of 700-level seminars to presuppose by default that students have completed the main 400-level and 500-level core requirements (PHIL 412 Beginning Logic, PHIL 500 Workshop, PHIL 530 Ethics, PHIL 570 Ancient Philosophy, PHIL 580 Modern Philosophy from Descartes to Kant) and so free reference is made to materials, views, techniques, etc. covered in those lower-level core requirements.

### Discovery Requirements

**For students majoring in only philosophy:** philosophy majors may "double count" any two courses toward the major and also to satisfy Discovery requirements. For example, a philosophy major can count (1) PHIL 412 Beginning Logic toward the major requirement as well as using this course to satisfy the Quantitative Reasoning Discovery Category and (2) they can also count PHIL 421 Philosophy and the Arts toward both the major and the Fine and Performing Arts Discovery Category. Because PHIL 412 Beginning Logic and PHIL 570 Ancient Philosophy are required for the major and also satisfy Quantitative Reasoning and Humanities Categories, respectively, all majors could simply count these two courses toward their Discovery requirements. In various circumstances—for instance if a student already satisfied those Discovery requirements before becoming a philosophy major—one might prefer to count other philosophy courses toward different Discovery Categories, and they are free to do so.

**For students double majoring with philosophy:** The Department sets no limits on how many courses students may "double count" toward both the philosophy major and Discovery categories if philosophy is your **second** major. A double major with philosophy as the second major could in principle count any of the following courses toward the major while satisfying five Discovery Categories:

1. **Quantitative Reasoning (QR)** Discovery Category could be satisfied by PHIL 412 Beginning Logic.
2. **Fine and Performing Arts (FPA)** Discovery Category could be satisfied by PHIL 421 Philosophy and the Arts.
3. **Humanities (HUMA)** Discovery Category could be satisfied by PHIL 401 Introduction to Philosophy, PHIL 405 Critical Thinking, PHIL 405W Critical Thinking, PHIL 410 Happiness, Well-Being, and a Good Life, PHIL 419 Race, Gender and Social Justice, PHIL 419W Race, Gender and Social Justice, PHIL 420 Introduction to Philosophy of Law and Justice, PHIL 430 Ethics and Society, PHIL 431 Business Ethics, PHIL 436 Social and Political Philosophy, PHIL #440 Just Business: The Ethics of Markets and Money, PHIL 440A Honors/Who Are You? Personal Identity and Humanity, PHIL 440B Honors/Who's Human Now?, PHIL #444A Who Am I? Concepts of Self, PHIL 510 Philosophy and Feminism, PHIL 525 Existentialism, PHIL 531 Topics in Professional and Business Ethics, or PHIL 570 Ancient Philosophy.

4. **World Cultures (WC)** Discovery Category could be satisfied by PHIL 440C Honors/The Copernican Lens: Finding a Place for Humanity or PHIL 520 Introduction to Eastern Philosophy.
5. **Environment, Technology, and Society (ETS)** Discovery Category could be satisfied by PHIL 424 The Future of Humanity: Science, Technology, and Society, PHIL 435 Human Nature and Evolution, PHIL 444 Remaking Nature/The Ethics and Politics of Genetic Engineering, PHIL 447 Artificial Intelligence, Robots, and People, or PHIL 450 Environmental Ethics.

## Student Learning Outcomes

UNH philosophy majors acquire the ability to think systematically and imaginatively about fundamental and enduring issues such as morality, justice, happiness, beauty, gender, race, nature, artificial intelligence, space, time, and the meaning of life and death. Our internationally-renowned professors emphasize discussion, debate and writing in our courses. Wrestling with the "big questions" from diverse and global perspectives prepares students exceptionally well for a variety of fulfilling careers. Cultivating a lively and nurturing community personally invested in the success of our high achieving students, we take pride in watching our graduates excel in top law and graduate schools, innovative social justice programs, and various positions from Wall Street to Silicon Valley.

More concretely, we monitor the following learning objectives.

- Students understand major philosophers and philosophical ideas accurately.
- Students apply their understanding of ideas in novel contexts.
- Students write effectively.
- Students speak effectively.
- Students argue with depth, precision, balance, and insight.
- Students understand the formal structure of arguments and understand rules of inference.
- Students read analytically, critically, and empathetically.
- Students critically assess their own preconceptions, commitments and ideas.

The main way we oversee student progress is through close mentorship, early on in our 2nd year orientation designed for new majors (PHIL 500 Workshop), and culminating in their presentation of research in two required 700-level seminars. We also strongly encourage participation in the annual [Philosophy Department Undergraduate Research Conference](https://cola.unh.edu/philosophy/program/ba/philosophy-major-business-innovation-technology-option).

## Philosophy Major: Business, Innovation & Technology Option (B.A.)

<https://cola.unh.edu/philosophy/program/ba/philosophy-major-business-innovation-technology-option>

### Description

While completing the philosophy major, students may select the option in Philosophy of Business, Innovation and Technology. This option provides official recognition for those who choose to emphasize the study of the relationships between markets, technology and human well-being. Students will choose courses in the philosophy of artificial



intelligence, evolution, neuroscience, biotechnology, business ethics, economic policy, environmental ethics and other high impact subjects.

## Requirements

Students must fulfill the requirements of the philosophy major **plus** the requirements of the option. Majors must take a minimum of ten (10) philosophy courses, for a total of 40 credits. A single course can satisfy multiple requirements for the major. The required minimum overall GPA in major coursework is 2.00 and the minimum grade for all courses counting toward the major is a "C-." Candidates for a degree must satisfy additional University requirements for graduation, such as:

1. University "Writing Intensive" Requirements,
2. Liberal Arts Foreign Language Requirement (B.A. candidates only),
3. minimum number of credits (128 credits for B.A. degree), and
4. University Discovery Requirements.

Consult with your adviser early and often to plan the optimal path for fulfilling major and University requirements.

Code	Title	Credits
<b>Core Requirements</b>		<b>20</b>
PHIL 412	Beginning Logic	
PHIL 500	Workshop	
PHIL 530	Ethics	
PHIL 570	Ancient Philosophy	
PHIL 580	Modern Philosophy from Descartes to Kant	
<b>Electives</b> <sup>1</sup>		<b>12</b>
Select three (3) additional philosophy courses of the student's choice.		
<b>Discovery Capstone Requirement</b>		<b>8</b>
Select two (2) 700-level philosophy courses (excluding PHIL 795, PHIL 798, and PHIL 799) of the student's choice, at least one of these should be taken in the senior year		
<b>Total Credits</b>		<b>40</b>

<sup>1</sup> PHIL 495 Tutorial Reading and PHIL 795 Independent Study normally do not count toward fulfilling major requirement credits; exceptions may be granted by special permission.

## Business, Innovation, and Technology Option Requirements

This option requires **four philosophy courses (for a total of 16 credits)** from those listed below. Students may "double count" these courses toward the general requirements of the philosophy major, for example, by counting three of these courses as the elective courses required for the major.

Code	Title	Credits
<b>Select four of the following courses:</b>		<b>16</b>
PHIL 405	Critical Thinking	
PHIL 405W	Critical Thinking	
PHIL 419	Race, Gender and Social Justice	
PHIL 419W	Race, Gender and Social Justice	
PHIL 420	Introduction to Philosophy of Law and Justice	
PHIL 421	Philosophy and the Arts	
PHIL 424	The Future of Humanity: Science, Technology, and Society	
PHIL 424H	Honors/The Future of Humanity: Science, Technology, and Society	
PHIL 430	Ethics and Society	
PHIL 430W	Ethics and Society	
PHIL 431	Business Ethics	
PHIL 435	Human Nature and Evolution	
PHIL 435H	Honors/Human Nature and Evolution	
PHIL 436	Social and Political Philosophy	

PHIL 436H	Honors/Social and Political Philosophy
PHIL 436W	Social and Political Philosophy
PHIL #440	Just Business: The Ethics of Markets and Money
PHIL 444	Remaking Nature/The Ethics and Politics of Genetic Engineering
PHIL 447	Artificial Intelligence, Robots, and People
PHIL 450	Environmental Ethics
PHIL 531	Topics in Professional and Business Ethics
PHIL #531W	Professional & Business Ethics
PHIL 630	Neuroscience and Philosophy
PHIL 660	Law, Medicine, and Ethics
PHIL 701	Topics in Value Theory
PHIL 730	Topics in Theories of Justice
PHIL 780	Special Topics <sup>1</sup>

<sup>1</sup> By permission because only some sections of this course will count toward the major option.

Note that it is in the nature of 700-level seminars to presuppose by default that students have completed the main 400-level and 500-level core requirements (PHIL 412 Beginning Logic, PHIL 500 Workshop, PHIL 530 Ethics, PHIL 570 Ancient Philosophy, PHIL 580 Modern Philosophy from Descartes to Kant) and so free reference is made to materials, views, techniques, etc. covered in those lower-level core requirements.

### Discovery Requirements

**For students majoring in only philosophy:** philosophy majors may "double count" any two courses toward the major and also to satisfy Discovery requirements. For example, a philosophy major can count (1) PHIL 412 Beginning Logic toward the major requirement as well as using this course to satisfy the Quantitative Reasoning Discovery Category and (2) they can also count PHIL 421 Philosophy and the Arts toward both the major and the Fine and Performing Arts Discovery Category. Because PHIL 412 Beginning Logic and PHIL 570 Ancient Philosophy are required for the major and also satisfy Quantitative Reasoning and Humanities Categories, respectively, all majors could simply count these two courses toward their Discovery requirements. In various circumstances—for instance if a student already satisfied those Discovery requirements before becoming a philosophy major—one might prefer to count other philosophy courses toward different Discovery Categories, and they are free to do so.

**For students double majoring with philosophy:** The Department sets no limits on how many courses students may "double count" toward both the philosophy major and Discovery categories if philosophy is your **second** major. A double major with philosophy as the second major could in principle count any of the following courses toward the major while satisfying five Discovery Categories:

1. **Quantitative Reasoning (QR)** Discovery Category could be satisfied by PHIL 412 Beginning Logic.
2. **Fine and Performing Arts (FPA)** Discovery Category could be satisfied by PHIL 421 Philosophy and the Arts.
3. **Humanities (HUMA)** Discovery Category could be satisfied by PHIL 401 Introduction to Philosophy, PHIL 405 Critical Thinking, PHIL 405W Critical Thinking, PHIL 410 Happiness, Well-Being, and a Good Life, PHIL 419 Race, Gender and Social Justice, PHIL 419W Race, Gender and Social Justice, PHIL 420 Introduction to Philosophy of Law and Justice, PHIL 430 Ethics and Society, PHIL 431 Business Ethics, PHIL 436 Social and Political Philosophy, PHIL #440 Just Business: The Ethics of Markets and Money, PHIL 440A Honors/Who Are You? Personal Identity and

Humanity, PHIL 440B Honors/Who's Human Now?, PHIL #444A Who Am I? Concepts of Self, PHIL 510 Philosophy and Feminism, PHIL 525 Existentialism, PHIL 531 Topics in Professional and Business Ethics, or PHIL 570 Ancient Philosophy.

4. **World Cultures (WC)** Discovery Category could be satisfied by PHIL 440C Honors/The Copernican Lens: Finding a Place for Humanity or PHIL 520 Introduction to Eastern Philosophy.
5. **Environment, Technology, and Society (ETS)** Discovery Category could be satisfied by PHIL 424 The Future of Humanity: Science, Technology, and Society, PHIL 435 Human Nature and Evolution, PHIL 444 Remaking Nature/The Ethics and Politics of Genetic Engineering, PHIL 447 Artificial Intelligence, Robots, and People, or PHIL 450 Environmental Ethics.

## Student Learning Outcomes

UNH philosophy majors acquire the ability to think systematically and imaginatively about fundamental and enduring issues such as morality, justice, happiness, beauty, gender, race, nature, artificial intelligence, space, time, and the meaning of life and death. Our internationally-renowned professors emphasize discussion, debate and writing in our courses. Wrestling with the "big questions" from diverse and global perspectives prepares students exceptionally well for a variety of fulfilling careers. Cultivating a lively and nurturing community personally invested in the success of our high achieving students, we take pride in watching our graduates excel in top law and graduate schools, innovative social justice programs, and various positions from Wall Street to Silicon Valley.

More concretely, we monitor the following learning objectives.

- Students understand major philosophers and philosophical ideas accurately.
- Students apply their understanding of ideas in novel contexts.
- Students write effectively.
- Students speak effectively.
- Students argue with depth, precision, balance, and insight.
- Students understand the formal structure of arguments and understand rules of inference.
- Students read analytically, critically, and empathetically.
- Students critically assess their own preconceptions, commitments and ideas.

The main way we oversee student progress is through close mentorship, early on in our 2nd year orientation designed for new majors (PHIL 500 Workshop), and culminating in their presentation of research in two required 700-level seminars. We also strongly encourage participation in the annual [Philosophy Department Undergraduate Research Conference](#).

## Philosophy Major: Ethics and Social Responsibility Option (B.A.)

<https://cola.unh.edu/philosophy/program/ba/philosophy-major-ethics-social-responsibility-option>

### Description

While completing the philosophy major, students may select the option in ethics and social responsibility. This option provides official recognition for those who choose to emphasize concern with moral responsibility in

personal and social contexts, including the political and corporate arenas. Students will choose courses in environmental ethics, law, evolution, social and political philosophy, and feminism.

## Requirements

Students must fulfill the requirements of the philosophy major **plus** the requirements of the option. Majors must take a minimum of ten (10) philosophy courses, for a total of 40 credits. A single course can satisfy multiple requirements for the major. The required minimum overall GPA in major coursework is 2.00 and the minimum grade for all courses counting toward the major is a "C-." Candidates for a degree must satisfy additional University requirements for graduation, such as:

1. University "Writing Intensive" Requirements,
2. Liberal Arts Foreign Language Requirement (B.A. candidates only),
3. minimum number of credits (128 credits for B.A. degree), and
4. University Discovery Requirements.

Consult with your adviser early and often to plan the optimal path for fulfilling major and University requirements.

## Major Requirements

Code	Title	Credits
<b>Core Requirements</b>		<b>20</b>
PHIL 412	Beginning Logic	
PHIL 500	Workshop	
PHIL 530	Ethics	
PHIL 570	Ancient Philosophy	
PHIL 580	Modern Philosophy from Descartes to Kant	
<b>Electives <sup>1</sup></b>		<b>12</b>
Select three (3) additional philosophy courses of the student's choice.		
<b>Discovery Capstone Requirement</b>		<b>8</b>
Select two (2) 700-level philosophy courses (excluding PHIL 795, PHIL 798, and PHIL 799) of the student's choice, at least one of these should be taken in the senior year		
<b>Total Credits</b>		<b>40</b>

<sup>1</sup> PHIL 495 Tutorial Reading and PHIL 795 Independent Study normally do not count toward fulfilling major requirement credits; exceptions may be granted by special permission.

## Ethics and Social Responsibility Option Requirements

This option requires **four (4) courses (for a total of 16 credits)** from those listed below, with one PHIL 530 Ethics already strictly required for the major. Students may "double count" these courses toward the general requirements of the philosophy major, for example, by counting three (3) of these courses as the elective courses required for the major.

Code	Title	Credits
<b>Select four of the following courses:</b>		<b>16</b>
PHIL 405	Critical Thinking	
PHIL 405W	Critical Thinking	
PHIL 410	Happiness, Well-Being, and a Good Life	
PHIL 419	Race, Gender and Social Justice	
PHIL 419W	Race, Gender and Social Justice	
PHIL 420	Introduction to Philosophy of Law and Justice	
PHIL 424	The Future of Humanity: Science, Technology, and Society	
PHIL 424H	Honors/The Future of Humanity: Science, Technology, and Society	
PHIL 430	Ethics and Society	
PHIL 430W	Ethics and Society	
PHIL 431	Business Ethics	

PHIL 436	Social and Political Philosophy
PHIL 436H	Honors/Social and Political Philosophy
PHIL 436W	Social and Political Philosophy
PHIL #440	Just Business: The Ethics of Markets and Money
PHIL 440B	Honors/Who's Human Now?
PHIL 444	Remaking Nature/The Ethics and Politics of Genetic Engineering
PHIL 450	Environmental Ethics
PHIL 510	Philosophy and Feminism
PHIL 520	Introduction to Eastern Philosophy
PHIL 525	Existentialism
PHIL 530	Ethics
PHIL 531	Topics in Professional and Business Ethics
PHIL #531W	Professional & Business Ethics
PHIL #635	Advanced Topics in Philosophy of Law and Justice
PHIL 660	Law, Medicine, and Ethics
PHIL 701	Topics in Value Theory
PHIL 730	Topics in Theories of Justice
PHIL 780	Special Topics

<sup>1</sup> By permission because only some sections of the course will count toward the major option.

Note that it is in the nature of 700-level seminars to presuppose by default that students have completed the main 400-level and 500-level core requirements (PHIL 412 Beginning Logic, PHIL 500 Workshop, PHIL 530 Ethics, PHIL 570 Ancient Philosophy, PHIL 580 Modern Philosophy from Descartes to Kant) and so free reference is made to materials, views, techniques, etc. covered in those lower-level core requirements.

### Discovery Requirements

**For students majoring in only philosophy:** philosophy majors may "double count" any two courses toward the major and also to satisfy Discovery requirements. For example, a philosophy major can count (1) PHIL 412 Beginning Logic toward the major requirement as well as using this course to satisfy the Quantitative Reasoning Discovery Category and (2) they can also count PHIL 421 Philosophy and the Arts toward both the major and the Fine and Performing Arts Discovery Category. Because PHIL 412 Beginning Logic and PHIL 570 Ancient Philosophy are required for the major and also satisfy Quantitative Reasoning and Humanities Categories, respectively, all majors could simply count these two courses toward their Discovery requirements. In various circumstances—for instance if a student already satisfied those Discovery requirements before becoming a philosophy major—one might prefer to count other philosophy courses toward different Discovery Categories, and they are free to do so.

**For students double majoring with philosophy:** The Department sets no limits on how many courses students may "double count" toward both the philosophy major and Discovery categories if philosophy is your **second** major. A double major with philosophy as the second major could in principle count any of the following courses toward the major while satisfying five Discovery Categories:

1. **Quantitative Reasoning (QR)** Discovery Category could be satisfied by PHIL 412 Beginning Logic.
2. **Fine and Performing Arts (FPA)** Discovery Category could be satisfied by PHIL 421 Philosophy and the Arts.
3. **Humanities (HUMA)** Discovery Category could be satisfied by PHIL 401 Introduction to Philosophy, PHIL 405 Critical Thinking, PHIL 405W Critical Thinking, PHIL 410 Happiness, Well-Being, and a Good Life, PHIL 419 Race, Gender and Social Justice, PHIL 419W Race, Gender and Social Justice, PHIL 420

Introduction to Philosophy of Law and Justice, PHIL 430 Ethics and Society, PHIL 431 Business Ethics, PHIL 436 Social and Political Philosophy, PHIL #440 Just Business: The Ethics of Markets and Money, PHIL 440A Honors/Who Are You? Personal Identity and Humanity, PHIL 440B Honors/Who's Human Now?, PHIL #444A Who Am I? Concepts of Self, PHIL 510 Philosophy and Feminism, PHIL 525 Existentialism, PHIL 531 Topics in Professional and Business Ethics, or PHIL 570 Ancient Philosophy.

4. **World Cultures (WC)** Discovery Category could be satisfied by PHIL 440C Honors/The Copernican Lens: Finding a Place for Humanity or PHIL 520 Introduction to Eastern Philosophy.
5. **Environment, Technology, and Society (ETS)** Discovery Category could be satisfied by PHIL 424 The Future of Humanity: Science, Technology, and Society, PHIL 435 Human Nature and Evolution, PHIL 444 Remaking Nature/The Ethics and Politics of Genetic Engineering, PHIL 447 Artificial Intelligence, Robots, and People, or PHIL 450 Environmental Ethics.

## Student Learning Outcomes

UNH philosophy majors acquire the ability to think systematically and imaginatively about fundamental and enduring issues such as morality, justice, happiness, beauty, gender, race, nature, artificial intelligence, space, time, and the meaning of life and death. Our internationally-renowned professors emphasize discussion, debate and writing in our courses. Wrestling with the "big questions" from diverse and global perspectives prepares students exceptionally well for a variety of fulfilling careers. Cultivating a lively and nurturing community personally invested in the success of our high achieving students, we take pride in watching our graduates excel in top law and graduate schools, innovative social justice programs, and various positions from Wall Street to Silicon Valley.

More concretely, we monitor the following learning objectives.

- Students understand major philosophers and philosophical ideas accurately.
- Students apply their understanding of ideas in novel contexts.
- Students write effectively.
- Students speak effectively.
- Students argue with depth, precision, balance, and insight.
- Students understand the formal structure of arguments and understand rules of inference.
- Students read analytically, critically, and empathetically.
- Students critically assess their own preconceptions, commitments and ideas.

The main way we oversee student progress is through close mentorship, early on in our 2nd year orientation designed for new majors (PHIL 500 Workshop), and culminating in their presentation of research in two required 700-level seminars. We also strongly encourage participation in the annual [Philosophy Department Undergraduate Research Conference](https://cola.unh.edu/philosophy/program/ba/philosophy-major-political-legal-philosophy-option).

## Philosophy Major: Political and Legal Philosophy Option (B.A.)

<https://cola.unh.edu/philosophy/program/ba/philosophy-major-political-legal-philosophy-option>

## Description

The political and legal philosophy option in the philosophy major gives students interested in politics, law and justice the opportunity to focus their philosophy major courses around their interests in a systematic and rigorous way. Philosophy has long been a major for high-achieving students interested in law, and our graduates are admitted regularly to top law schools such as Harvard, Yale, Stanford, University of Chicago, NYU and Duke, among others. We are also a home for UNH students interested and active in political philosophy. Our faculty members have considerable expertise in both political and legal philosophy, with some serving on UNH's pre-law advisory committee.

## Requirements

Students must fulfill the requirements of the philosophy major **plus** the requirements of the option. Majors must take a minimum of ten (10) philosophy courses, for a total of 40 credits. A single course can satisfy multiple requirements for the major. The required minimum overall GPA in major coursework is 2.00 and the minimum grade for all courses counting toward the major is a "C-." Candidates for a degree must satisfy additional University requirements for graduation, such as:

1. University "Writing Intensive" Requirements,
2. Liberal Arts Foreign Language Requirement (B.A. candidates only),
3. minimum number of credits (128 credits for B.A. degree), and
4. University Discovery Requirements.

Consult with your adviser early and often to plan the optimal path for fulfilling major and University requirements.

## Major Requirements

Code	Title	Credits
<b>Core Requirements</b>		<b>20</b>
PHIL 412	Beginning Logic	
PHIL 500	Workshop	
PHIL 530	Ethics	
PHIL 570	Ancient Philosophy	
PHIL 580	Modern Philosophy from Descartes to Kant	
<b>Electives<sup>1</sup></b>		<b>12</b>
Select three (3) additional philosophy courses of the student's choice.		
<b>Discovery Capstone Requirement</b>		<b>8</b>
Select two (2) 700-level philosophy courses (excluding PHIL 795, PHIL 798, and PHIL 799) of the student's choice, at least one of these should be taken in the senior year		
<b>Total Credits</b>		<b>40</b>

<sup>1</sup> PHIL 495 Tutorial Reading and PHIL 795 Independent Study normally do not count toward fulfilling major requirement credits; exceptions may be granted by special permission.

## Political and Legal Philosophy Option Requirements

This option requires four philosophy courses (for a total of 16 credits) from those listed below. Students may "double count" these courses toward the general requirements of the philosophy major, for example, by counting three of these courses as the elective courses required for the major.

Code	Title	Credits
<b>Select four of the following courses:</b>		<b>16</b>
PHIL 405	Critical Thinking	
PHIL 419	Race, Gender and Social Justice	
PHIL 420	Introduction to Philosophy of Law and Justice	
PHIL 424	The Future of Humanity: Science, Technology, and Society	
PHIL 430	Ethics and Society	
PHIL 431	Business Ethics	
PHIL 436	Social and Political Philosophy	
PHIL #440	Just Business: The Ethics of Markets and Money	
PHIL 444	Remaking Nature/The Ethics and Politics of Genetic Engineering	
PHIL 450	Environmental Ethics	
PHIL 510	Philosophy and Feminism	
PHIL 531	Topics in Professional and Business Ethics	
PHIL #620	20th Century European Philosophy	
PHIL 630	Neuroscience and Philosophy	
PHIL #635	Advanced Topics in Philosophy of Law and Justice	
PHIL 660	Law, Medicine, and Ethics	
PHIL 701	Topics in Value Theory (by permission)	
PHIL 730	Topics in Theories of Justice	
PHIL 780	Special Topics (by permission)	

Note that it is in the nature of 700-level seminars to presuppose by default that students have completed the main 400-level and 500-level core requirements (PHIL 412 Beginning Logic, PHIL 500 Workshop, PHIL 530 Ethics, PHIL 570 Ancient Philosophy, PHIL 580 Modern Philosophy from Descartes to Kant) and so free reference is made to materials, views, techniques, etc. covered in those lower-level core requirements.

### Discovery Requirements

**For students majoring in only philosophy:** philosophy majors may "double count" any two courses toward the major and also to satisfy Discovery requirements. For example, a philosophy major can count (1) PHIL 412 Beginning Logic toward the major requirement as well as using this course to satisfy the Quantitative Reasoning Discovery Category and (2) they can also count PHIL 421 Philosophy and the Arts toward both the major and the Fine and Performing Arts Discovery Category. Because PHIL 412 Beginning Logic and PHIL 570 Ancient Philosophy are required for the major and also satisfy Quantitative Reasoning and Humanities Categories, respectively, all majors could simply count these two courses toward their Discovery requirements. In various circumstances—for instance if a student already satisfied those Discovery requirements before becoming a philosophy major—one might prefer to count other philosophy courses toward different Discovery Categories, and they are free to do so.

**For students double majoring with philosophy:** The Department sets no limits on how many courses students may "double count" toward both the philosophy major and Discovery categories if philosophy is your **second** major. A double major with philosophy as the second major could in principle count any of the following courses toward the major while satisfying five Discovery Categories:

1. **Quantitative Reasoning (QR)** Discovery Category could be satisfied by PHIL 412 Beginning Logic.
2. **Fine and Performing Arts (FPA)** Discovery Category could be satisfied by PHIL 421 Philosophy and the Arts.
3. **Humanities (HUMA)** Discovery Category could be satisfied by PHIL 401 Introduction to Philosophy, PHIL 405 Critical Thinking, PHIL 405W Critical Thinking, PHIL 410 Happiness, Well-Being, and a Good Life, PHIL 419 Race, Gender and Social Justice, PHIL 419W Race, Gender and Social Justice, PHIL 420 Introduction to Philosophy of Law and Justice, PHIL 430 Ethics and



Society, PHIL 431 Business Ethics, PHIL 436 Social and Political Philosophy, PHIL #440 Just Business: The Ethics of Markets and Money, PHIL 440A Honors/Who Are You? Personal Identity and Humanity, PHIL 440B Honors/Who's Human Now?, PHIL #444A Who Am I? Concepts of Self, PHIL 510 Philosophy and Feminism, PHIL 525 Existentialism, PHIL 531 Topics in Professional and Business Ethics, or PHIL 570 Ancient Philosophy.

4. **World Cultures (WC)** Discovery Category could be satisfied by PHIL 440C Honors/The Copernican Lens: Finding a Place for Humanity or PHIL 520 Introduction to Eastern Philosophy.
5. **Environment, Technology, and Society (ETS)** Discovery Category could be satisfied by PHIL 424 The Future of Humanity: Science, Technology, and Society, PHIL 435 Human Nature and Evolution, PHIL 444 Remaking Nature/The Ethics and Politics of Genetic Engineering, PHIL 447 Artificial Intelligence, Robots, and People, or PHIL 450 Environmental Ethics.

## Student Learning Outcomes

UNH philosophy majors acquire the ability to think systematically and imaginatively about fundamental and enduring issues such as morality, justice, happiness, beauty, gender, race, nature, artificial intelligence, space, time, and the meaning of life and death. Our internationally-renowned professors emphasize discussion, debate and writing in our courses. Wrestling with the “big questions” from diverse and global perspectives prepares students exceptionally well for a variety of fulfilling careers. Cultivating a lively and nurturing community personally invested in the success of our high achieving students, we take pride in watching our graduates excel in top law and graduate schools, innovative social justice programs, and various positions from Wall Street to Silicon Valley.

More concretely, we monitor the following learning objectives.

- Students understand major philosophers and philosophical ideas accurately.
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- Students understand the formal structure of arguments and understand rules of inference.
- Students read analytically, critically, and empathetically.
- Students critically assess their own preconceptions, commitments and ideas.

The main way we oversee student progress is through close mentorship, early on in our 2nd year orientation designed for new majors (PHIL 500 Workshop), and culminating in their presentation of research in two required 700-level seminars. We also strongly encourage participation in the annual [Philosophy Department Undergraduate Research Conference](#).

## Philosophy Minor

<https://cola.unh.edu/philosophy/program/minor/philosophy>

### Description

UNH philosophy minors acquire the ability to think systematically and imaginatively about fundamental and enduring issues such as morality, justice, happiness, beauty, gender, race, nature, artificial intelligence,

space, time, and the meaning of life and death. Our internationally-renowned professors emphasize discussion, debate and writing in our courses. Wrestling with the “big questions” from diverse and global perspectives will prepare you exceptionally well for a variety of fulfilling careers. A lively and nurturing community personally invested in the success of our high achieving students, we take pride in watching our graduates excel in top law and graduate schools, innovative social justice programs, and various positions from Wall Street to Silicon Valley and beyond that seek hard workers who can think rigorously and communicate clearly.

## Requirements

A philosophy minor consists of **five (5) philosophy courses (for a total of 20 credits) with a grade of C- or above**. At least one of the philosophy courses must be at the 500-level or higher.

Code	Title	Credits
PHIL course at 500-level or higher		4
Four elective PHIL courses		16
<b>Total Credits</b>		<b>20</b>

PHIL 495 Tutorial Reading and PHIL 795 Independent Study may be used towards the minor only with special approval.

You do not need to declare a minor; however, it might be wise to meet with a faculty member from the Philosophy Department to discuss your minor plan.

At the beginning of your final semester of study, you should complete a [Minor Certification of Completion Form](#), email the completed form to [philosophy@unh.edu](mailto:philosophy@unh.edu) to request the Department Chair's signature as the Minor Advisor signature, obtain your advisor's signature, and submit it to your Dean's Office.

## Philosophy of Business, Innovation, & Technology Cognate

<https://cola.unh.edu/philosophy/program/cognate/philosophy-business-innovation-technology>

### Description

Our internationally renowned philosophy professors emphasize discussion, debate, and writing in our courses. Wrestling with big questions prepares our students exceptionally well for highly successful careers in business and cutting-edge technology. As a lively and nurturing faculty personally invested in the success of our high achieving students, we take pride in watching our graduates go on to excel in top law schools, elite graduate programs, and prestigious positions from Wall Street to Silicon Valley.

For students unable to major or minor in Philosophy, students may select the three course cognate in Philosophy of Business, Innovation, and Technology. This cognate provides official recognition for those who choose to emphasize the study of the relationships between markets, technology, and human well-being. Students will choose courses in the philosophy of artificial intelligence, evolution, neuroscience, biotechnology, business ethics, economic policy, environmental ethics and other high impact subjects.



Contact the Philosophy Department with questions at (603) 862-2060 or [philosophy@unh.edu](mailto:philosophy@unh.edu).

## Requirements

For a cognate in Philosophy of Business, Innovation, and Technology, a student must complete **three (3) philosophy courses (for a total of 12 credits) from the following list.**

Code	Title	Credits
Select three (3) philosophy courses		12
PHIL 421	Philosophy and the Arts	
PHIL 424	The Future of Humanity: Science, Technology, and Society	
PHIL 430	Ethics and Society	
PHIL 431	Business Ethics	
PHIL 435	Human Nature and Evolution	
PHIL 436	Social and Political Philosophy	
PHIL #440	Just Business: The Ethics of Markets and Money	
PHIL 444	Remaking Nature/The Ethics and Politics of Genetic Engineering	
PHIL 447	Artificial Intelligence, Robots, and People	
PHIL 450	Environmental Ethics	
PHIL 530	Ethics	
PHIL 531	Topics in Professional and Business Ethics	
PHIL 630	Neuroscience and Philosophy	
PHIL 660	Law, Medicine, and Ethics	
an approved 700-level philosophy seminar		

Students do not need to declare a cognate; however, we recommend that students meet with a faculty member from the Philosophy Department to discuss their plan. At the beginning of a student's final semester of study, the student should complete a [Certification of Completion of Cognate form](#), obtain the necessary signatures, and submit it to their Dean's Office.

Credit toward the cognate will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the cognate. Courses taken on the pass/fail basis may not be used for the cognate.

## Political and Legal Philosophy Cognate

<https://cola.unh.edu/philosophy/program/cognate/political-legal-philosophy>

### Description

For students unable to major or minor in philosophy, students may select the three-course cognate in political and legal philosophy (for a total of 12 credits). This option provides official recognition for those who choose to emphasize the study of political and legal philosophy.

## Requirements

Code	Title	Credits
Select THREE courses (12 credits) from the following list:		
PHIL 405	Critical Thinking	4
PHIL 419	Race, Gender and Social Justice	4
PHIL 420	Introduction to Philosophy of Law and Justice	4
PHIL 424	The Future of Humanity: Science, Technology, and Society	4
PHIL 430	Ethics and Society	4
PHIL 431	Business Ethics	4

PHIL 436	Social and Political Philosophy	4
PHIL #440	Just Business: The Ethics of Markets and Money	4
PHIL 444	Remaking Nature/The Ethics and Politics of Genetic Engineering	4
PHIL 450	Environmental Ethics	4
PHIL 510	Philosophy and Feminism	4
PHIL 531	Topics in Professional and Business Ethics	4
PHIL #620	20th Century European Philosophy	4
PHIL 630	Neuroscience and Philosophy	4
PHIL #635	Advanced Topics in Philosophy of Law and Justice	4
PHIL 660	Law, Medicine, and Ethics	4
Approved PHIL seminars, including seminars in neuroscience, happiness, economic philosophy, race and others		4

You do not need to declare a cognate; however, we recommend that you meet with a faculty member from the Philosophy Department to discuss your plan. At the beginning of your final semester of study, you should complete a certification of completion of cognate form, obtain the necessary signatures, and submit it to your Dean's Office.

Credit toward the cognate will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the cognate. Courses taken on the pass/fail basis may not be used for the cognate.

## Political Science (POLT)

The study of political science includes the study of politics, power and governance, from local municipalities to nation states and the international system. Students study both formal and informal institutions of government, political behavior, civil society, the role of the media, individuals and the factors that shape policy. Political science clarifies political involvement and contributes to informed citizenship. The course of study is particularly valuable to students planning to enter local, state or national government, the Foreign Service, those who intend to study law and enter the legal profession, as well as careers in the security/intelligence sector. The major also enhances cognitive abilities, writing, public speaking and analytical skills that translate into careers in journalism, international organizations, public affairs and the private sector.

## Internships and Advanced Study

In addition to the courses regularly offered, the department could have available selected topics, advanced study in political science and internships. Interested students should contact our department advisor, [Heather Austin](#) ([heather.austin@unh.edu](mailto:heather.austin@unh.edu)), to learn about the course offerings for a given semester.

The department also offers several internship opportunities that give students experience in various aspects of government, policy-making and the legal system at the local, state and national levels. Student must have taken certain course prerequisites for each kind of internship. In addition, students must have junior or senior standing and normally have a 3.2 grade point average (GPA) or higher to be eligible for consideration. Students desiring to undertake internships must fully comply with the departmental guidelines as stated on the application forms, which are available on the department website. Applications must be received by the first day of the preregistration period prior to the semester the course will be undertaken. Internships can only fulfill non-subfield requirements at the 500-level. Washington placements are made either through the Department of Political Science or through the Washington Center located in the National Student Exchange Office; major credit must be arranged through the department.

## Political Science Language Requirement

The bachelor of arts degree at the University of New Hampshire requires that a student satisfy the foreign language proficiency requirement. The requirement may be met by demonstrating language proficiency equal to a one-year college-level course (401 and 402, 403 and 503, or 503 and above in spoken language). See [University Requirements/Degrees](#) (p. 26) for the full description of this requirement.

The Department of Political Science does not allow American Sign Language (ASL) to count toward the language requirement.

Exceptions to this must be petitioned and approved by the Department of Political Science's undergraduate committee and the student's advisor.

## Five-year B.A./M.A. Program

The five-year political science B.A./M.A. program (also known as a "dual degree, early admission" program) aims to:

1. Improve opportunities for excellent undergraduates to prepare for competitive Ph.D. programs or add an additional credential before entering a competitive job market; and
2. Allow students interested in politics to advance and further specialize their political science education in only one additional year at UNH.

Students must fulfill all programmatic requirements for the current master's degree program, as well as fulfill all programmatic requirements for their bachelor's degree.

Interested students must submit a full graduate application by February 15 of their junior year. Minimum GPA required for admission is 3.2.

For additional information you may contact the graduate coordinator, Prof. Elizabeth Carter, (603) 862-4239, [elizabeth.carter@unh.edu](mailto:elizabeth.carter@unh.edu) or Heather Austin, (603) 862-1767, [heather.austin@unh.edu](mailto:heather.austin@unh.edu).

<https://cola.unh.edu/political-science>

## Programs

- [Political Science Major \(B.A.\)](#) (p. 125)
- [Political Science Minor](#) (p. 126)
- [Survey Research Minor](#) (p. 127)

## Faculty

<https://cola.unh.edu/political-science/faculty-staff-directory>

## Political Science Major (B.A.)

<https://cola.unh.edu/political-science/program/ba/political-science-major>

## Description

The study of government and politics, to which the courses and seminars of the Department of Political Science are devoted, includes the development of knowledge of political behavior by individuals and groups as well as knowledge about governments: their nature and functions,

their problems and behavior, and their interactions—at the national and international levels as well as local, state and regional levels.

Much of the learning offered by the Department of Political Science can also be regarded as essential for good citizenship, since political knowledge helps to explain the formal and informal institutions by which we are governed and the forces that lead to policy decisions, and also seeks to clarify the issues and principles that encourage people toward political involvement. In addition, such learning is especially valuable to students planning to enter local or national government or other public service related fields, including the Foreign Service, and it will be of great help to those who intend to study law and enter the legal profession. For teaching, particularly at the college level, and for many types of government service, graduate work may be indispensable. An undergraduate major in political science will provide a helpful foundation for any further study of politics and related fields in the social sciences and humanities. Such an emphasis will also be valuable for students seeking careers in journalism, international organizations, and the public affairs and administrative aspects of labor, financial and business organizations.

## Requirements

The major in political science consists of at least 10 courses (40 credits) and not more than 12 courses (48 credits). The minimum grade requirement is C- per course. Any grade lower than a C- will not count toward major. The required minimum overall GPA for major coursework is 2.0.

Code	Title	Credits
<b>Major Program Requirements</b> <sup>1</sup>		
POLT 401	Politics and Society	4
POLT 402	American Politics and Government	4
POLT 403	United States in World Affairs	4
<b>Six 500-level courses:</b>		<b>24</b>
Select 3 subfield courses, 1 from each of 3 different subfields below.		
Select 3 elective courses from any of the 5 subfields below. <sup>2</sup>		
<b>Subfield: American Politics</b>		
POLT 500	American Public Policy	
POLT 502	State and Local Government	
POLT 504	American Presidency	
POLT 505	American Congress	
POLT 506	Parties, Interest Groups, and Voters	
POLT 507	Politics of Crime and Justice	
POLT 508	Supreme Court and the Constitution	
POLT 509	Managing Bureaucracy in America	
POLT 510	Media and Politics	
POLT 511	Women & Politics	
POLT 512	Public Opinion in American Politics	
POLT 513	Civil Rights and Liberties	
POLT 580	Selected Topics Am Politics	
<b>Subfield: Political Thought</b>		
POLT 520	Politics, Justice, and Morality	
POLT 521	Rights and the Political Community	
POLT 522	Dissent and the Political Community	
POLT 523	American Political Thought	
POLT 524	Politics and Literature	
POLT #524W	Politics and Literature	
POLT 584	Selected Topics in Political Thought	
<b>Subfield: Comparative Politics</b>		
POLT 544	Of Dictators and Democrats	
POLT 545	People and Politics in Asia	
POLT 546	Wealth and Politics in Asia	
POLT 548	Drug Wars	
POLT 549	The Politics of Markets	

POLT 550	Comparative Government and Society
POLT 551	Ethnicity, Violence, Democracy
POLT 552	Contemporary European Politics
POLT 554	Revolution and Protest in Latin America
POLT 556	Politics in China
POLT 559	Comparative Politics of the Middle East
POLT #588	Selected Topics in Comparative Politics
<b>Subfield: International Politics</b>	
POLT 560	World Politics
POLT #561	Introduction to International Political Economy
POLT 562	Strategy and National Security Policy
POLT #563	The Global Information Grid's Disruptive Impact on Government, Politics, and Society
POLT 565	United States Policy in Latin America
POLT 566	Asian Challenge to Global Order
POLT 568	International Security
POLT 569	The Rise of China
POLT #570	Counterterrorism: Nation states' responses to terrorist activity
POLT 592	Selected Topics in International Politics
<b>Subfield: Methods</b>	
POLT 595	Smart Politics
<b>Discovery Program Capstone</b>	
Select one 700-level POLT course	
<b>Total Credits</b>	
40	

<sup>1</sup> Once students declare the major, POLT 401, POLT 402, POLT 403 must be completed within the first calendar year.

Note: POLT #407, POLT 440A, POLT #444, POLT 444B do not count toward the major.

<sup>2</sup> Students can take any POLT course at the intermediate level or higher (500-799) to count toward elective credit. ECON 402 Principles of Economics (Micro) or ECON 605 Intermediate Microeconomic Analysis and ECON 401 Principles of Economics (Macro) or ECON 611 Intermediate Macroeconomic Analysis may also be used to fulfill the fifth or sixth elective in this sequence. Additional economics courses will be considered by petition. Only one economics course can count toward this requirement. If students substitute an economics course for a POLT 500-level course, the economics course cannot be used to satisfy Discovery Program category requirements.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Political Science majors may use one major-required course to satisfy one Discovery category requirement.

## Student Learning Outcomes

- **Knowledge Base:** a proficient knowledge base of the five subfields of Political Science including American Government, Political Theory, Comparative Politics, International Relations, and Methods. Areas of strength include the study of public opinion, comparative politics and international relations, political economy, environmental politics, Latin American politics, Middle Eastern politics, and Asian politics. In this regard, the program fosters the development of a strong empirical foundation through multiple levels of courses. Majors are required to complete each of the following: POLT 401 Politics and Society, POLT 402 American Politics and Government and POLT 403 United States in World Affairs.
- **Research Skills:** A second goal is to advance the students' abilities to understand and use basic political science research skills.

These include computer literacy, knowledge of credible sources of information, basic statistical applications, and support for foreign language proficiency. We also strive to help students identify interesting and important research questions clearly and concisely, gather and assess various types of information, and come to well-reasoned conclusions.

- **Critical Thinking:** The third objective involves enhancement of student cognitive abilities and critical thinking. We hone the ability to analyze, assess, and reconstruct findings in written, oral, and graphical form. We strive to promote students who are self-disciplined thinkers who understand the rigorous standards of research, are intelligent consumers of political information, and are able to understand and weigh multiple perspectives and interpretations.
- **Communication Skills:** Another aim is to enhance the written and oral communication skills of our students. We support the goals of the writing intensive requirement and expose students to different genres and conventions in academic writing. Most 500 and 700-level courses emphasize cultivating strong writing and reading skills, while at the 700-level, student engagement in sustained discussion becomes the centerpiece of instruction in many seminars. Writing instruction includes emphasis not only on research papers but on short analytical essays, précis, and reviews that ask students to synthesize complex information, develop arguments, and delve more deeply into interpretation. In some courses, part of this work includes iterated practice of grammar and stylistic choices through revision and proposal assignments.
- **Professional Socialization and Support for Post-Graduate Training and Placement:** The sixth aim of the program is to give students the requisite skills, preparation and knowledge base to become capable and responsible political actors in their chosen professional careers and future goals. We expect our students to be exposed to the ethics and organizational culture of political science specifically and the social sciences generally. We aim to provide a foundation of professionalism for students who enter both the private and public sectors upon graduation and for those who continue their studies beyond the B.A.
- **Inspire Curiosity and Enthusiasm for Inquiry:** A final goal is to foster a spirit of inquiry. Faculty in the Department hope to stimulate curiosity about the political world and inspire life-long learners who are engaged in the political process at the local, national and global levels.

## Political Science Minor

<https://cola.unh.edu/political-science/program/minor/political-science>

### Description

The study of government and politics, to which the courses and seminars of the Department of Political Science are devoted, includes the development of knowledge of political behavior by individuals and groups as well as knowledge about governments: their nature and functions; their problems and behaviors; and their interactions across all levels of governance.

Much of the learning offered by the Department of Political Science can also be regarded as essential for good citizenship, since political knowledge helps to explain the formal and informal institutions by which we are governed and the forces which lead to policy decisions, and also seeks to clarify the issues and principles that encourage people toward

political involvement. In addition, such learning is especially valuable to students planning to enter local or national government or other public service, including the Foreign Service, and it will be of great help to those who intend to study law and enter the legal profession.

## Requirements

The political science minor consists of five courses (20 credits total).

Code	Title	Credits
Five elective POLT courses, with no more than two at the 400 level		20
<b>Total Credits</b>		<b>20</b>

- These courses may be taken in any combination of the five subfields and levels (400-700) offered. The fields to choose from are: American politics, political thought, comparative politics, international politics and methods.
- The minimum grade requirement is C- per course. Any grade lower than a C- will not count toward the minor.

Students wishing to use transfer credits from abroad or other universities should meet with our political science advisor, [Heather Austin](mailto:heather.austin@unh.edu), ([heather.austin@unh.edu](mailto:heather.austin@unh.edu)) to determine eligibility toward the minor.

## Survey Research Minor

<https://cola.unh.edu/political-science/program/minor/survey-research>  
<https://cola.unh.edu/political-science/program/minor/survey-research>

## Description

The survey research minor will provide students with the skills necessary to design, conduct, analyze and present survey research in a variety of professional settings. This minor will enable students to gain a strong grounding in the theory and practice of survey research, as well as learn how public opinion forms and changes over time. Students will apply what they have learned at the UNH Survey Center, nationally recognized for its public opinion and political polling. Students who complete this minor will be poised to pursue an advanced degree in this subject and, ultimately, a career in the field.

## Requirements

The survey research minor requires five courses (20 credits), as follows:

Code	Title	Credits
<b>Core Course</b>		<b>4</b>
POLT 512	Public Opinion in American Politics	
<b>Introduction to Research Methods Course</b>		<b>4</b>
Select one (1) from the following:		
POLT 595	Smart Politics	
SOC 601	Methods of Social Research	
JUST 501	Research Methods	
<b>Statistics Course</b>		<b>4</b>
Select one (1) from the following:		
SOC 402	Statistics	
PSYC 402	Statistics in Psychology	
<b>Advanced Research Course Elective</b>		<b>4</b>
Select one (1) from the following:		
HMP 711	Health Systems Research I	
HMP 712	Health Analytics	

MKTG 752	Marketing Research	
PSYC 531	Psychobiology	
PSYC 552	Social Psychology	
SOC 620	Drugs and Society	
SOC 625	Mental Health and Society	
SOC 725	Social Demography	
SOC 797	Special Topics (Only topic: Survey Research in Practice)	
Other elective based on student's field of interest and approved by the coordinator		
<b>Capstone Practicum</b>		4
To be chosen in consultation with the coordinator		
<b>Total Credits</b>		20

- Students must receive a grade of C or better for a course to count toward the minor requirements.
- Once students have declared the minor, they are required to meet with the coordinator or appropriate affiliated faculty advisor at least once per semester for regular review and assessment of their program, learning outcomes, and progress toward the degree.

## Transfer or Articulation Agreements with Other Institutions

Transfer credits may be approved by the coordinator to count toward the minor. If the transfer credit is accepted by the university and fits within the scope of the minor, it will be considered.

## Psychology (PSYC)

The Department of Psychology focuses on the scientific study of human and non-human behavior. The program exposes students to the scientific study of behavior and encourages an increased understanding of the behavior in humans and animals. Our bachelor of arts program in psychology is broad, with an emphasis on technical skills and the opportunity to specialize in areas that interest you. Courses cover such topics as clinical and counseling, social psychology, personality, psychological development, cognition in humans and non-humans, neuroscience, sensory psychology and the history of psychology. Opportunities abound to gain research experience in a wide range of laboratories and/or to participate in clinically-oriented internships.

The program in neuroscience and behavior, shared between Liberal Arts and Life Sciences and Agriculture, focuses on the scientific study of the brain and its relationship to behavior. This Bachelor of Science program is structured around a rigorous core sequence of courses that incorporates an extensive laboratory experience, with the opportunity for specialization. Courses include such topics as endocrinology, genetics, neurology, animal behavior, neuroscience and philosophy, drugs, sensory systems, mood disorders and ecology. A large number of laboratories are available that routinely incorporate undergraduate students.

## Advising System

All students in the department will be assigned a professional advisor, either the department coordinator or the academic advisor. Academic advisors assist students in all phases of educational planning and decision making, including registration, long-range academic planning, degree and program requirements, and career selection and planning. Faculty advisors are available to consult with students about research and graduate school options.

## Undergraduate Awards for Majors

Each year the faculty chooses psychology undergraduates as the recipients of the following awards: the Herbert A. Carroll Award for an

outstanding senior in psychology, the George M. Haslerud Award for an outstanding junior in psychology, and the Fuller Foundation Scholarship for an outstanding junior in psychology with demonstrated interests in clinical psychology. Psychology majors with at least a 3.2 grade-point average are eligible for these awards. Faculty nominate students from the eligibility list and final selection of recipients is made by vote of the full-time psychology faculty.

## Honors Program in Psychology

The Department of Psychology sponsors an honors program for outstanding students in the major. Students may apply to the honors program in psychology in their sophomore or junior year.

### Eligibility criteria include

1. Overall grade-point average of 3.5 or above and 3.5 in major courses
2. Completion of PSYC 401 Introduction to Psychology, PSYC 402 Statistics in Psychology and PSYC 502 Research Methods in Psychology with a grade of B or above in each.

### Requirements of the program include

1. Designate three of the four 700-level psychology courses as honors or equivalent
2. PSYC 797 Senior Honors Tutorial (fall of senior year)
3. PSYC 799 Senior Honors Thesis (spring of senior year)

Students interested in applying to the honors program should contact the department coordinator by the end of their sophomore year.

## Undergraduate Research Conference

The Department of Psychology sponsors the annual George M. Haslerud Undergraduate Research Conference each spring. Undergraduate honors students present their theses at the conference. Contact the department coordinator for more information.

## Five-Year BA/MA Program

The five-year B.A./M.A. program in experimental psychology aims to

1. improve opportunities for excellent undergraduates to prepare for competitive Ph.D. programs or add an additional credential before entering a competitive job market; and
2. allow students interested in experimental psychology to advance and further specialize their psychology education in only one additional year at UNH.

The M.A./B.A. requires 30 credits. Twelve credits will count towards both the B.A. and M.A. degree. These three courses count as electives and do not go towards the undergraduate psychology major. Students must fulfill all programmatic requirements for the master's degree program, as well as fulfill all programmatic requirements for their bachelor's degree.

The first step toward applying to the program is to contact a faculty member whose research is in a topic that matches your interest in order to arrange support for your thesis or paper of publishable quality. Interested students must submit a full graduate application to the graduate school during their junior year.

For additional information, please contact Robin Scholefield at 603-862-2369 or at robin.scholefield@unh.edu.

<https://cola.unh.edu/psychology>

## Programs

- [Neuroscience and Behavior Major \(B.S.\)](#) (p. 115)
- [Psychology Major \(B.A.\)](#) (p. 128)
- [Psychology Minor](#) (p. 129)

## Faculty

<https://cola.unh.edu/psychology/faculty-staff-directory>

## Psychology Major (B.A.)

<https://cola.unh.edu/psychology/program/ba/psychology-major>

## Description

The psychology major provides students with a broad education, while also allowing some specialization. The program exposes students to the scientific study of behavior and encourages an increased understanding of the behavior of humans and animals.

Students who wish to declare psychology as a major after enrolling in the University should consult with the department's academic counselor for application procedures and criteria.

## Requirements

Students majoring in psychology must complete 44 credits with a minimum grade of C- in each course and a 2.0 overall average in all major requirements.

Code	Title	Credits
PSYC 400	Psychology Freshmen Advising Seminar	1
<b>Core Courses</b>		
PSYC 401	Introduction to Psychology	4
PSYC 402	Statistics in Psychology	4
PSYC 502	Research Methods in Psychology	4
<b>Breadth (500-level) courses</b>		
Select two of the following courses from Group I:		8
PSYC 511	Sensation and Perception	
PSYC 512	Psychology of Primates	
PSYC 513	Cognitive Psychology	
PSYC 521	Behavior Analysis	
PSYC 522	Behaviorism (offered in Manchester only)	
PSYC 531	Psychobiology	
Select two of the following courses from Group II:		8
PSYC 552	Social Psychology	
PSYC 553	Personality	
PSYC 561	Abnormal Behavior	
PSYC 571	Pioneers of Psychology	
PSYC 581	Child Development	
<b>Depth (700-level) courses</b>		
Select two of the following courses from Group I:		8
PSYC 705	Tests and Measurement	
PSYC 710	Visual Perception	
PSYC 712	Psychology of Language	
PSYC 713	Psychology of Consciousness	
PSYC 716	Cognitive Neuroscience	
PSYC 720	Animal Cognition	
PSYC 722	Behaviorism, Culture, and Contemporary Society	



PSYC 731	Brain and Behavior
PSYC 733	Drugs and Behavior
PSYC 735	Neurobiology of Mood Disorders
PSYC 736	Attention Disorders
PSYC 737	Behavioral Medicine
PSYC 741W	Special Topics (examples: Fundamentals of Substance Abuse, Neuroscience of Memory)
Select two of the following courses from Group II:	
PSYC 705	Tests and Measurement
PSYC 755	Psychology and Law
PSYC 756	Psychology of Crime and Justice
PSYC 757	Psychology of Happiness
PSYC 758	Health Psychology
PSYC 762	Counseling
PSYC 780	Prenatal Development and Infancy
PSYC 783	Cognitive Development
PSYC 785	Social Development
PSYC 791	Special Topics (examples: Culture and Human Development, Race, Autobiographical Memory, Emotion & the Embodied Mind, Sport & Performance Psychology, Ecopsychology, Psychology of Delinquency)
or PSYC 791W	Special Topics
PSYC 793	Internship
<b>Total Credits</b>	<b>45</b>

Note: Most offerings have one or more prerequisite courses. Students (with the help of their adviser) are expected to select breadth courses that will later enable them to select depth courses appropriate to their interests and career goals.

The Discovery Program capstone requirement, taken during the senior year, may be fulfilled by completing one of the following options:

1. The honors-in-major program with an honors project; honors seminar, and research presentation (PSYC 799 Senior Honors Thesis);
2. a 4-credit capstone designated independent study project (PSYC 795 Independent Study);
3. PSYC 793 Internship;
4. Capstone-designated 700-level course.

The psychology department does not accept other departments' statistics courses toward the psychology major. Students who have taken a statistics course other than PSYC 402 Statistics in Psychology must pass a competency exam in order to declare the major and/or register for PSYC 402 Statistics in Psychology.

Major department courses may not be used to satisfy Discovery category requirements except for PSYC 402 Statistics in Psychology, which may be used to satisfy the QR Discovery requirement and the major requirement.

PSYC 401 Introduction to Psychology cannot be used to fulfill a Social Science; PSYC 571 Pioneers of Psychology cannot be used to fulfill a Historical Perspective. In the case that Psychology is a second major, major courses can be counted toward the Discovery requirements.

## Transfer Students

Transfer students who elect to major in psychology must complete at least 24 credits in the program at UNH to qualify for the degree in psychology. Transfer students must earn a total of 44 approved credits for completion of the psychology major. The distribution of these credits will be determined by the department's academic counselor. Transfer students should note that courses are allotted only the number of credits granted by the original institution (after adjustments for semester-hour equivalents). Thus, students transferring from an institution at which courses carry less than four credits each must make up for any credit deficit created by acceptance of transfer credits into the psychology major. Only courses taken in a psychology department can be transferred

into the psychology major. Of the four 700-level courses required for the major, at least three must be taken at UNH.

## Additional Notes

Specific course selections should be discussed with advisers. Exceptions to the requirements for the major require compelling circumstances and a petition to the department.

Psychology majors planning to go on to graduate study in psychology are advised to include PSYC 705 Tests and Measurement among their courses.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

## Student Learning Outcomes

- Demonstrate fundamental knowledge and comprehension of the major concepts, theoretical perspectives, historical trends, and empirical findings in psychology.
- Understand basic research methods in psychology including design, data analysis, and interpretation; and utilize this knowledge to conduct their own psychological research, with an appreciation of the ethical issues involved in human and non-human research.
- Engage in scientific reasoning and problem solving so that they can evaluate the quality and implications of scientific research.
- Write empirical research reports and literature reviews in American Psychological Association style and present findings from scientific research.

## Psychology Minor

<https://cola.unh.edu/psychology/program/minor/psychology>

### Description

Psychology is the study of the mind and human and animal behavior – what motivates us to do the things that we do? In this program, you'll have the opportunity to learn scientific research and analysis methods while studying how we learn and develop, how we interact socially, how our minds affect the way we perceive things, and how we identify and define abnormal behavior.

### Requirements

Code	Title	Credits
PSYC 401	Introduction to Psychology	4
Two courses at the 500 level or higher		8
Two additional PSYC courses		8
<b>Total Credits</b>		<b>20</b>

- No more than 4 credits of PSYC 795 Independent Study may be applied to the minor.
- A maximum of 9 approved psychology transfer credits can be applied to the UNH psychology minor.

- Transfer courses must be evaluated for their equivalency. Only courses taken in a psychology department can be applied towards the minor.
- Three credit transfer courses can be applied as only three credits. Students must make up the credit deficit created by acceptance of transfer courses, with one exception: one three-credit course accepted in transfer may be applied for a total of 19 credits.
- AP Psychology transferred into UNH is equivalent as PSYC 401.

## Queer Studies

### Programs

- [Queer Studies Minor](#) (p. 130)

## Queer Studies Minor

<https://cola.unh.edu/womens-gender-studies/program/minor/queer-studies>

### Description

The queer studies minor provides students with opportunities to research and understand a rapidly growing field whose focus is the study of lesbian, gay, bisexual, trans and allied peoples, their histories and cultures. Queer studies is a method of inquiry that explores the role of same-sex desire and constructions of gender across and among cultures and histories. In these classes, students will consider sexualities and genders as identities and social statuses, as categories of knowledge, and as lenses that help to frame how we understand our world. The minor consists of interdisciplinary coursework in queer studies and is open to all students. Students who wish to pursue the queer studies minor should consult with [Holly Cashman](mailto:holly.cashman@unh.edu) ([holly.cashman@unh.edu](mailto:holly.cashman@unh.edu)).

### Requirements

The queer studies minor requires 5 courses (20 credits) from the queer studies course offerings list below. A grade of **C- or better** is required in all queer studies courses. One pre-approved elective from the electives list below may count toward the minor. Courses taken Pass/Fail may not be used for the minor. No more than 8 credits used to satisfy the requirements for a major may be used for the queer studies minor. If you wish to substitute a different course, consult with a queer studies faculty advisor.

## Queer Studies Course Offerings

Please note that additional courses may count. Please visit the program's website for the most up-to-date information.

Code	Title	Credits
ANTH 625	Sexuality in Cross-Cultural Perspectives	4
ANTH 685	Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa	4
CMN 697	Seminar in Rhetorical Study	4
ENGL 693	Special Topics in Literature	4
HDFS 746	Human Sexuality	4
HDFS 757/857	Race, Class, Gender, and Families	4
HIST 497	Explorations in Historical Perspectives	4
HIST 595	Explorations (Only topics Gender and Sexuality in Pre-Modern Europe; Sex and Sexuality in Islamic History)	1-4
HIST 665	Themes in Women's History	4

HUMA 401	Introduction to the Humanities	4
PSYC 595	Applications of Psychology (Research, Field, or Academic Experience)	1-4
SOC 520	Family	4
SOC 570	Sexual Behavior	4
SW 715/815	Affirming Practice with Lesbian, Gay, Bisexual, Transgender, Queer+ People	4
WS 405	Gender, Power and Privilege	4
WS 444	Trans/Forming Gender	4
WS 505	Survey in Women's Studies (Only topics Violence Against Women; Gender, Race and Sexuality in Visual Culture)	4
WS 632	Feminist Thought (depending on instructor)	4
WS 795	Independent Study (or other departmental designation)	1-4
WS 798	Colloquium (Only topics Race, Gender, and Representation; Gay Marriage and Kinship; Women in Prison)	4

## Electives (require program approval and may vary by instructor)

Code	Title	Credits
CMN 567	Gender, Race, and Class in the Media	4
CMN 697	Seminar in Rhetorical Study	4
EDUC 705/805	Contemporary Educational Perspectives	4
ENGL 618	Film Theory	4
HDFS 545	Intimate Relationships and Families	4
HUMA 401	Introduction to the Humanities	4
SOC 570	Sexual Behavior	4
SOC 697	Special Topics (Only topic Women, Health, and Illness)	4
SW 840	Implications of Race, Culture, and Oppression for Social Work Practice	3
WS 401	Introduction to Women's Studies	4
WS 444A	Race Matters	4
WS 632	Feminist Thought	4
WS 796	Advanced Topics	4
WS 797	Internship	4
WS 798	Colloquium (Only topic Violence Against Women/Activism)	4

## Race and Ethnic Studies (RES)

### Programs

- [Race and Ethnic Studies Minor](#) (p. 130)

## Race and Ethnic Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/race-ethnic-studies>

### Description

The race and ethnic studies (RES) minor examines how racial and ethnic categories are created and maintained – politically, socially and culturally. RES uses critical, interdisciplinary and comparative approaches to study race relations as they intersect with factors including gender and sexuality, class, religion and immigration status. The minor prepares students for life and work in a world increasingly characterized by difference derived from racial and ethnic identities.

## Learning Outcomes

Facilitate understanding of how the social constructions of race affect the social fabric of our historical and contemporary world; enhance students' abilities to appreciate differences and to actively and critically engage in civic responsibilities, especially with respect to social justice; prepare students to negotiate an increasingly interconnected world and apply their education in a wide range of occupations; gain exposure to the theories and methods of ethnic studies; and compare representations

of borderlands, hybridity, migration and diaspora from different cultures to comprehend how national boundaries, as well as local, national, and transnational cultures and politics, affect the constitution of racial and ethnic categories.

Classes for the RES minor are housed in a variety of departments in the College of Liberal Arts, offering students a truly interdisciplinary experience. Please contact the [Global Racial and Social Inequality Lab \(GRSI.LAB@unh.edu\)](mailto:GRSI.LAB@unh.edu) for minor advising.

## Requirements

The race and ethnic studies minor consists of five courses or 20 credits. To complete a minor, students are required to:

1. Enroll in an introductory-level course. (These are listed on the minor website each semester.)
2. Enroll in at least one course at the 600/700-level.
3. Understand that no more than 8 credits used to satisfy the requirements for a major may be used for a minor.
4. Earn a C- or better in each course and maintain a 2.0 grade-point average in courses taken for the minor.

## List of Courses Approved for the Minor

Code	Title	Credits
ANTH 500	Peoples and Cultures of the World (when focus is Latin America, SubSaharan Africa or Middle East/North Africa)	4
ANTH 610	Medical Anthropology: Illness and Healing	4
ANTH #616	Religion, Culture, and Society	4
ANTH 625	Sexuality in Cross-Cultural Perspectives	4
ANTH 697/ENGL 693	Special Topics (American Roots Music)	4
ANTH 750	Islam and Gender: Gendered Lives of Muslims	4
CMN 515	Analysis of News	4
CMN 567	Gender, Race, and Class in the Media	4
CMN 696	Seminar in Media Studies (Topics in Film/Race, Class, Gender)	4
EDUC #717	Growing up Male in America	4
ENGL #517	Black Creative Expression	4
ENGL 550	Introduction to the Literature and Culture of Race	4
ENGL 581	Reading the Postcolonial Experience	4
ENGL 585	Introduction to Women in Literature	4
ENGL 595	Literary Topics (Intro/Caribbean Lit in English ONLINE)	4
ENGL 606	Languages of the World	4
ENGL 609	Ethnicity in America: The African American Experience in the 20th Century	4
ENGL 650	I Hear America Singing: Studying American Literature and Culture (Latino/A Literature, Comics & Graphic Narratives, Consumer Culture)	4
ENGL 714	Critical Skills (topic: On Race)	4
ENGL 739	American Indian Literature	4
ENGL 778/WS 798	Race and Gender in Film and Popular Culture	4
HIST 505	African American History	4
HIST #506	African American History	4
HIST 532	Modern Latin America	4
HIST 588	History of Modern Africa: 1870 to the Present	4
HIST 632	Latin American History: Topics	4
HUMA 730	Special Studies (Race Theory)	4
POLT 546	Wealth and Politics in Asia	4
POLT 565	United States Policy in Latin America	4
PSYC 571	Pioneers of Psychology	4
PSYC 791	Special Topics (Psychology and Race)	4
SPAN 526	Introduction to Latin American Cultures	4
SPAN 798	Topics in Hispanic Linguistics and Cultural Studies (Language & Id in Spanish)	4
SW 697	Special Topics in Social Welfare (Exploring Social Justice)	4
WS 401	Introduction to Women's Studies	4
WS 405	Gender, Power and Privilege	4
WS 444A	Race Matters	4
WS #444C	On the Roads to Equality	4

WS 444D	Cyborgs, Avatars, and Feminists: Gender in the Virtual World	4
WS 505	Survey in Women's Studies (Only topics: Leadership for Social Change, Queer Cinema, Queer Sustainability, Goba Sex Industry, Race, Gender and Enviromental Jutsice, Feminist Perspectives on Media)	4
WS 632	Feminist Thought	4
WS 798	Colloquium (Women in Prison)	4

## Additional Information

Courses taken pass/fail may not be used toward a minor. A relevant internship may be substituted for one of the electives.

After completing the 20-credit sequence, the student submits the Certification of Completion of Minor form, available online or from the RES coordinator. Once this certification is approved by the RES coordinator and major adviser, the form goes to the college dean and the registrar to be recorded on the transcript. The certification form must be completed by the beginning of the student's final semester at the University.

## Religious Studies

- [Religious Studies Minor](#) (p. 131)

## Religious Studies Minor

<https://cola.unh.edu/interdisciplinary-studies/program/minor/religious-studies>

## Description

The religious studies program at the University of New Hampshire currently offers an interdisciplinary minor, bringing together courses in several fields that address religion as a cross-cultural and experiential phenomenon. Topics include beliefs, rituals, texts and the meaning of life as explored in a variety of religious traditions. A religious studies major is available through the self-designed major program. For more information, consult the coordinator.

## Requirements

Code	Title	Credits
HIST 483	History of World Religions	4
HUMA/RS 505	Introduction to Religion	4
Select at least 3 additional courses from an approved semester list. See examples below.		12
<b>Total Credits</b>		<b>20</b>

## Examples of Approved Elective Courses

Code	Title	Credits
ANTH 640	Anthropology of Islam: Muslims' Everyday Lives in Contemporary Communities	4
ENGL 518W	Bible as Literature	4
HIST 585	Medieval Islam	4
HIST 642	Saints, Sinners, and Heretics: Europe in the Age of Religious Reform	4
HUMA 526	Humanities and Science (topic: Cognitive Science of Religion)	4
PHIL 417	God, Religion, and the Meaning of Life	4

Students especially interested in religious studies are encouraged to combine the minor with further pertinent coursework in one of the established departments contributing to the program: classics, humanities and Italian studies; history; philosophy; anthropology and English. The religious studies self-designed major includes the minor requirements of HUMA 505/RS 505 Introduction to Religion and HIST 483 as well as eight other relevant courses, which can include independent

studies. The program coordinator can aid in advising such a major program.

Courses ordinarily have some degree of focus on issues related to the academic study of religion, conceptualizing religion, or religious influences as a principal concern, asking comparative questions, and/or developing models of cross-cultural usefulness.

Interested students also should be alert for special topics courses in history (e.g. HIST 600 Explorations), English, anthropology (e.g. ANTH 500 Peoples and Cultures of the World), humanities, classics and other disciplines that might be relevant to the study of religion.

Students interested in the religious studies minor should see the coordinator to fill out an intent-to-minor form by the beginning of their junior year.

## Russian (RUSS)

The Russian program provides students with an opportunity to study one of the world's most important languages, its literature and its culture. In addition to the intrinsic value of Russian language, literature and culture as a liberal arts experience, the Russian major leads to a number of careers, such as teaching, translation and interpreting, government and the Foreign Service. It is also a valuable asset in preparing for careers in law, economics and international trade, and it can serve as a double major with business administration, international affairs, homeland security, the natural and physical sciences, and other liberal arts fields such as English, history, political science, sociology, philosophy, theatre, communication, linguistics and other foreign languages.

<https://cola.unh.edu/languages-literatures-cultures>

### Programs

- [Russian Major \(B.A.\)](#) (p. 132)
- [Russian Minor](#) (p. 133)

### Faculty

<https://cola.unh.edu/languages-literatures-cultures/faculty-staff-directory>

## Russian Major (B.A.)

<https://cola.unh.edu/languages-literatures-cultures/program/ba/russian-major>

### Description

The Russian program provides students with an opportunity to study one of the world's most important languages, its literature and its culture. In addition to the intrinsic value of Russian language, literature and culture as a liberal arts experience, majoring in Russian leads to a number of careers, such as teaching, translation and interpreting, government and the Foreign Service. The knowledge of the language and cultural proficiency is also a valuable asset in preparing you for careers in law, economics and international trade. All Russian majors are strongly encouraged to double major or include a relevant minor in their studies.

If you would like more information please contact [LLC.Dept@unh.edu](mailto:LLC.Dept@unh.edu).

## Requirements

New students will be assigned to the proper language level course after consultation with the Russian faculty.

All students must complete at least 10 classes (40 credits). The required minimum overall GPA in major coursework is 2.0. Specific course requirements are:

Code	Title	Credits
<b>Language Courses <sup>1</sup></b>		
Students entering major at a higher language level will replace the language courses with additional electives		
RUSS 401	Elementary Russian I	
RUSS 402	Elementary Russian II	
RUSS 503	Intermediate Russian I	
RUSS 504	Intermediate Russian II	
RUSS 631	Advanced Russian Conversation and Composition	
RUSS 632	Advanced Russian Conversation and Composition	
<b>Electives <sup>2</sup></b>		
Select a minimum of three courses from the following Culture, Linguistics, and Literature category:		
RUSS #425M	Topics in Russian Culture and Society in Moscow	
RUSS 521W	Devils, Deities, and Madness in Russian Literature	
RUSS 525	Russia: Mythology and Propaganda	
RUSS #525M	Russia: Mythology and Propaganda in Moscow	
RUSS #685	Study Abroad	
RUSS 691W	Readings in Russian Literature	
RUSS #725M	Topics in Russian Culture and Society in Moscow	
RUSS 733	History of Slavic Languages and Culture	
RUSS 790W	Advanced Language and Style	
RUSS 797	Special Studies in Russian Language, Literature, and Culture	
RUSS #798	Special Studies in Russian Language, Literature, and Culture	
LLC 540	Film History	
LLC #551	Comparative Literature: Masterpieces of World Literature I	
LLC 552	Comparative Literature: Masterpieces of World Literature II	
LLC 595	Language Practicum	
LLC 791	Methods of Foreign Language Teaching	
<b>Capstone <sup>3</sup></b>		
LLC 790	World Languages Capstone	
<b>Study Abroad</b>		
Study abroad is a requirement for the Russian major, although an approved equivalent high-impact experience may be substituted for study abroad with a compelling justification.		

<sup>1</sup> While the major may start counting as early as the Elementary I level (RUSS 401), those who enter the major at a higher level (RUSS 503, RUSS 504, RUSS 631, or RUSS 632) will replace the courses they skip from the elementary, intermediate and advanced language category with additional courses from the electives category.

<sup>2</sup> More electives required if fewer language credits were completed due to proficiency level and placement.

Students are encouraged to take as many of the culture, linguistics, and literature elective in the Russian language as possible, but there is no limit on the number of classes conducted in English from the electives category. Students taking no classes in the target language in a given semester will be strongly encouraged to enroll in one credit of conversation hour to maintain their language skills, and many of the courses taught in English will allow students the option to (or even require students to) do some work in the target language.

<sup>3</sup> Or approved equivalent 700-level course taken at UNH, approved study abroad equivalent, or approved high-impact experience (such as internship with a robust target language/culture component).

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Russian majors may use two major-required courses to satisfy two Discovery category requirements. In addition, Russian majors may take RUSS 521W Devils, Deities, and Madness in Russian Literature to satisfy both a Discovery Inquiry requirement and a major requirement.

Transfer students must earn a minimum of 12 major credits at the Durham campus.

## Student Learning Outcomes

- Upon completion of a Russian major, students are able to express themselves orally and in writing on a variety of topics with accuracy, and they are able to support their opinions with evidence found in the media and scholarly reading. Students are able to articulate their ideas and defend their opinions.
- Throughout the language sequence students are expected to give oral presentations on a variety of topics, related to their interest, second major or minor.
- Students have spent at least 8 weeks-semester/year in Russia on a study abroad program, which strengthens their language skills, improves their proficiency, both in language and culturally, and which allows them to interact with native speakers. The major includes at least two courses on Russian literature (one in English and one in Russian), and students are familiar with the works of major Russian authors (i.e. Pushkin, Lermontov, Turgenev, Gogol, Dostoevsky, Tolstoy, Chekhov, Pasternak, Solzhenitsyn, Zoshchenko, Bulgakov, among others.) Students are able to understand the texts in the historical and literary movements of Russia, as well as analyze the works in and of themselves. Students study the cultural history of Russia/Soviet Union/Russia to understand the Russian perspective of itself and the world.

## Russian Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/russian>

### Description

The Russian program provides students the opportunity to minor in Russian. The minor consists of 20 credits (beginning with Russian 503 Intermediate Russian I) where students develop language proficiency, a solid knowledge of grammar and pronunciation, and knowledge of Russian culture. Students with a Russian minor will have a sufficient command of the language to enhance their chosen field of study, and will have countless career opportunities, such as the public, private and nonprofit sectors, including government, education, journalism, law, communications, and business.

Students in the Russian minor program at UNH are strongly encouraged to study on the UNH Study Abroad Program in Russia. Students can earn credits toward the Russian minor as well as complete two Discovery categories on the program. Foreign language skills and cultural competencies will open doors for students that would not have been opened without the minor in Russian.

## Requirements

The minor in Russian consists of 20 credits in Russian courses above RUSS 402 Elementary Russian II; it must include:

Code	Title	Credits
RUSS 503 & RUSS 504	Intermediate Russian I and Intermediate Russian II	8
Select at least one of the following:		4
RUSS 631	Advanced Russian Conversation and Composition	
RUSS 632	Advanced Russian Conversation and Composition	
RUSS 691W	Readings in Russian Literature	
RUSS 790W	Advanced Language and Style	
Select two elective RUSS courses above RUSS 402		8
<b>Total Credits</b>		<b>20</b>

Students wishing to minor are expected to meet with a faculty member from the Russian program to discuss their course of study.

At the beginning of your final semester of study, you should fill out a [certification of completion of minor](#) form, obtain the necessary signatures, and submit it to your Dean's Office.

## Security Studies

### Programs

- [Security Studies Minor](#) (p. 133)

## Security Studies Minor

<https://cola.unh.edu/political-science/program/minor/security-studies>

### Description

The security studies minor will provide students with the opportunity to explore the many dimensions of security through the interdisciplinary study of political science, anthropology, communication, geography, history, humanities, justice studies, sociology, women's and gender studies, economics and aerospace studies. This well-rounded curriculum will enable students to build upon their interest in political science by specializing in an area of increasing importance — domestic and global security.

The field of security studies has always been important within the discipline of political science, but the concept of security has broadened and become more problematized in recent years. Following the terrorist attacks of 9/11, federal, state and local governments created thousands of jobs that require knowledge of security issues and the ability to conduct research. Leaders at all levels count on staff with analytical skills to design and conduct research to support decision-making, and communicate the results of this research effectively to policy-makers. Individuals who understand the national security environment and have the ability to design and conduct research are in critical demand in the public sector, private sector and not-for-profit entities.

For more information, contact [Madhavi Devasher](#) ([madhavi.devasher@unh.edu](mailto:madhavi.devasher@unh.edu)), 603-862-8020.



## Requirements

1. Five courses (20 credits)
2. Students must receive a grade of C or better for a course to count toward the minor requirements.
3. No more than 8 credits may double count between majors and minors. Thus, political science majors pursuing the security studies minor can only double count up to two of the three required political science courses below. The third required course must be taken in addition to courses taken to fulfill major requirements.

Code	Title	Credits
<b>Required Courses</b>		
Select one core POLT course of the following:		4
POLT 560	World Politics	
POLT 562	Strategy and National Security Policy	
POLT 568	International Security	
Select two intermediate POLT courses of the following:		8
POLT 403	United States in World Affairs	
POLT 513	Civil Rights and Liberties	
POLT 545	People and Politics in Asia	
POLT 546	Wealth and Politics in Asia	
POLT 548	Drug Wars	
POLT 551	Ethnicity, Violence, Democracy	
POLT 554	Revolution and Protest in Latin America	
POLT 556	Politics in China	
POLT 559	Comparative Politics of the Middle East	
POLT 560	World Politics <sup>1</sup>	
POLT #561	Introduction to International Political Economy	
POLT 562	Strategy and National Security Policy <sup>1</sup>	
POLT #563	The Global Information Grid's Disruptive Impact on Government, Politics, and Society	
POLT 565	United States Policy in Latin America	
POLT 566	Asian Challenge to Global Order	
POLT 568	International Security <sup>1</sup>	
POLT 569	The Rise of China	
POLT #570	Counterterrorism: Nation states' responses to terrorist activity	
POLT 592	Selected Topics in International Politics	
POLT 595	Smart Politics	
POLT 740	States and Societies in the Middle East	
POLT 742	Politics of Afghanistan, Pakistan, and India	
POLT 751	Comparative Environmental Politics and Policy	
POLT 760	Theories of International Relations	
POLT 762	International Political Economy	
POLT #765	Security Intelligence Study	
POLT 778	International Organization	
POLT 797C	Seminar in Comparative Politics	
POLT 797E	Seminar in International Politics	
<b>Electives</b>		
Select two electives from other disciplines (at least one must be in a humanities department or program)		8
<b>Total Credits</b>		20

<sup>1</sup> If not counted for core requirement.

### Electives within humanities departments and programs:

Code	Title	Credits
HIST 537	Espionage and History	4
HIST 619	Foreign Relations of the United States	4
HIST 620	Foreign Relations of the United States	4
HUMA 525	Humanities and the Law	4
PHIL #635	Advanced Topics in Philosophy of Law and Justice	4

### Electives outside humanities departments and programs:

Code	Title	Credits
CMN 456	Propaganda and Persuasion	4
JUST 405	Technology, Crime, and Society: A Forensic Exploration of High-Tech and Digital Crime	4
PSYC 756	Psychology of Crime and Justice	4
SOC 450	Contemporary Social Problems	4
SOC 515	Introductory Criminology	4
SOC #656	Terrorism	4
SOC 693	Global Social Change	4
Other POLT courses can be approved by the core faculty upon request.		

Once students have declared the minor, they are required to meet with the coordinator or appropriate affiliated faculty adviser at least once per semester for regular review and assessment of their program, learning outcomes, and progress toward the degree.

Transfer credits may be approved by the coordinator to count toward the minor. If the transfer credit is accepted by the University and fits within the scope of the minor, it will be considered.

## Sociology (SOC)

Sociology is the study of social life, social change, and the social causes and consequences of human behavior. Sociologists investigate the structure of groups, organizations and societies, and how people interact within these contexts.

Since human behavior is shaped by social factors, the subject matter of sociology ranges from the intimate family to the hostile mob; from organized crime to religious cults; from the divisions of race, gender and social class to the shared beliefs of a common culture.

<https://cola.unh.edu/sociology>

## Programs

- [Sociology Major \(B.A.\)](#) (p. 134)
- [Sociology Minor](#) (p. 136)
- [Medical Sociology Cognate](#) (p. 136)

## Faculty

<https://cola.unh.edu/sociology/people>

## Sociology Major (B.A.)

<https://cola.unh.edu/sociology/program/ba/sociology>

## Description

Majoring in sociology provides a solid, multifaceted foundation in the liberal arts, including analytical thinking and writing, and skills in collecting and analyzing data. Students learn diverse theoretical approaches to the social world and acquire tools for conducting and understanding social science research. The wide range of substantive areas taught in the UNH Department of Sociology include courses concentrating on family and work; environmental sociology; social policy; inequalities of race, class and gender; criminology, social control and deviant behavior; medical sociology and mental health; and religion.

Undergraduate training in sociology is an excellent background for a variety of careers, including the business world, where majors might work

in marketing and sales or human resources; government and nonprofit services, where majors might work in education, health services, social welfare or criminal justice; and research. An undergraduate degree in sociology is also excellent preparation for graduate work in law, social work, criminal justice, counseling, public administration, public health, business administration, urban planning or further studies in sociology.

Students may declare a major in sociology in Webcat. New students who declare the major should enroll in SOC 400 Introductory Sociology during the next semester.

Conjoint minors (allowing double-counting of one or two courses) are available for justice studies; gerontology; American studies; race and ethnic studies; women's and gender studies; and other approved minors. Students also have the opportunity to pursue a second major, including justice studies. Students interested in social work or teaching can develop programs in conjunction with the appropriate departments. The departmental honors program is recommended for students with cumulative grade-point averages over 3.4, and especially for those anticipating graduate study.

## Requirements

Majors must complete a minimum of 40 semester credits in sociology courses with grades of C- or better in each course as well as maintain an overall GPA of 2.0 or better in all sociology courses.

Code	Title	Credits
<b>Required Core Courses</b>		
SOC 400	Introductory Sociology	4
SOC 402	Statistics	4
SOC 599	Sociological Analysis <sup>1</sup>	4
SOC 601	Methods of Social Research <sup>2</sup>	4
<b>Electives</b>		<b>20</b>

Select five sociology elective courses, at least two of which must be at the 600 or 700 level (upper-level electives).

SOC #440A	Honors/Drug Addiction in American Society
SOC 444A	Honors/Society in the Arctic
SOC 450	Contemporary Social Problems
SOC 515	Introductory Criminology
SOC 520	Family
SOC 525	Juvenile Crime and Delinquency
SOC 530	Race and Racism
SOC 535	Homicide
SOC 565	Environment and Society
SOC 570	Sexual Behavior
SOC 595	Independent Reading and Research
SOC 597	Special Topics
SOC 620	Drugs and Society
SOC 625	Mental Health and Society
SOC #640	Religion
SOC 645	Class, Status and Power
SOC 647	Sociology of Work and Well-Being
SOC #655	Sociology of Law and Justice
SOC #656	Terrorism
SOC 660	Urban Sociology
SOC 665	Environmental Sociology
SOC #656	Terrorism
SOC 693	Global Social Change
SOC 697	Special Topics
SOC #715	Criminological Theory
SOC 720	Sociology of Drug Use
SOC 725	Social Demography
SOC 730	Communities and the Environment
SOC 740	Sociology of Mental Health
SOC 745	Race, Ethnicity, and Inequality

SOC 773	Childhood and Social Policy
SOC 788	Advanced Medical Sociology
SOC 792	Internship Independent Study
SOC 797	Special Topics
SOC 799	Senior Thesis
Capstone Requirement	
SOC 611	Sociological Theory <sup>3</sup>
Total Credits	

<sup>1</sup> SOC 599 Sociological Analysis must be completed no later than the junior year and is a prerequisite for majors taking 600- and 700-level courses.

<sup>2</sup> SOC 402 Statistics is a prerequisite for SOC 601 Methods of Social Research.

<sup>3</sup> Complete SOC 611 Sociological Theory during senior year.

SOC 595 Independent Reading and Research can be used to fulfill one lower-level elective or SOC 799 Senior Thesis can be used to fulfill one upper-level elective. Sociology majors may use two major-required courses to satisfy two Discovery category requirements. In addition, SOC 599 Sociological Analysis can be used to satisfy both a major requirement and the Inquiry Discovery requirement. (Statistics courses taken in other disciplines are not acceptable as a substitute for SOC 402 Statistics.)

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. B.A. candidates must also satisfy the foreign language proficiency requirement.

Students interested in majoring in sociology should consult with the director of undergraduate program in the sociology department for guidance. It is the responsibility of all sociology majors to obtain the latest information from the department office.

## Sociology Language Requirement

The bachelor of arts degree at the University of New Hampshire requires that students satisfy the foreign language proficiency requirement. The requirement may be met by demonstrating language proficiency equal to a one-year college-level course (401 and 402, 403 and 503, 501 [Latin only], or 503 and above in a spoken language). American Sign Language courses meet the foreign language proficiency requirement for sociology majors when ASL I and ASL II have been completed.

## Student Learning Outcomes

- Outcome 1: Students will learn to articulate and evaluate how individual biographies are shaped by social structures, social institutions, cultural norms, and multiple of dimensions of social stratification and inequality. (Sociological imagination)
- Outcome 2: Students will learn to analyze and evaluate multiple and competing arguments about high-profile social, political, and cultural current events; distinguish between evidence and opinions; and use reason and data to advance an argument. (Critical thinking)
- Outcome 3: Students will learn to use, evaluate, and apply classical and contemporary theoretical perspectives to historical and contemporary events. (Sociological theory)
- Outcome 4: Students will learn how to generate and interpret qualitative and quantitative data in a value-neutral way. (Data analysis)

- Outcome 5: Students will learn how to interpret and evaluate several of the major social science research methodologies, as well as the relationship between research questions and appropriate methods. (Research methods)
- Outcome 6: Students will learn to effectively communicate a sociological perspective both in writing and verbally. (Communication skills)
- Outcome 7: Students will learn to understand how people of different cultural, racial, ethnic, sex, gender, religious, and political identities interpret the world around them. (Diversity, Equity, and Inclusion)
- Outcome 8: Students will learn to work effectively and respectfully with people of different backgrounds, experiences, and perspectives. (Collaboration)

## Sociology Minor

<https://cola.unh.edu/sociology/program/minor/sociology>

### Description

Minor in sociology provides a foundation in analytical thinking and writing, and skills in collecting and analyzing data. Students learn diverse theoretical approaches to the social world and acquire tools for conducting and understanding social science research. Course topics include family and work; environmental sociology; social policy; inequalities of race, class and gender; criminology, social control and deviant behavior; medical sociology and mental health; and religion.

Undergraduate training in sociology is an excellent background for a variety of careers, including the business world, working in marketing and sales or human resources; government and nonprofit services, working in education, health services, social welfare or criminal justice; and research. A minor in sociology is also excellent preparation for graduate work in law, social work, criminal justice, counseling, public administration, public health, business administration, urban planning and other fields.

### Requirements

A minor consists of any five 4-credit courses in sociology with a C- or better in each course and a grade-point average of 2.0 or better in these courses.

Code	Title	Credits
Select five elective courses from the following:		
SOC 400	Introductory Sociology	4
SOC 402	Statistics	4
SOC #402H	Honors/Statistics	4
SOC #440A	Honors/Drug Addiction in American Society	4
SOC 444A	Honors/Society in the Arctic	4
SOC 450	Contemporary Social Problems	4
SOC 515	Introductory Criminology	4
SOC 520	Family	4
SOC 525	Juvenile Crime and Delinquency	4
SOC 530	Race and Racism	4
SOC 535	Homicide	4
SOC 565	Environment and Society	4
SOC 570	Sexual Behavior	4
SOC 595	Independent Reading and Research	2-8
SOC 597	Special Topics	4
SOC 599	Sociological Analysis	4
SOC 601	Methods of Social Research	4

SOC 611	Sociological Theory	4
SOC 620	Drugs and Society	4
SOC 625	Mental Health and Society	4
SOC 635W	Medical Sociology	4
SOC #640	Religion	4
SOC 645	Class, Status and Power	4
SOC 647	Sociology of Work and Well-Being	4
SOC #655	Sociology of Law and Justice	4
SOC #656	Terrorism	4
SOC 665	Environmental Sociology	4
SOC 693	Global Social Change	4
SOC 697	Special Topics	4
SOC #715	Criminological Theory	4
SOC 720	Sociology of Drug Use	4
SOC 725	Social Demography	4
SOC 730	Communities and the Environment	4
SOC 740	Sociology of Mental Health	4
SOC 745	Race, Ethnicity, and Inequality	4
SOC 773	Childhood and Social Policy	4
SOC 788	Advanced Medical Sociology	4
SOC 792	Internship Independent Study	2-8
SOC 797	Special Topics	4
SOC 799	Senior Thesis	4 or 8
SOC 799H	Senior Honors Thesis	4 or 8

## Medical Sociology Cognate

<https://cola.unh.edu/sociology/program/cognate/medical-sociology>

### Description

The medical sociology cognate provides students with an understanding of how social structure shapes the etiology of health and illness as well as the availability, effectiveness and choices around health care on micro and macro levels. It develops students' sociological imagination, fosters their application of a sociological perspective to the study of health, and allows them to gain the skills needed to be informed consumers of empirical health research. The focus on empirical literacy that is central to courses in sociology facilitates students' ability to communicate and apply research findings in their respective professional fields.

Although the sociological perspective will benefit students from all backgrounds, a cognate in medical sociology may be especially relevant for students majoring in biomedical science, neuroscience and behavior, psychology, gerontology, health and physical education, nursing, health policy and administration, business, human development and others.

### Requirements

- Any three courses in medical/health focused sociology courses (12 credits) with a grade of C- or better
- Submission of a completed "Certification of Completion of Cognate" form
- Courses taken pass/fail may NOT be used for the cognate.
- Sociology majors may count cognate classes as major electives.

Code	Title	Credits
Select three courses from the following:		
SOC #440A	Honors/Drug Addiction in American Society	4
SOC 570	Sexual Behavior	4
SOC 597	Special Topics (Topic: Death & Dying in America)	4
SOC 620	Drugs and Society	4

SOC 625	Mental Health and Society	4
SOC 635W	Medical Sociology	4
SOC 697	Special Topics (Topic: Work and Well-Being)	4
SOC 720	Sociology of Drug Use	4
SOC 740	Sociology of Mental Health	4
SOC 788	Advanced Medical Sociology	4
SOC 797	Special Topics (Topics: Global Health, Social Dimensions of COVID-19)	4
Total Credits		12

## Spanish (SPAN)

The Spanish program major and minor in the Department of Languages, Literatures and Cultures helps students develop Spanish language proficiency and enhanced knowledge of the cultural and literary achievements of Hispanic societies around the globe. This dual emphasis on communication and cultural analysis prepares students to live in communities where Spanish is increasingly important professionally and personally.

Students also have the option to complete honors in the major providing they complete the necessary classes and a senior thesis in Spanish.

The UNH study abroad program in Granada, Spain, open to majors and nonmajors, offers students the opportunity to live and study abroad for a spring semester. A six-week summer immersion program in Costa Rica also is available to students. Financial aid is available for eligible students. Visit [cola.unh.edu/granada](https://cola.unh.edu/granada), [cola.unh.edu/costa-rica](https://cola.unh.edu/costa-rica), or contact the departmental program directors for further information.

## Accelerated B.A./M.A. Program

The dual-degree B.A./M.A. program in Spanish in the Department of Languages, Literatures and Cultures offers high-achieving students the opportunity to earn both an undergraduate and a graduate degree during their time at UNH. Qualified students may be accepted into the program late in the first semester of their junior year and begin to take graduate courses in the spring of their senior year. Students graduate with a B.A. upon completion of 128 credits (including all University, College and Program requirements), and then complete graduate work (30 credits) the following year. After only five years of study, students earn both degrees.

<https://cola.unh.edu/languages-literatures-cultures>

## Programs

- [Spanish Major \(B.A.\)](#) (p. 137)
- [Spanish Minor](#) (p. 138)

## Faculty

<https://cola.unh.edu/languages-literatures-cultures/faculty-staff-directory>

## Spanish Major (B.A.)

<https://cola.unh.edu/languages-literatures-cultures/program/ba/spanish-major>

## Description

When you major in Spanish you are opening your opportunities to a variety of fields in which proficiency in the Spanish language

and knowledge of Hispanic cultures are desirable or required. Such fields might include international relations, business administration, government, social service and communications. In addition, students can prepare to teach Spanish at the elementary and secondary level and in bilingual education programs through UNH's MAT in Secondary Education with a certification in World Languages. The undergraduate major also provides a basis for graduate study in preparation for scholarly research and teaching at the college level. When combined with coursework or a dual major in other disciplines, the major prepares students for work in Spanish-speaking areas of the world as well as in bilingual regions of the United States.

## Requirements

All students must complete at least 10 classes (40 credits). All coursework required for the Spanish major must be completed with a grade of C or better. Specific course requirements are:

Code	Title	Credits
<b>Language Courses <sup>1</sup></b>		
Students entering major at a higher language level will replace the language courses with additional electives		
SPAN 503	Intermediate Spanish I	
SPAN 504	Intermediate Spanish II	
SPAN 631	Advanced Conversation and Composition I	
SPAN 632	Advanced Conversation and Composition II	
<b>Electives <sup>2</sup></b>		
Select a minimum of five courses from the following Culture, Linguistics, and Literature category		
SPAN 525	Introduction to Spanish Cultures	
SPAN 526	Introduction to Latin American Cultures	
SPAN 535B	Professional Culture in Latin America - Case Study: Mexico and Brazil	
SPAN 641	Spanish Language Variation & Change	
SPAN 645	Intro to Spanish Linguistics	
SPAN 647	Topics in Hispanic Cultural Studies	
SPAN 648	The Hispanic World Today	
SPAN 650	Hispanic Literature and Popular Culture	
SPAN 651	Introduction to Spanish Literature and Thought	
SPAN #652	Introduction to Spanish Literature and Thought	
SPAN 653	Introduction to Latin American Literature and Thought	
SPAN 654	Introduction to Latin American Literature and Thought	
SPAN 790	Topics in Second Language Acquisition/Pedagogy/Methodology	
SPAN 797	Topics in Hispanic Literary and Cultural Studies	
SPAN 798	Topics in Hispanic Linguistics and Cultural Studies	
SPAN 799	Senior Honors	
LLC 535B	Professional Culture in Latin America - Case Study: Mexico and Brazil	
LLC 444H	Honors/Human Rights and the Disappeared in Latin American Culture	
LLC 540	Film History	
LLC #551	Comparative Literature: Masterpieces of World Literature I	
LLC 552	Comparative Literature: Masterpieces of World Literature II	
LLC 555	Discover Cuba: An Arts Experience	
LLC 791	Methods of Foreign Language Teaching	
<b>Capstone <sup>3</sup></b>		
LLC 790	World Languages Capstone	
<b>Study Abroad</b>		

An approved foreign study experience in a Spanish-speaking country is required, although an approved equivalent high-impact experience may be substituted for study abroad with a compelling justification

- <sup>1</sup> While the major may start counting as early as the Intermediate I level (SPAN 503), those who enter the major at a higher level (SPAN 504, SPAN 631, or SPAN 632) will replace the courses they skip from the four in the intermediate and advanced language category with additional electives in the Culture, Linguistics, and Literature category.
- <sup>2</sup> More electives required if fewer language credits were completed due to proficiency level and placement.  
No limit on the number of classes in English allowed. Students taking no classes in the target language in a given semester will be strongly

encouraged to enroll in one credit of conversation hour to maintain their language skills, and many of the courses taught in English will allow students the option to (or even require students to) do some work in the target language.

- <sup>3</sup> Or approved equivalent 700-level course taken at UNH, approved study abroad equivalent, or approved high-impact experience (such as internship with a robust target language/culture component).

Please note that the required minimum overall GPA for study abroad and the Spanish major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Spanish majors may use two major-required courses to satisfy two Discovery category requirements.

## Student Learning Outcomes

**Linguistic proficiency** Students can demonstrate an Advanced level of proficiency (as defined in ACTFL Proficiency Guidelines) in the target language in speaking, writing, listening and reading.

- **Speaking:** students are able to handle a variety of communicative tasks. They are able to participate in most informal and formal conversations on topics related to school, home, academic, and other activities. They can also speak about topics related to employment, current events, and matters of public and community interest.
- **Writing:** students are able to meet work and/or academic writing needs. They demonstrate the ability to narrate, describe and express viewpoints about topics in major time frames with control of aspect.
- **Listening and Reading:** students are able to understand conventional narrative and descriptive texts (spoken and/or written). They can understand the main facts, tone and style, and supporting details.
- **Comprehension:** students may often develop understanding primarily from their particular situational and subject-matter knowledge(course materials, contextual knowledges, and study abroad experiences), but each student should be able to extend and expand their comprehension to most areas of specialized and non-specialized materials, especially as that directly relates to any of the student's other major and minor academic subjects of study.

**Intercultural and transcultural competence** Students will demonstrate knowledge and understanding of other cultures, and are able to think critically about and are able to recognize and accept culturally differences, and the uniqueness of other cultures and peoples. By the time they graduate from our program, they will be able to:

- Recognize and describe the historical, social, economic, and political forces that shape society in the various target cultures that they have directly studied (taking into account that they cannot be familiar with all the particular specificities of the 23+ nations of the Spanish-Speaking world).
- Analyze and critique the cultural and social products of the target culture(s)(film, literature, art, popular culture, media, etc.) within their context, including conducting basic research projects.
- On a broader level, each student should be able to begin to question the validity of their own cultural beliefs, behaviors and norms, by

contrasting and comparing them with those of the target culture (cross-cultural sensitivity and respect).

- Students should be able to perceive and value cultural diversity and reinterpret the place of the self as an individual culturally situated within the global context of the twenty-first century.

## Spanish Minor

<https://cola.unh.edu/languages-literatures-cultures/program/minor/spanish>

### Description

When you minor in Spanish you are expanding upon opportunities and opening doors to careers in your field of interest. Many other disciplines such as social service, nursing, teaching and business require Spanish as a second language since Spanish is the second most spoken language in the United States. Increasingly, employers in government at municipal, state and federal levels and business as well as related careers, are viewing such experience and language skills favorably.

### Requirements

At least three courses must be taken in residence at UNH. All coursework required for the Spanish minor must be completed with a grade of C or better and may not be taken pass/fail.

Code	Title	Credits
5 courses (20 credits) in SPAN 503 or above, which must include:		20
SPAN 631	Advanced Conversation and Composition I	
SPAN 632	Advanced Conversation and Composition II	
<b>Total Credits</b>		<b>20</b>

## Theatre and Dance (THDA)

There is no area of human endeavor that theatre does not touch. To study theatre is to learn a great deal about yourself and about the world in which you will live. No course of study will prepare you better for life in a rapidly changing world.

The award-winning faculty at the University of New Hampshire provide theatre and dance majors with superlative training within a broad liberal arts context. Students may take courses in acting; voice and movement; dialects; directing; choreography; design and theatre technology; the history, theory and criticism of drama and theatre; youth drama; secondary theatre education; playwriting; storytelling; puppetry; ballet; theatre dance (jazz and tap); aerial dance; and musical theatre. Students interested in performance, technical and historical aspects are trained to step into professional careers while still broadening the scope of their preparation through a rich liberal arts education. The program encourages students to explore their interests through independent studies and internships, special projects and active personal involvement in lecture and laboratory classes, with the possibility for integration with other departments. To assist with financial needs, the department awards scholarships to selected majors each spring.

The Department of Theatre and Dance offers over 25 performance opportunities every year in either musicals, plays or dance concerts. In addition to performing, students are given the opportunity to direct, stage manage, design, choreograph or write scripts for the work done in our department. We offer jazz, tap and ballet studies. In addition, UNH



was the first university to add Aerial Dance to course offerings. Students study with faculty who have worked locally, nationally and internationally.

In addition to comprehensive liberal arts preparation, six specific course sequences are available within the theatre major:

1. courses leading to a theatre major with an option in acting & directing;
2. courses leading to a theatre major with an option in dance: ballet, theatre dance (tap and jazz) and aerial dance. Students also have the option of pursuing dance education leading to K-12 dance teacher certification. You may achieve dance licensure in two different ways. You may pursue dance education/licensure through the undergraduate program. This leaves no room for double majors or minors. If you want to broaden your undergraduate education and need more space for classes outside of THDA, you may pursue the five-year program, beginning preparation for teaching at the undergraduate level and then pursuing a graduate degree to get dance certification. Students complete a baccalaureate degree in theatre with a dance option and move into a fifth year of study with a full-year internship, leading to either the Masters in Education (M.Ed.) or a Master of Arts in Teaching (M.A.T.) degree and licensure for teaching;
3. courses leading to a theatre major with an option in design & theatre technology;
4. courses leading to a theatre major with an option in musical theatre;
5. courses leading to a theatre major that, if desired, may be combined with requirements of the Department of Education to pursue a K-12 teacher's license. You may achieve theatre licensure in two different ways. You may pursue secondary theatre education/licensure through the undergraduate program. This leaves no room for double majors or minors. If you want to broaden your undergraduate education and need more space for classes outside of THDA, you may pursue the five-year program, beginning preparation for teaching at the undergraduate level and then pursuing a graduate degree to get theatre arts certification. Students complete a baccalaureate degree in theatre with a secondary theatre education option and move into a fifth year of study with a full-year internship, leading to either the Masters in Education (M.Ed.) or a Master of Arts in Teaching (M.A.T.) degree and licensure for teaching;
6. courses leading to a theatre major that, if desired, may be combined with requirements of the Department of Education, in conjunction with a fifth year master of education (M.Ed.) program, to prepare students for elementary school certification with an undergraduate option in youth drama.

Auditions are required for the acting, dance and musical theatre options. Interviews are strongly encouraged for all other areas. The audition session will last approximately three hours. In addition to the audition, students will take part in group acting exercises, do a dance call and have an opportunity to ask questions during a comprehensive department overview. Please note that entrance into Department of Theatre and Dance options is contingent upon acceptance into the University of New Hampshire. Prospective students who live more than 250 miles away may contact the department to discuss other audition options. Audition dates, as well as detailed entrance requirements, can be found at the Department of Theatre and Dance website.

## Minoring in Theatre and Dance

A minor acknowledges a level of competence and academic focus without the depth a major requires. Students may pursue a minor while

majoring in another subject when the demands of that major prevent the possibility of a double major.

<https://cola.unh.edu/theatre-dance>

## Programs

- [Theatre Major \(B.A.\)](#) (p. 139)
- [Theatre Major: Acting and Directing Option \(B.A.\)](#) (p. 140)
- [Theatre Major: Dance Option \(B.A.\)](#) (p. 141)
- [Theatre Major: Design & Theatre Technology Option \(B.A.\)](#) (p. 143)
- [Theatre Major: Musical Theatre Option \(B.A.\)](#) (p. 144)
- [Theatre Major: Secondary Theatre Education Option \(B.A.\)](#) (p. 145)
- [Theatre Major: Youth Drama Option \(B.A.\)](#) (p. 147)
- [Arts Administration Minor](#) (p. 148)
- [Dance Minor](#) (p. 148)
- [Musical Theatre Minor](#) (p. 149)
- [Theatre Minor](#) (p. 149)
- [Youth Drama Minor](#) (p. 149)
- [Studies in Fashion and Design Cognate](#) (p. 150)
- [Studies in the Design of Interior Space Cognate](#) (p. 149)

## Faculty

<https://cola.unh.edu/theatre-dance/faculty-staff-directory>

## Theatre Major (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major>

## Description

The comprehensive theatre major provides a well-rounded course of study which encourages inquisitive students who have a wide range of theatre/dance interests to tailor a program that will challenge but also broaden their intellectual horizons. Its lower required credit load also makes it ideally suited to students who want to combine their theatre studies with another major, such as business administration, international studies or social work. Contact [Raina Ames](mailto:raina.ames@unh.edu) ([raina.ames@unh.edu](mailto:raina.ames@unh.edu)), Paul Creative Arts Center, (603) 862-3044.

## Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year. Students must also complete a digital

portfolio that demonstrates fulfillment of student learning outcomes related to their area of study.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
<b>Required Courses</b>		
THDA 436	History of Theatre I	4
or THDA 438	History of Theatre II	
THDA 459	Stagecraft	4
THDA 460	Elements of Design	4
THDA 462	Ballet I	4
or THDA 463	Theatre Dance I	
THDA 551	Acting I	4
THDA 589	Practicum (A - D) <sup>1</sup>	4-8
THDA 798	Senior Thesis	2
or THDA 799	Capstone Project	
<b>Theory/History</b>		
Select 4 credits of the following:		4
THDA 436	History of Theatre I	
or THDA 438	History of Theatre II	
THDA 444B	Famous Dancers of the 20th Century	
THDA 450	History of Musical Theatre in America	
THDA #520	Creative Drama	
THDA 541	Arts Administration and Entrepreneurship	
THDA 632	Interpretation of Shakespeare in Theatre	
THDA #638	American Theatre: 1920-1970	
THDA 640W	Playwriting	
THDA 721	Arts Integration	
THDA 727	Methods of Teaching Theatre	
<b>Design/Theatre</b>		
Select 4 credits of the following:		4
THDA 458	Costume Construction	
THDA 475	Stage Makeup	
THDA 546	Costume Design for the Theatre	
THDA #547	Stage Properties	
THDA 548	Stage Lighting Design and Execution	
THDA 583	Introduction to Puppetry	
THDA 641	Stage Management	
THDA 650	Scene Painting for the Theatre	
THDA 651	Rendering for the Theatre	
THDA 652	Scene Design	
THDA 683	Advanced Puppetry	
<b>Performance</b>		
Select 4 credits of the following:		4
THDA 462	Ballet I	
THDA 463	Theatre Dance I	
THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	
THDA 532	The London Experience	
THDA 552	Acting II	
THDA 555	Acting The Song	
THDA 592A	Special Topics	
THDA 624	Theatre for Young Audiences	
THDA 655	Musical Theatre Scene Study	
THDA 741	Directing	
THDA 755	Musical Theatre Repertoire	
THDA 758	Acting III	

Elective 600-799 Level Courses <sup>2</sup>	8
Total Credits	46-50

- <sup>1</sup> The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester.

<sup>2</sup> Includes those in Sections II, III, and IV

## Student Learning Outcomes

**Core Student Learning Outcomes for the Bachelor of Arts in Theatre major:** On completion of the B.A. in Theatre, students will:

- Recognize and distinguish between various styles and forms of theatre or dance that have shaped the evolution of these disciplines.
- Effectively communicate artistic ideas and/or critical analysis of theatre or dance works through appropriate oral, written or practical means.
- Demonstrate knowledge and fundamental skill level of the basic areas of theatre or dance production in areas related to performance, design, technology or management.
- Create and demonstrate informed and personal artistic choices in coursework and productions (i.e., design, dance, directing, acting).

## Theatre Major: Acting and Directing Option (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major-acting-directing-option>

### Description

Created for students with a passion for acting and/or directing, this option is designed to develop the actor and the director as an interpretive, creative and self-sufficient artist. Award-winning faculty working in the profession challenge students to strive for excellence in the art and craft of acting and directing through highly challenging coursework, performance projects and productions, as well as special workshops with acclaimed guest artists.

Contact David Kaye ([david.kaye@unh.edu](mailto:david.kaye@unh.edu)), Paul Creative Arts Center, (603) 862-0667.

### Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year. Students must also complete a digital

portfolio that demonstrates fulfillment of student learning outcomes related to their area of study.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
<b>Required Courses</b>		
THDA 436	History of Theatre I	4
THDA 438	History of Theatre II	4
THDA 459	Stagecraft	4
THDA 460	Elements of Design	4
THDA 462 or THDA 463	Ballet I Theatre Dance I	4
THDA 551	Acting I	4
THDA 552	Acting II	4
THDA 570	Movement & Vocal Production	4
THDA 589	Practicum (A - D) <sup>1</sup>	4-8
THDA 741	Directing	4
THDA 742	Directing II	4
THDA 758	Acting III	4
THDA 759	Acting: Period and Style	4
THDA 799	Capstone Project	2
<b>Theory/History</b>		
Select 4 credits of the following:		4
THDA 450	History of Musical Theatre in America	
THDA 632	Interpretation of Shakespeare in Theatre	
THDA #638	American Theatre: 1920-1970	
THDA 640W	Playwriting	
<b>Total Credits</b>		<b>58-62</b>

<sup>1</sup> The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester.

## Student Learning Outcomes

**Core Student Learning Outcomes for the Bachelor of Arts in Theatre major:** On completion of the B.A. in Theatre, students will:

- Recognize and distinguish between various styles and forms of theatre or dance that have shaped the evolution of these disciplines.
- Effectively communicate artistic ideas and/or critical analysis of theatre or dance works through appropriate oral, written or practical means.
- Demonstrate knowledge and fundamental skill level of the basic areas of theatre or dance production in areas related to performance, design, technology or management.
- Create and demonstrate informed and personal artistic choices in coursework and productions (i.e., design, dance, directing, acting).

**Additional Student Learning Outcomes for Option in Acting and Directing:** In addition to the shared department learning outcomes for all THDA

students, upon completion of the major with an Option in Acting and Directing, students will:

- Achieve at minimum an intermediate proficiency in fundamental skills related to theatrical performance.
- Utilize critical thinking and writing skills to analyze plays for both the performance of roles and the direction of productions in a range of styles and genres.
- Effectively communicate and collaborate with all participants in the interactive and creative process of theatre.
- Form, communicate and defend verbally and in writing value judgments about quality and aesthetics of performance and directing in works of theatre.
- Demonstrate knowledge of basic terminology of acting and directing as well as leading practitioners and theorists of the acting and directing process.

## Theatre Major: Dance Option (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major-dance-option>

### Description

The dance option offers a diverse program that is designed to give the dance teacher, choreographer and/or performer the skills needed to embark on a successful career. Technique courses in ballet, pointe, tap, jazz and the aerial arts are at the core of this program. Courses in history of dance, composition, choreography and dance pedagogy aid dancers in preparing for a variety of employment opportunities in the dance field. In addition, dancers are introduced to the technical aspects involved in staging a full-scale performance. Performance opportunities include yearly faculty-directed dance concerts and student-created dance showcases each semester. Dancers may focus on one or all dance forms.

If you are interested in teaching grades K-12, you could pursue dance education, either through NH Dance K-12 teacher undergraduate certification, or you could pursue a fifth-year master's in teaching program through the UNH Education Department. A Master's degree can raise your salary significantly when entering the workforce.

Contact [Gay Nardone](mailto:gay.nardone@unh.edu) ([gay.nardone@unh.edu](mailto:gay.nardone@unh.edu)), Newman Dance Studio, (603) 862-1728.

### Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year. Students must also complete a digital portfolio that demonstrates fulfillment of student learning outcomes related to their area of study.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
<b>Required Courses</b>		
THDA 459 or THDA 460	Stagecraft Elements of Design	4
THDA 487	History of Dance	4
THDA 551	Acting I	4
THDA 589	Practicum (A - D) <sup>1</sup>	4-8
THDA 795W or THDA #796W	Independent Study (Writing Intensive) Independent Study	2
THDA 799 or THDA 798	Capstone Project Senior Thesis	2
<b>Theory Courses</b>		
THDA 633	Dance Composition	4
THDA 732	Choreography	4
THDA 786	Dance Pedagogy	4
<b>Fine Arts</b>		
Select 8 credits of the following:		8
THDA 444B	Famous Dancers of the 20th Century	
THDA 459	Stagecraft	
THDA 460	Elements of Design	
THDA 546	Costume Design for the Theatre	
THDA 548	Stage Lighting Design and Execution	
THDA 555	Acting The Song	
THDA 564	Compocinema	
THDA 655	Musical Theatre Scene Study	
<b>Performance</b>		
Select 16 credits of the following:		16
THDA 462	Ballet I	
THDA 463	Theatre Dance I	
THDA 562	Ballet II (May be repeated to 16 cr)	
THDA 563	Theatre Dance II (May be repeated to 16 cr)	
THDA 576	Pointe	
THDA 662	Ballet III (May be repeated to 16 cr)	
THDA 663	Theatre Dance III (May be repeated to 16 cr)	
THDA 665	Aerial Dance (May be repeated to 16 cr)	
<b>Total Credits</b>		<b>56-60</b>

<sup>1</sup> The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester.

## State K-12 Teacher Certification

Certification in dance is part of the pre-service programs in teacher education, which seek to prepare teachers who demonstrate excellence in classroom practice and who will become educational leaders. You may achieve dance licensure in two different ways. You may pursue dance education/licensure through the undergraduate program. This leaves no room for double majors or minors. If you want to broaden your undergraduate education and need more space for classes outside of THDA, you may pursue the five-year program, beginning preparation for teaching at the undergraduate level and then pursuing a graduate degree to get dance certification. Students complete a baccalaureate degree

in theatre with a dance option and move into a fifth year of study with a full-year internship, leading to either the Masters in Education (M.Ed.) or a Master of Arts in Teaching (M.A.T.) degree and licensure for teaching. With a GPA of 3.2 or better, you may be eligible for early admission to the graduate program, allowing up to twelve credits to dual count for both undergraduate and graduate degrees. Successful completion of the Praxis Core test is required for UNH graduate school admission. To complete the work in five years, students must plan for dual admission to graduate school and also take multiple education courses during the undergraduate years.

The kindergarten through 12th grade certification in the dance education program provides the foundation for public school teaching certification. This program integrates a general education background with dance training in a variety of dance styles, dance history, choreography and dance pedagogy for the purpose of understanding content, process, and methodologies of dance as an art form. All five-year candidates must meet requirements for admission to graduate school. All K-12 education in dance students must receive a "C-" grade or better in all theatre and dance courses required in the program and a "B-" or better in the graduate level courses. New Hampshire also participates in a reciprocal agreement with many other states, the Interstate Certification Compact. For further clarification regarding undergraduate or graduate teacher certification options, contact Assaf Benchetrit, Paul Creative Arts Center, (603) 862-4485, [assaf.benchetrit@unh.edu](mailto:assaf.benchetrit@unh.edu).

## 4-Year Teacher Licensure B.A. Program

The 4-year teacher licensure B.A. program includes the same requirements as the B.A. dance option but with the following modifications.

- The THDA 551: Acting I requirement is waived.
- The THDA 798/799 requirement is replaced with EDUC 694 Courses in Supervised Teaching.
- The Performance requirement is reduced from 16 credits to 12 credits.
- The following requirements are added:

Code	Title	Credits
BMS 507	Human Anatomy and Physiology I	0 or 4
EDUC 500	Exploring Teaching	4
EDUC 605	Educational Perspectives in Critical Times	4
EDUC 694	Courses in Supervised Teaching	8
EDUC 701	Human Development & Learning: Cultural Perspectives	4
EDUC 751A or EDUC 751B	Inclusive Elementary Education: Literacies and Learning for Diverse Learners Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions	4
NUTR 400	Nutrition in Health and Well Being	0 or 4
THDA 791	Internship in Theatre and Dance	2

## 5-Year Teacher Licensure M.A.T. or M.Ed. Program

The 5-year teacher licensure M.A.T. or M.Ed. program includes the same requirements as the B.A. dance option but with the following modifications.

- The following requirements are added:

Code	Title	Credits
BMS 507	Human Anatomy and Physiology I <sup>1</sup>	4
EDUC 500/935A	Exploring Teaching <sup>1</sup>	4
NUTR 400	Nutrition in Health and Well Being <sup>1</sup>	4
EDUC 605	Educational Perspectives in Critical Times <sup>1</sup>	4
EDUC 701/801	Human Development & Learning: Cultural Perspectives <sup>2</sup>	4

EDUC 751A/851A	Inclusive Elementary Education: Literacies and Learning for Diverse Learners <sup>1</sup>	4
or EDUC 751B/851B	Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions	
EDUC 900A	Internship and Seminar in Teaching	6
EDUC 901A	Internship and Seminar in Teaching	6

<sup>1</sup> Must be taken before the teaching internship.

<sup>2</sup> May be taken at the undergraduate level or the graduate level.

## Student Learning Outcomes

### Core Student Learning Outcomes for the Bachelor of Arts in Theatre

**major:** On completion of the B.A. in Theatre, students will:

- Recognize and distinguish between various styles and forms of theatre or dance that have shaped the evolution of these disciplines.
- Effectively communicate artistic ideas and/or critical analysis of theatre or dance works through appropriate oral, written or practical means.
- Demonstrate knowledge and fundamental skill level of the basic areas of theatre or dance production in areas related to performance, design, technology or management.
- Create and demonstrate informed and personal artistic choices in coursework and productions (i.e., design, dance, directing, acting).

**Additional Student Learning Outcomes for Option in Dance:** In addition to the shared department learning outcomes for all THDA students, upon completion of the major with an Option in Dance, students will:

- Develop an awareness of proper dance technique, physical expression and kinesthetic exploration.
- Apply choreographic phrases and compositional skills through performance.
- Demonstrate a foundation in dance pedagogy.
- Demonstrate a reflective and critical awareness of dance history.
- Effectively apply dance principles to critical writing via journals, performance critiques, and research assignments.

## Theatre Major: Design & Theatre Technology Option (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major-design-theatre-technology-option>

### Description

Design and theatre technology students who show significant progress and ability may earn the opportunity to demonstrate practical application of their studies through the department's main stage production design assignments. Through classwork, production assignments and problem-solving, this option prepares students for both practical skills and aesthetic sensibilities needed for the creation of visual and technical elements for the performing arts. The challenging coursework provides both fundamental knowledge and critical thinking practice, which are skills that help students pursue a successful profession in theatre and related fields; the core principles of hard work, problem-solving and creativity are transferable to other career paths as well. UNH-trained graduates hold careers across the nation as designers, technical

directors, stage managers, property masters, head electricians and scenic artists.

Contact **Szu-Feng Chen** ([szu-feng.chen@unh.edu](mailto:szu-feng.chen@unh.edu)), Paul Creative Arts Center, (603) 862-4445.

## Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year. Students must also complete a digital portfolio that demonstrates fulfillment of student learning outcomes related to their area of study.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
<b>Required Courses</b>		
THDA 436	History of Theatre I	4
or THDA 438	History of Theatre II	
THDA 459	Stagecraft	4
THDA 460	Elements of Design	4
THDA 462	Ballet I	4
or THDA 463	Theatre Dance I	
THDA 551	Acting I	4
THDA 589	Practicum (A- D) <sup>1</sup>	4-8
THDA 799	Capstone Project	2
Select 12 credits of the following:		12
THDA 546	Costume Design for the Theatre	
THDA 548	Stage Lighting Design and Execution	
THDA 641	Stage Management	
THDA 652	Scene Design	
Select 12 credits of the following:		12
THDA 458	Costume Construction	
THDA 475	Stage Makeup	
THDA 541	Arts Administration and Entrepreneurship	
THDA 546	Costume Design for the Theatre	
THDA 548	Stage Lighting Design and Execution	
THDA 549	Vectorworks Computer-Aided Design Drafting for the Theatre	
THDA 641	Stage Management	
THDA 650	Scene Painting for the Theatre	
THDA 651	Rendering for the Theatre	
THDA 652	Scene Design	
THDA 741	Directing	
Select 8 credits of the following:		8
ARTS 510	Principles of Design	



ARTS 532	Introductory Drawing	
ARTS 546	Painting Design I: Perceptual Painting and Color Theory	
THDA #547	Stage Properties	
ARTS 552	Introductory Digital Photography	
ARTS 567	Introductory Sculpture	
ARTS 613	Design and Place	
THDA 532	The London Experience	
THDA 791	Internship in Theatre and Dance	
THDA 795 & THDA 796	Independent Study and Independent Study	
INCO 590 & INCO 790	Student Research Experience and Advanced Research Experience	
<b>Total Credits</b>		<b>58-62</b>

<sup>1</sup> The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester.

## Student Learning Outcomes

**Core Student Learning Outcomes for the Bachelor of Arts in Theatre major:** On completion of the B.A. in Theatre, students will:

- Recognize and distinguish between various styles and forms of theatre or dance that have shaped the evolution of these disciplines.
- Effectively communicate artistic ideas and/or critical analysis of theatre or dance works through appropriate oral, written or practical means.
- Demonstrate knowledge and fundamental skill level of the basic areas of theatre or dance production in areas related to performance, design, technology or management.
- Create and demonstrate informed and personal artistic choices in coursework and productions (i.e., design, dance, directing, acting).

**Additional Student Learning Outcomes for Option in Design and Theatre Technology:** In addition to the shared department learning outcomes for all THDA students, upon completion of the major with an Option in Design and Theatre Technology, students will:

- Exhibit an understanding of the general principles and practices for the design/tech area.
- Apply knowledge of design/tech skills and technologies to the production of theatrical creations.
- Demonstrate skills in script analysis, research, and critical thinking for design development.
- Demonstrate development of a creative process as well as practical problem-solving skills for artistic work.
- Effectively use communication and collaboration skills in writing, speaking, and visual presentation.
- Utilize critical assessment skills to evaluate the work of other students and to show improvement on their own work as a result of the collective feedback process.
- Develop a resume, portfolio, and interview skills that reflect professional standards.

## Theatre Major: Musical Theatre Option (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major-musical-theatre-option>

### Description

The musical theatre option is designed to cultivate and nurture the creative artistry of those highly motivated students who wish to develop their combined talent as singers, actors and dancers. Students in the musical theatre option are trained as actors who sing and dance and will thrive in this intense and dynamic program of coursework, practical application, performance-based projects, departmental productions, and special workshops with guest artists and instructors. Students will be expected to fully integrate their rigorous training as actors, dancers and singers with the outstanding liberal arts education they will receive at UNH to become well-rounded and marketable musical theatre artists.

Contact [Tom Alsip](mailto:thomas.alsip@unh.edu) (thomas.alsip@unh.edu), Paul Creative Arts Center, (603) 862-3288.

### Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year. Students must also complete a digital portfolio that demonstrates fulfillment of student learning outcomes related to their area of study.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
<b>Required Courses</b>		
THDA 436 or THDA 438	History of Theatre I History of Theatre II	4
THDA 450	History of Musical Theatre in America	4
THDA 455	Musicianship and Beginning Vocal Techniques for Musical Theatre	2
THDA 459	Stagecraft	4
THDA 460	Elements of Design	4
THDA 462 or THDA 562	Ballet I Ballet II	2-4
THDA 463	Theatre Dance I	4

THDA 500	Musical Theatre Voice I	1
THDA 551	Acting I	4
THDA 555	Acting The Song	4
THDA 563	Theatre Dance II	2
THDA 570	Movement & Vocal Production	4
THDA 589	Practicum (A - D) <sup>1</sup>	4-8
THDA 600	Musical Theatre Voice II	1
THDA 655	Musical Theatre Scene Study	4
THDA 700	Musical Theatre Voice III (repeatable)	1
THDA 755	Musical Theatre Repertoire	4
THDA 799	Capstone Project	2
2 Additional Credits From Dance		2
THDA 562	Ballet II	
THDA 565	Beginning Aerial Dance	
THDA 576	Pointe	
THDA 662	Ballet III	
THDA 663	Theatre Dance III	
THDA 665	Aerial Dance	
<b>Total Credits</b>		<b>57-63</b>

<sup>1</sup> The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester.

## Student Learning Outcomes

**Core Student Learning Outcomes for the Bachelor of Arts in Theatre major:** On completion of the B.A. in Theatre, students will:

- Recognize and distinguish between various styles and forms of theatre or dance that have shaped the evolution of these disciplines.
- Effectively communicate artistic ideas and/or critical analysis of theatre or dance works through appropriate oral, written or practical means.
- Demonstrate knowledge and fundamental skill level of the basic areas of theatre or dance production in areas related to performance, design, technology or management.
- Create and demonstrate informed and personal artistic choices in coursework and productions (i.e., design, dance, directing, acting).

**Additional Student Learning Outcomes for Option in Musical Theatre:**

In addition to the shared department learning outcomes for all THDA students, upon completion of the major with an Option in Musical Theatre, students will:

- Utilize a healthy vocal technique and demonstrate the ability to read music.
- Effectively analyze a dramatic script.
- Apply knowledge of theatre to write critically about both musical and non-musical theatre.
- Demonstrate the ability to perform dance choreography.
- Apply acting techniques both in writing and in practice.
- Utilize knowledge of musical theatre history and styles to select appropriate repertoire for class and auditions.
- Demonstrate the skills and create the elements necessary to compete in the professional theatrical world, including a professional resume and audition book.

## Theatre Major: Secondary Theatre Education Option (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major-secondary-theatre-education-option>

### Description

Candidates interested in passing on their love of theatre to future generations will find that the secondary theatre education option offers practical and theoretical training for teachers. As one of a few programs in the country, UNH's Secondary Theatre Education option boasts a robust offering with six courses specifically focused on how to teach theatre. Through comprehensive course and laboratory work, students obtain hands-on theatre teaching experience, so that by the time they reach graduation, they have spent significant hours working with the K-12 age group. Students are provided with extensive training and practical teaching experience specifically geared towards the goal of being a theatre teacher, either in a traditional classroom or as a teaching artist. As you complete your studies, you will have the option to enter theatre education directly as a teaching artist at professional theatres, you could plan from your first year to pursue NH Theatre Arts K-12 teacher undergraduate certification, or you could pursue a fifth-year master's in teaching program through the UNH Education Department.

A master's degree can raise your salary significantly when entering the workforce. Whether pursuing the fifth year graduate certification program or entering the professional theatre education world directly after the undergraduate degree, students can expect to leave UNH prepared for the rigorous task of teaching.

Contact [Raina Ames \(raina.ames@unh.edu\)](mailto:raina.ames@unh.edu), Paul Creative Arts Center, (603) 862-3044.

### Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year. Students must also complete a digital portfolio that demonstrates fulfillment of student learning outcomes related to their area of study.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
<b>Required Courses</b>		
THDA 436	History of Theatre I	4
THDA 438	History of Theatre II	4
THDA 459	Stagecraft	4
THDA 460	Elements of Design	4
THDA 463	Theatre Dance I	4
THDA 475	Stage Makeup	2
THDA 551	Acting I	4
THDA 589	Practicum (A - D) <sup>1</sup>	4-8
THDA 624	Theatre for Young Audiences	4
THDA 721	Arts Integration	4
THDA 727	Methods of Teaching Theatre <sup>2</sup>	4
THDA 729	Community Oriented Drama Programs	4
THDA 741	Directing	4
THDA 760	Teacher Planning for Theatre	4
THDA 799	Capstone Project ( must be taken in senior year)	2
<b>Design/Theatre Technology</b>		
Select 4 credits of the following:		4
THDA 458	Costume Construction	
THDA 546	Costume Design for the Theatre	
THDA 548	Stage Lighting Design and Execution	
<b>Education</b>		
EDUC 500	Exploring Teaching <sup>2</sup>	4
<b>Total Credits</b>		<b>64-68</b>

<sup>1</sup> Students are required to take at least one practicum for every semester they are a major in the Department of Theatre and Dance. In addition, each student must take each type of practicum at least once (Technical, Costume, Performance, Marketing and Promotion).

<sup>2</sup> May be taken at the undergraduate level or the graduate level.

NOTE: It is understood that students will fulfill 20 internship contact hours with theatre students in their option area: elementary, middle, or high school. Projects for THDA 729 Community Oriented Drama Programs cannot count as internship hours. Students may fulfill this requirement through a variety of teaching opportunities with the department's outreach program (both during the school year and in the summer), or they may work with local schools teaching, coaching actors, assistant directing, choreographing, or in some other capacity as specifically arranged with their theatre adviser.

It also is understood that students involved in the above course curriculum in order to get state theatre arts certification must apply to either the UNH Department of Education or another university for acceptance into a fifth-year master of arts in teaching (M.A.T.) or master of education (M.Ed.) degree program that fulfills state requirements for certification.

## State K-12 Teacher Certification

In order to obtain state theatre arts certification, students must either know from their first year that they are pursuing undergraduate Theatre Arts teacher certification or they must apply to the UNH Department of Education or another university for acceptance into a fifth-year master of arts in teaching (M.A.T.) or masters of education (M.Ed.) degree program, which fulfills state requirements for certification. Students who are accepted into early graduate admission may take up to 12 credits toward the 32 credit masters while finishing their undergraduate degree. For further clarification regarding both undergraduate and graduate certification options, contact Raina Ames, Paul Creative Arts Center, (603) 862-3044, [raina.ames@unh.edu](mailto:raina.ames@unh.edu).

## 4-Year Teacher Licensure B.A. Program

The 4-year teacher licensure B.A. program includes the same requirements as the B.A. secondary theatre education option but with the following modifications.

- The THDA 798/799 requirement is replaced with EDUC 694 Courses in Supervised Teaching
- The following requirements are added.

Code	Title	Credits
EDUC 605	Educational Perspectives in Critical Times	4
EDUC 694	Courses in Supervised Teaching	8
EDUC 701	Human Development & Learning: Cultural Perspectives	4
EDUC 751A	Inclusive Elementary Education: Literacies and Learning for Diverse Learners	4
or EDUC 751B	Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions	
THDA 791	Internship in Theatre and Dance	2

## 5-Year Teacher Licensure M.A.T. or M.Ed. Program

The 5-year teacher licensure M.A.T. or M.Ed. Program includes the same requirements as the B.A. secondary theatre education option but with the following modifications:

- The following requirements are added.

Code	Title	Credits
EDUC 605	Educational Perspectives in Critical Times <sup>1</sup>	4
EDUC 701/801	Human Development & Learning: Cultural Perspectives <sup>2</sup>	4
EDUC 751A/851A	Inclusive Elementary Education: Literacies and Learning for Diverse Learners <sup>2</sup>	4
or EDUC 751B/851B	Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions	
EDUC 900A	Internship and Seminar in Teaching	6
EDUC 901A	Internship and Seminar in Teaching	6
8 credits from THDA 700-level or EDUC #700/800-level elective courses. <sup>2</sup>		8

<sup>1</sup> Must be taken before the teaching internship.

<sup>2</sup> Must be taken before the teaching internship. May be taken at the undergraduate level or the graduate level.

## Student Learning Outcomes

### Core Student Learning Outcomes for the Bachelor of Arts in Theatre

**major:** On completion of the B.A. in Theatre, students will:

- Recognize and distinguish between various styles and forms of theatre or dance that have shaped the evolution of these disciplines.
- Effectively communicate artistic ideas and/or critical analysis of theatre or dance works through appropriate oral, written or practical means.
- Demonstrate knowledge and fundamental skill level of the basic areas of theatre or dance production in areas related to performance, design, technology or management.
- Create and demonstrate informed and personal artistic choices in coursework and productions (i.e., design, dance, directing, acting).

### Additional Student Learning Outcomes for Option in Secondary Theatre Education:

In addition to the shared department learning outcomes for all THDA students, upon completion of the major with an Option in Secondary Theatre Education, students will:

- Develop and compile effective lesson plans and teaching materials appropriate to student developmental levels and individual learning styles.
- Define a personal teaching philosophy.

- Demonstrate effective teaching strategies.
- Evaluate teaching abilities through analysis and reflection.
- Develop directing and production skills.
- Match to teaching materials the appropriate national educational standards for arts and non-arts subjects.

## Theatre Major: Youth Drama Option (B.A.)

<https://cola.unh.edu/theatre-dance/program/ba/theatre-major-youth-drama-option>

### Description

Anyone interested in teaching elementary-aged students would benefit from the youth drama option. Consider pairing this with family studies or early childhood education. Youth drama is for those students who wish to use dramatic arts as a teaching tool, either in the elementary classroom or as a teaching artist. Our comprehensive curriculum is specifically designed to train teachers to use storytelling and creative drama to enrich the classroom. Work with our master puppeteer to take Introduction to Puppetry as well as Advanced Puppetry. Through comprehensive class and laboratory work, students obtain hands-on theatrical teaching experience so that, by the time they reach graduation, they have spent significant hours teaching children. This program will give you hands-on teaching experience and the option to pursue a fifth-year master's degree in elementary teaching through the UNH Education Department. Whether pursuing the fifth year graduate certification program or entering the professional theatre education world directly after the undergraduate degree, students will leave UNH with sound theoretical training in addition to practical instruction on how to use drama to enhance learning outcomes, address classroom discipline issues and, of course, bring the arts to life in the classroom.

Contact [Raina Ames](mailto:raina.ames@unh.edu) ([raina.ames@unh.edu](mailto:raina.ames@unh.edu)), Paul Creative Arts Center, (603) 862-3044.

### Requirements

In the freshman and sophomore years, students should enroll for at least two major and two Discovery courses per semester. The minimum grade requirement for major courses is C- per course. Any grade lower than C- will not count toward the major. Under department policy, students who complete both COMM 401 American Sign Language I and COMM 502 American Sign Language II satisfy the bachelor of arts language proficiency requirement. All majors must take courses in the following areas: performance, design/theatre technology and theory/history as well as fulfill between four and eight practicums and complete a capstone course. Although timing will vary with each option, it is strongly suggested that all introductory courses be taken prior to the end of the student's sophomore year. Students must also complete a digital portfolio that demonstrates fulfillment of student learning outcomes related to their area of study.

The required minimum overall GPA in major coursework is 2.0.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each

individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement.

Theatre department majors may use one major-required course to satisfy one Discovery category requirement.

All UNH B.A. degrees require a minimum of 128 credit hours.

Code	Title	Credits
<b>Required Courses</b>		
THDA 459	Stagecraft	4
THDA 460	Elements of Design	4
THDA 463	Theatre Dance I	4
THDA #520	Creative Drama	4
THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	4
THDA 583	Introduction to Puppetry	4
THDA 589	Practicum (A - D) <sup>1</sup>	4-8
THDA 624	Theatre for Young Audiences	4
THDA 683	Advanced Puppetry	4
THDA 721	Arts Integration	4
THDA 727	Methods of Teaching Theatre	4
THDA 729	Community Oriented Drama Programs	4
THDA 760	Teacher Planning for Theatre	4
THDA 799	Capstone Project (must be taken in senior year)	2
<b>Education</b>		
EDUC 500	Exploring Teaching <sup>2</sup>	4
<b>Total Credits</b>		<b>58-62</b>

- <sup>1</sup> The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester.
- <sup>2</sup> Must be taken before student teaching internship.

## State Teacher Certification

Youth Drama options often pursue elementary education certification. In order to obtain state licensure, students must apply to either the UNH Department of Education or another university for acceptance into a fifth year masters of education (M.Ed.) degree program, which fulfills state requirements for certification. Students who are accepted into early graduate admission may take up to 12 credits toward the masters degree while finishing their undergraduate degree. For further clarification regarding fifth-year certification options, contact Raina Ames, Paul Creative Arts Center, (603) 862-3044, [raina.ames@unh.edu](mailto:raina.ames@unh.edu).

## 5-Year Teacher Licensure M.Ed. Program

The 5-year teacher licensure M.Ed. program includes the same requirements as the B.A. youth drama option but with the following modifications.

- The following requirements are added:

Code	Title	Credits
MATH 601	Exploring Mathematics for Teachers <sup>1</sup>	4
EDUC 605	Educational Perspectives in Critical Times <sup>1</sup>	4
EDUC 701/801	Human Development & Learning: Cultural Perspectives <sup>2</sup>	4
MATH 703	Teaching of Mathematics in Grades K-5 <sup>1</sup>	4
EDUC 703F/803F	Teaching Elementary School Science <sup>2</sup>	4
EDUC 703M/803M	Teaching Elementary Social Studies <sup>2</sup>	4
EDUC 706/806	Teaching & Learning Literacy in the Elementary Classroom <sup>2</sup>	4
EDUC 751A/851A	Inclusive Elementary Education: Literacies and Learning for Diverse Learners <sup>1</sup>	4
EDUC 808	Literacy Assessment for Elementary Classroom Teachers	4
Must be taken concurrently with EDUC 900A		
EDUC 809	Supporting Readers in Elementary Classrooms	4
Must be taken concurrently with EDUC 901A		

EDUC 900A	Internship and Seminar in Teaching	6
EDUC 901A	Internship and Seminar in Teaching	6
<b>Total Credits</b>		<b>52</b>

<sup>1</sup> Must be taken before student teaching internship.

<sup>2</sup> May be taken at undergraduate or graduate level.

## Student Learning Outcomes

**Core Student Learning Outcomes for the Bachelor of Arts in Theatre major:** On completion of the B.A. in Theatre, students will:

- Recognize and distinguish between various styles and forms of theatre or dance that have shaped the evolution of these disciplines.
- Effectively communicate artistic ideas and/or critical analysis of theatre or dance works through appropriate oral, written or practical means.
- Demonstrate knowledge and fundamental skill level of the basic areas of theatre or dance production in areas related to performance, design, technology or management.
- Create and demonstrate informed and personal artistic choices in coursework and productions (i.e., design, dance, directing, acting).

**Additional Student Learning Outcomes for Option in Youth Drama:** In addition to the shared department learning outcomes for all THDA students, upon completion of the major with an Option in Youth Drama, students will:

- Develop and compile effective lesson plans and teaching materials appropriate to student developmental levels and individual learning styles.
- Define a personal teaching philosophy.
- Demonstrate effective teaching strategies and established skills as a group leader in dramatic activities.
- Evaluate teaching abilities through analysis and reflection.
- Demonstrate technical skills in storytelling and puppetry performance techniques.
- Match to teaching materials the appropriate national educational standards for arts and non-arts subjects.

## Arts Administration Minor

<https://cola.unh.edu/theatre-dance/program/minor/arts-administration>

### Description

The minor in arts administration is designed to give students in the fine and performing arts a base knowledge and skill set that can be applied to a wide range of job opportunities related to arts management, administration and entrepreneurship in the creative economy. It has also been created for students enrolled in the Peter T. Paul School of Business, as well as majors in other disciplines, to expand their knowledge base in the fine and performing arts area of their greatest interest. These courses are combined with specific classes in arts administration to prepare students for opportunities within the nonprofit and for-profit arts sectors. Students who major in theatre or one of its theatre or dance options may minor in arts administration provided no more than 8 credits are used to satisfy both major and minor requirements.

Contact **Michael Wood** ([mike.wood@unh.edu](mailto:mike.wood@unh.edu)), (603) 862-3038.

## Requirements

Code	Title	Credits
<b>Required Courses</b>		
ACC 501	Survey of Accounting	4
or ADMN 502	Financial Accounting	
MKTG 530	Survey of Marketing	4
or ADMN 585	Marketing	
THDA 541	Arts Administration and Entrepreneurship	4
<b>Elective Courses</b>		<b>8</b>
For students pursuing majors in The Peter T Paul School of Business or the fine and performing arts division of COLA: Two elective courses from the following list (electives must be taken outside your home college unless indicated). For all other students, two elective courses from the following list. At least one elective course must be in the fine or performing arts.		
ARTH 400	Topics in Art History	
ARTH 480	Introduction to Art History	
ARTS 510	Principles of Design <sup>1</sup>	
ARTS 532	Introductory Drawing	
ARTS 552	Introductory Digital Photography	
MGT 520	Topics in Management (Thinking Like an Entrepreneur, Negotiations)	
MGT 540	Leadership in the 21st Century	
MGT 640	Human Resource Management	
MKTG 547	Promotion and Advertising	
MKTG 649	Foundations of Personal Selling	
MKTG 520	Topics in Marketing (Understanding Your Customer)	
PAUL 450	Personal Finance	
THDA 442	Introduction to the Art of Acting	
THDA 459	Stagecraft	
THDA 462	Ballet I	
THDA 463	Theatre Dance I	
THDA #547	Stage Properties	
THDA 548	Stage Lighting Design and Execution	
THDA 555	Acting The Song	
THDA 641	Stage Management	
THDA 791	Internship in Theatre and Dance <sup>2</sup>	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> This course can be taken by students pursuing majors in the fine and performing arts division of COLA. This course cannot also be used toward completion of any major in Art and Art History.

<sup>2</sup> This course can be taken by students pursuing majors in the fine and performing arts division of COLA. This course cannot also be used toward completion of the Theatre & Dance major. Course must be specifically focused on Arts Administration.

## Dance Minor

<https://cola.unh.edu/theatre-dance/program/minor/dance>

### Description

Students minoring in dance keep open the option of pursuing a career in dance by cultivating and maintaining a high level of dance skill while still having the opportunity to major in another area of interest outside the Department of Theatre and Dance. Minors are encouraged to audition for all performance opportunities including faculty-directed dance concerts as well as student-created dance showcases. In addition, students who major in theatre or one of its theatre options may minor in dance provided no more than 8 credits are used to satisfy both major and minor requirements.



Contact Michael Wood, (603) 862-3038, [mike.wood@unh.edu](mailto:mike.wood@unh.edu).

## Requirements

Code	Title	Credits
Select up to 16 credits from the following:		16
THDA 462	Ballet I	
THDA 562	Ballet II	
THDA 662	Ballet III	
THDA 463	Theatre Dance I	
THDA 563	Theatre Dance II	
THDA 663	Theatre Dance III	
THDA 665	Aerial Dance	
THDA 576	Pointe	
Select at least 4 credits from the following: <sup>1</sup>		4
THDA 633	Dance Composition	
THDA 564	Compocinema	
THDA 732	Choreography	
THDA 786	Dance Pedagogy	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Courses in this section are taught on a rotational basis and are not offered every semester. Students are encouraged to fulfill this requirement by the end of their Junior year. Course substitutions in this section are not permitted.

## Musical Theatre Minor

<https://cola.unh.edu/theatre-dance/program/minor/musical-theatre>

### Description

The musical theatre minor offers the student basic knowledge of the history and canon of this uniquely American art form while providing for hands-on experience in training as actors who sing and dance. Students who major in theatre or one if its theatre or dance options may minor in musical theatre provided no more than 8 credits are used to satisfy both major and minor requirements.

Contact Michael Wood, (603) 862-3038, [mike.wood@unh.edu](mailto:mike.wood@unh.edu).

## Requirements

Code	Title	Credits
<b>Required Courses</b>		
THDA 441	Exploring Musical Theatre	4
or THDA 450	History of Musical Theatre in America	
THDA 442	Introduction to the Art of Acting	4
or THDA 551	Acting I	
THDA 463	Theatre Dance I	4
THDA 555	Acting The Song	4
Select one THDA course <sup>1</sup>		4
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Excluding THDA 500 Musical Theatre Voice I, THDA 600 Musical Theatre Voice II, and THDA 700 Musical Theatre Voice III

## Theatre Minor

<https://cola.unh.edu/theatre-dance/program/minor/theatre>

### Description

The theatre minor provides the broadest overview of the discipline, allowing students to create their course of study by exploring theory and technique classes from acting, design and theatre technology, and history. Students who major in theatre or one if its theatre or dance options may minor in theatre provided no more than 8 credits are used to satisfy both major and minor requirements.

Contact Michael Wood, (603) 862-3038, [mike.wood@unh.edu](mailto:mike.wood@unh.edu).

## Requirements

Code	Title	Credits
THDA 442	Introduction to the Art of Acting	4
or THDA 460	Elements of Design	
Select 4 credits of the Theory/History courses in the General Theatre Major Requirements		4
Select 4 credits of the Design/Theatre Technology courses in the General Theatre Major Requirements		4
Select 8 credits of any THDA course		8
<b>Total Credits</b>		<b>20</b>

## Youth Drama Minor

<https://cola.unh.edu/theatre-dance/program/minor/youth-drama>

### Description

Anyone with an interest in theatre for young audiences, either in acting or as a way to augment teaching strategies, will benefit from this minor, which utilizes activated and arts-infused methodology to enliven work with K-12 students. The youth drama minor is ideal for those who wish to explore the dramatic arts through an educational lens.

Contact Michael Wood, (603) 862-3038, [mike.wood@unh.edu](mailto:mike.wood@unh.edu).

## Requirements

Code	Title	Credits
<b>Required Courses</b>		
THDA #520	Creative Drama	4
or THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	
THDA 583	Introduction to Puppetry	4
THDA 624	Theatre for Young Audiences	4
THDA 683	Advanced Puppetry	4
THDA 721	Arts Integration	4
<b>Total Credits</b>		<b>20</b>

## Studies in the Design of Interior Space Cognate

<https://cola.unh.edu/theatre-dance/program/cognate/studies-design-interior-space>

### Description

The cognate provides students a pathway to enter the world of interior design. It aims to give students an overview of design creation and execution for space planning. From concept development to project execution, the cognate allows students to formulate design projects that

are both practical and aesthetically pleasing. Students will develop a comprehensive creative process through research, problem solving and project development. The cognate prepares students to apply critical thinking to the creation of interior environments utilizing a human-centered approach.

Students complete three courses, one in each of three groups:

1. **Design Development:** Helps students obtain the skills in design creation. Students will learn about concept development, research analysis, and psychological and physiological characteristics in space planning. It provides the students the ability to utilize knowledge in design elements and principles in 3D design creation and integrate this knowledge into design concepts as solutions for design projects.
2. **Historical Aspect:** Gives students an overview of architectural history. It will help students to identify the historical, political, social and economic elements that have influenced the evolution in interior architecture and decorative arts. Students will be able to apply the skill in research and their knowledge of historic design styles in their design creations.
3. **Design Skills:** Helps students to understand and apply skills related to design execution. It provides students with the option to gain craftsmanship in sketching, rendering, scaled design drawings, CAD (computer-aided drafting), graphic solutions or standards.

## Requirements

Student must complete three courses (12 credits), one course in each group listed below.

Code	Title	Credits
Design Development		4
Select one course from the following:		
THDA 548	Stage Lighting Design and Execution	4
THDA 652	Scene Design	
ARTS 455	Architectural Design Studio	
Historical Aspect		4
Select one course from the following:		
ARTH 474	Introduction to Architectural History	4
ARTH 480	Introduction to Art History	
ARTH 656	Twentieth-Century Architecture: Modern and Contemporary	
Design Skills		4
Select one course from the following:		
ARTS 613	Design and Place	4
THDA 549	Vectorworks Computer-Aided Design Drafting for the Theatre	
THDA 651	Rendering for the Theatre	
Total Credits		12

## Studies in Fashion and Design Cognate

<https://cola.unh.edu/theatre-dance/program/cognate/studies-fashion-design>

### Description

The studies in fashion and design cognate offers students a foundation for developing the basic skills to enter the field of fashion design. It introduces the art behind the creation of apparel and the basics of marketing strategy connected to fashion design. Students will be educated to develop their own creative process and design method while

learning the basic knowledge of marketing and personal business. The cognate prepares students with a means to combine their artistic vision with practical application and helps them become designers who have the skills to support their own artistries.

Students complete three courses, one in each of three groups:

1. **Design Creation:** Helps students to adapt their artistic skills to support conceptual ideas. It gives students the abilities in creating, analyzing, constructing and presenting works for costume creation. It aims to guide students in developing their own working process with a critical approach to problem solving. Students will be able to use terminology to communicate ideas in the fashion design industry.
2. **Design Skills:** Gives students the options to understand and apply a skill class of their choice to helps students articulate their design ideas visually and digitally. It aims to offer students with the options to create visual merchandising for their design works through rendering hand skills, graphic design software, or photography.
3. **Marketing:** Helps students to understand and incorporate the business aspect into their creative works. It aims to prepare students to promote and sustain their creative works independently as a personal business or within retail organizations.

## Requirements

Student must complete three courses (12 credits), one course in each group listed below.

Code	Title	Credits
Design Creation (select one of the following)		4
THDA 546	Costume Design for the Theatre	
THDA 458	Costume Construction	
Design Skills (select one of the following)		4
ARTS 510	Principles of Design	
ARTS 552	Introductory Digital Photography	
THDA 651	Rendering for the Theatre	
Marketing (select one of the following)		4
MKTG 530	Survey of Marketing	
MKTG 547	Promotion and Advertising	
MKTG 649	Foundations of Personal Selling	
Total Credits		12

## Women's and Gender Studies (WS)

Women's and gender studies provides students with an understanding of the status of women in various cultures and historical eras, in the nexus of race, class, sexuality, religious and disability studies. Students learn the use of gender as a category of analysis and increase their knowledge of women's contributions to many fields. Women's and gender studies courses offer students critical perspectives on such basic questions of the social order as assumptions about gender roles and gender identity.

As a relatively small department in the College of Liberal Arts, we provide students with a sense of community and opportunities to contribute directly to changing the campus climate. In a rigorous academic environment, women's and gender studies offers students a springboard for activism. Our internship program enables students to gain first-hand work experience across many fields.

A major or minor in women's and gender studies or social justice leadership prepares students for careers where the changing roles of women are having a perceptible impact. Women's studies graduates go on to law school and graduate school in a variety of disciplines. Some

have taken positions with social change or family service agencies, while others have found work in such fields as health care, journalism, education, human rights, social and environmental justice, and the arts.

<https://cola.unh.edu/womens-gender-studies>

## Programs

- [Women's and Gender Studies Major \(B.A.\)](#) (p. 151)
- [Social Justice Leadership Minor](#) (p. 152)
- [Women's and Gender Studies Minor](#) (p. 153)

## Faculty

<https://cola.unh.edu/womens-gender-studies/faculty-staff-directory>

## Women's and Gender Studies Major (B.A.)

<https://cola.unh.edu/womens-gender-studies/program/ba/womens-gender-studies-major>

## Description

Women's and gender studies provides students with an understanding of the status of women in various cultures and historical eras, in the nexus of race, class, sexuality, religious and disability studies. Students learn the use of gender as a category of analysis and increase their knowledge of women's contributions to many fields. Women's and gender studies courses offer students critical perspectives on such basic questions of the social order as assumptions about gender roles and gender identity.

As a relatively small department in the College of Liberal Arts, we provide students with a sense of community and opportunities to contribute directly to changing the campus climate. In a rigorous academic environment, women's and gender studies offers students a springboard for activism. Our internship program enables students to gain first-hand work experience across many fields.

A major in women's and gender studies prepares students for careers where the changing roles of women are having a perceptible impact. Women's and gender studies graduates go on to law school and graduate school in a variety of disciplines. Some have taken positions with social change or family service agencies, while others have found work in such fields as health care, journalism, education, human rights, social and environmental justice, and the arts.

Students who wish to major in women's and gender studies should consult with the [department chair or coordinator](#).

## Requirements

The women's and gender studies major requires students to complete 40 credits of major-approved coursework with grades of C- or better and an overall grade point average in major courses of 2.00 or higher.

Code	Title	Credits
WS 401	Introduction to Women's Studies	4
or WS 405	Gender, Power and Privilege	
WS 632	Feminist Thought	4

### Discovery Program Capstone Requirement:

WS 798	Colloquium	4
or WS 799	Honors Thesis	
Select seven additional courses chosen in consultation with a WS academic advisor <sup>1</sup>		28
Total Credits		40

<sup>1</sup> At least two of the courses must be WS courses. The remaining courses may be either WS courses or WS-faculty-approved courses offered in departments or programs outside of WS (cross-counted courses). A list of cross-counted courses can be found each semester at: <https://cola.unh.edu/womens-gender-studies/cross-counted-courses-ws-schedule>.

At least five courses for the major must be taken at the 600 level or above. Only two 400-level courses may be used to satisfy major requirements.

WS topic courses include:

## 444 Inquiry Courses

Code	Title	Credits
WS 444	Trans/Forming Gender	4
WS 444A	Race Matters	4
WS #444C	On the Roads to Equality	4
WS 444D	Cyborgs, Avatars, and Feminists: Gender in the Virtual World	4

## 505 Surveys

WS 505 Survey in Women's Studies

Examples of course topics include:

- Sustainability & Spirituality
- Leadership for Social Change
- Fashion This!
- Intro to LGBTQ+ Studies
- Exploring Masculinities
- Queer Cinema
- Reproductive Justice
- Disability Justice

WS 510 Framing Feminism: Gender Politics in Film

## 798 Colloquiums

WS 798 Colloquium

Examples of course topics include:

- Feminist Studies in Film and Queer Cinema
- Jewish Feminism, Politics, and Culture
- Global Feminist Issues
- Transgender Feminism
- Theater as a Provocative Act
- #Metoo Movement
- Native and Indigenous Women
- Queer Sustainability
- Queer Theory

For a list of currently-approved cross-counted offerings from other departments, please check: [cola.unh.edu/womens-gender-studies/cross-counted-courses-ws-schedule](https://cola.unh.edu/womens-gender-studies/cross-counted-courses-ws-schedule).

A practicum, internship course, and/or research with faculty is strongly recommended.

Women's and gender studies majors may use two major-required courses to satisfy two Discovery category requirements. First and second majors may double count no more than two courses between the WS major and another major or minor.

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major program. Bachelor of arts candidates must also satisfy the foreign language proficiency requirement. ASL: COMM 401 American Sign Language I and COMM 502 American Sign Language II may be used to satisfy the language competency requirement.

## Student Learning Outcomes

- Demonstrate the ability to think critically about categories of difference—including gender, sexuality, race, nation, class, religion—and explore the relationship between inequality and those categories of difference.
- Demonstrate understanding of how difference influences the values, beliefs, and experiences of individuals and groups in across historical, cultural, political and geographic contexts.
- Define and apply central concepts in Women's and Gender Studies and Queer Studies, including but not limited to sexuality, power, privilege, inequality, justice, violence, the body, reproductive health, and intersectionality (i.e., interlocking and simultaneous forms of oppression).
- Know the history of feminist thought and production, especially as it has been inflected by cultural difference.
- Demonstrate self-reflectiveness, cultural awareness, critical analysis, and the ability to effect personal and community change.
- Write and speak clearly, be able to construct persuasive arguments based on their experiences, the experiences of others, and on scholarship; be able to conduct research using feminist methodologies.

## Social Justice Leadership Minor

<https://cola.unh.edu/womens-gender-studies/program/minor/social-justice-leadership>

### Description

The minor in social justice leadership engages students in an exploration of policies, power dynamics, institutions and structures that promote and hinder equity and processes of change required for social justice. Students will examine various forms of injustice such as sexism, racism, classism, ableism and environmental degradation. The minor is grounded in three pillars — a theory component, a leadership component and experiential learning activities. The minor is interdisciplinary in nature, drawing on disciplines such as anthropology, education, English, history, philosophy, political science, social work and sociology. After completing the curriculum, students will have gained a historical perspective, theoretical understanding and applied leadership skills that are needed

for social justice work and activism. The minor certifies students' knowledge regarding, and commitment to, social justice leadership, which will be useful in postgraduate pursuits.

Students who wish to minor in social justice leadership should consult with the [department chair or coordinator](#).

## Requirements

Code	Title	Credits
<b>THEORY</b>		
WS 401 or WS 405	Introduction to Women's Studies Gender, Power and Privilege	4
<b>LEADERSHIP</b>		
WS 505 or WS 796	Survey in Women's Studies (Leadership Part I) Advanced Topics	4
<b>APPLIED</b>		
Choose one capstone course from the following (normally taken at the end of the course sequence):		4
WS 795	Independent Study	
WS 796	Advanced Topics	
WS 797	Internship	
WS 798	Colloquium	
or other relevant approved capstone dealing with social justice leadership issues		
Choose two electives in Social Justice and/or Leadership (see list below)		8
<b>Total Credits</b>		<b>20</b>

## Approved Electives

Code	Title	Credits
<b>Courses in the Women's and Gender Studies Department</b>		
WS 444	Trans/Forming Gender	4
WS 444A	Race Matters	4
WS #444C	On the Roads to Equality	4
WS 444D	Cyborgs, Avatars, and Feminists: Gender in the Virtual World	4
WS 505	Survey in Women's Studies (Leadership in the Real World)	4
WS 510	Framing Feminism: Gender Politics in Film	4
WS 632	Feminist Thought	4
WS 795	Independent Study	1-4
WS 796	Advanced Topics	4
WS 797	Internship	4
WS 798	Colloquium (such as Women in Prison)	4
<b>Courses in Other College of Liberal Arts Departments</b>		
ANTH 500	Peoples and Cultures of the World (Sub-Saharan Africa)	4
ANTH 625	Sexuality in Cross-Cultural Perspectives	4
ANTH 685	Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa	4
ANTH 750	Islam and Gender: Gendered Lives of Muslims	4
CMN 505	Analysis of Popular Culture	4
CMN 567	Gender, Race, and Class in the Media	4
CMN #757	Public Address and the American Experience (Social Protest: Rhetoric of Resistance)	4
EDUC 444B	Public Issues, Democratic Schooling & Active Citizenship in a Global Context	4
EDUC 500	Exploring Teaching	4
EDUC #717	Growing up Male in America	4
ENGL 585	Introduction to Women in Literature (Dreamgirls: Studies in Beautiful Blackness)	4
ENGL 650	I Hear America Singing: Studying American Literature and Culture (Latina/o Literature, Playing in the Dark: Race & Sex in American Literature, American Literature & Consumer Culture)	4
ENGL 693	Special Topics in Literature (Literary Responses to the Holocaust)	4
ENGL 738	Asian American Studies	4
ENGL 739	American Indian Literature	4
HIST 566	Comparative Revolutions: How to Make a Revolution in the World before Marx	4
HIST 624	Topics in Modern US History (Reform Movements & Popular Protest)	4
HIST 665	Themes in Women's History (Gender & Politics)	4
HIST 690	Seminar: Historical Expl (Gay & Lesbian History: From the Victorian Era to Stonewall)	4
HIST 797	Colloquium (Citizenship & Inequality in the Americas)	4
HUMA #592	Special Topics in the Humanities (Women in Western Religion: Goddesses, Witches, Saints & Sinners)	2-8

HUMA 700	Seminar (Love & Ethics)	4
PHIL 430	Ethics and Society	4
PHIL 436	Social and Political Philosophy	4
PHIL 450	Environmental Ethics	4
PHIL 510	Philosophy and Feminism	4
POLT 548	Drug Wars	4
POLT 762	International Political Economy	4
<b>Courses in the College of Health and Human Services</b>		
HDFS 746	Human Sexuality	4
NURS 450	Making Babies: Technology, Nature, and Social Context	4
OT 513	Stressed Out: The Science and Nature of Human Stress	4
SW 697	Special Topics in Social Welfare (Exploring Social Justice & Cultural Competency)	4
SW 715	Affirming Practice with Lesbian, Gay, Bisexual, Transgender, Queer+ People	4

The women's and gender studies core faculty will consider approving other courses that include more than 50% of content related to social justice leadership.

Once students have declared the minor, they are required to meet with the coordinator at least once per semester for regular review of progress towards the degree.

Transfer credits may be approved by the coordinator to count towards the minor. If the transfer credit is accepted by the university and fits within the scope of the minor, it will be considered.

## Women's and Gender Studies Minor

<https://cola.unh.edu/womens-gender-studies/program/minor/womens-gender-studies>

### Description

Women's and gender studies provides students with an understanding of the status of women in various cultures and historical eras, in the nexus of race, class, sexuality, religious and disability studies. Students learn the use of gender as a category of analysis and increase their knowledge of women's contributions to many fields. Women's studies courses offer students critical perspectives on such basic questions of the social order as assumptions about gender roles and gender identity.

As a relatively small department in the College of Liberal Arts, we provide students with a sense of community and opportunities to contribute directly to changing the campus climate. In a rigorous academic environment, women's and gender studies offers students a springboard for activism. Our internship program enables students to gain first-hand work experience across many fields.

A major or minor in women's and gender studies prepares students for careers where the changing roles of women are having a perceptible impact. Alumni go on to law school and graduate school in a variety of disciplines. Some have taken positions with social change or family service agencies, while others have found work in such fields as health care, journalism, education, human rights, social and environmental justice, and the arts.

Students who wish to minor in women's and gender studies should consult with the [department chair or coordinator](#).

### Requirements

For the women's and gender studies minor, students must complete 20 credits of women's and gender studies courses with a grade of C-

or better. Courses taken pass/fail may not be used toward the minor.

No more than eight credits used to satisfy the requirements for another major may be used for the women's and gender studies minor. Students electing the women's and gender studies minor must complete:

Code	Title	Credits
Select one of the following:		
WS 401	Introduction to Women's Studies	4
or WS 405	Gender, Power and Privilege	
WS 798	Colloquium (normally taken at the end of the course sequence) <sup>1</sup>	4
Complete three other women's studies courses, either program courses or those that are cross-counted with other departments		12
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> It may be possible to substitute WS 795 Independent Study, WS 796 Advanced Topics, WS 797 Internship, and WS 799 Honors Thesis for WS 798 Colloquium with permission from a women's studies adviser.



# World Languages

- [World Languages Dual Major](#) (p. 154)

## World Languages Dual Major

<https://cola.unh.edu/languages-literatures-cultures/program/world-languages-dual-major>

### Description

The world languages dual major is a 32-credit program that is paired with any major that leads to a B.S. degree. The major offers eight language options from which to choose as a focus: Arabic, Chinese, classics, French, German, Italian, Russian and Spanish. Study of a second language adds immense value to a student's academic experience by sharpening skills in communication, decision-making, critical thinking, listening, concentration and multitasking. It also provides excellent professional preparation for careers in business, healthcare, science, engineering and more. Mastering a second language and honing intercultural communication skills in a multicultural America and globalized world will add richness and flexibility to life beyond one's career, as well.

The global languages dual major is administered by the Department of Languages, Literatures and Cultures (LLC) but draws on languages and courses from both LLC and the Department of Classics, Humanities and Italian Studies.

### Requirements

The dual major in world languages consists of a total of 8 classes (32 credits), which may include the following, depending on your level/proficiency and language placement entering UNH. The minimum level of proficiency is noted below for each language. All coursework required for the world languages major must be completed with a grade of C or better.

Code	Title	Credits
<b>Language <sup>1</sup></b>		<b>8-24</b>
Choose ONE target language from below:		
<b>Arabic Language Requirements</b>		
ARBC 401	Elementary Arabic I	
ARBC 402	Elementary Arabic II	
ARBC 503	Intermediate Arabic	
ARBC 504	Intermediate Arabic	
ARBC 631	Advanced Arabic I	
ARBC 632	Advanced Arabic II (minimum level of proficiency required)	
<b>Chinese Language Requirements</b>		
CHIN 401	Elementary Chinese I	
CHIN 402	Elementary Chinese II	
CHIN 503	Intermediate Chinese I	
CHIN 504	Intermediate Chinese II	
CHIN 631	Advanced Chinese Conversation and Composition I	
CHIN 632	Advanced Chinese Conversation and Composition II (minimum level of proficiency required)	
<b>Classics Language Requirements</b>		
LATN 401	Elementary Latin I	
or GREK 401	Elementary Classical Greek I	
LATN 402	Elementary Latin II	
or GREK 402	Elementary Classical Greek II	
LATN 503	Intermediate Latin I	
or GREK 503	Intermediate Classical Greek I	
LATN 504	Intermediate Latin II (minimum level of proficiency required for LATN or GREK)	

or GREK 504	Intermediate Classical Greek II
<b>French Language Requirements</b>	
FREN 401	Elementary French I
FREN 402	Elementary French II
FREN 503	Intermediate French I
FREN 504	Intermediate French II
FREN 631	Advanced French: Reading and Writing
FREN 632	Advanced French: Listening and Speaking (minimum level of proficiency required)
<b>German Language Requirements</b>	
GERM 401	Elementary German I
GERM 402	Elementary German II
GERM 503	Intermediate German I
GERM 504	Intermediate German II
GERM 631W	Advanced Communications Skills I
GERM 632	Advanced Communications Skills II (minimum level of proficiency required)
<b>Italian Language Requirements</b>	
ITAL 401	Elementary Italian I
ITAL 402	Elementary Italian II
ITAL 503	Intermediate Italian I
ITAL 504	Intermediate Italian II
ITAL 631	Advanced Conversation and Composition I
ITAL 632	Advanced Conversation and Composition II (minimum level of proficiency required)
<b>Russian Language Requirements</b>	
RUSS 401	Elementary Russian I
RUSS 402	Elementary Russian II
RUSS 503	Intermediate Russian I
RUSS 504	Intermediate Russian II
RUSS 631	Advanced Russian Conversation and Composition
RUSS 632	Advanced Russian Conversation and Composition (minimum level of proficiency required)
<b>Spanish Language Requirements</b>	
SPAN 401	Elementary Spanish I
SPAN 402	Elementary Spanish II
SPAN 503	Intermediate Spanish I
SPAN 504	Intermediate Spanish II
SPAN 631	Advanced Conversation and Composition I
SPAN 632	Advanced Conversation and Composition II (minimum level of proficiency required)
<b>Culture, Linguistics, Literature <sup>2</sup></b>	<b>4-20</b>
Choose any 400-, 500-, 600- or 700-level courses in your target language program and/or in LLC from the lists below	
<b>Arabic:</b>	
ARBC 425, ARBC 595, ARBC 700, ARBC 795	
<b>Chinese:</b>	
CHIN #400, CHIN #410, CHIN #420, CHIN 425, CHIN 521, CHIN #686, CHIN 795	
<b>Classics:</b>	
CLAS 400, CLAS 401, CLAS 403, CLAS 404, CLAS #411, CLAS #412, CLAS #444, CLAS 444D, CLAS 501, CLAS 510, CLAS 511, CLAS 520A, CLAS 520B, CLAS 520C, CLAS 520D, CLAS 525, CLAS 530A, CLAS 530B, CLAS 540A, CLAS 540B, CLAS 540C, CLAS 550A, CLAS 550B, CLAS 550C, CLAS 551, CLAS 575, CLAS 601, CLAS 675, CLAS 676, CLAS 677, CLAS 678, CLAS 686, CLAS 694, CLAS 695, CLAS 696, LATN 403, LATN 605, LATN 606, LATN 753, LATN 754, LATN #756, GREK 595, GREK 751, GREK 753, GREK #795, GREK 796	
<b>French:</b>	
FREN 403, FREN 525, FREN #525H, FREN 526, FREN 595, FREN #595A, FREN 651, FREN 652, FREN 676, FREN #677, FREN 683, FREN 690, FREN 691, FREN 765, FREN 775, FREN 785, FREN 790, FREN 795	
<b>German:</b>	
GERM 521, GERM 525, GERM 586, GERM 728, GERM 732, GERM 738, GERM 795, GERM 797, GERM 798	
<b>Italian:</b>	
ITAL 425, ITAL 444A, ITAL 444B, ITAL 444C, ITAL 510J, ITAL 521, ITAL 522, ITAL 525, ITAL 526, ITAL 540, ITAL 595, ITAL #595A, ITAL 635, ITAL 651, ITAL 652, ITAL 675, ITAL 681A, ITAL 681B, ITAL 682B, ITAL 683, ITAL 733, ITAL 775, ITAL 795	
<b>Russian:</b>	
RUSS #425M, RUSS 521W, RUSS 525, RUSS #525M, RUSS 595, RUSS #680, RUSS #685, RUSS 691W, RUSS #725M, RUSS 733, RUSS 790W, RUSS 795, RUSS #796, RUSS 797, RUSS #798	
<b>Spanish:</b>	
SPAN 403, SPAN 525, SPAN 526, SPAN 535B, SPAN 595, SPAN 641, SPAN 645, SPAN 647, SPAN 648, SPAN 650, SPAN 651, SPAN #652, SPAN 653, SPAN 654, SPAN 683, SPAN 686, SPAN 790, SPAN 795, SPAN 797, SPAN 798, SPAN 799	
<b>LLC:</b>	

LLC 444H, LLC 444I, LLC 535A, LLC 535B, LLC #535C, LLC 540, LLC #551, LLC 552, LLC 555, LLC 560, LLC 595, LLC 791

Capstone

4

LLC 790 World Languages Capstone<sup>3</sup>

- <sup>1</sup> From 8 to 24 credits, depending on students' proficiency level and language placement on entry. All students must complete at least 8 classes (32 credits). While the major may start counting as early as the Elementary I level (401), those who enter the major at a higher level (e.g., 503, 504, or 631) will replace the lower level language courses with additional electives in the "Culture, Linguistics, Literature" category.
- <sup>2</sup> Minimum 4 credits up to 20 credits (depending on number required to get to 32 total)
- <sup>3</sup> Or approved equivalent 700-level course taken at UNH, approved study abroad equivalent, or approved high-impact experience (such as internship with a robust target language/culture component).

An experience such as study abroad, service learning, internship, or faculty-mentored, independent undergraduate research is encouraged but not required. Up to 16 credits toward the major may be earned in a semester-long study abroad program or summer study abroad program, depending on the individual language programs and their study abroad options. Students should consult with a faculty advisor regarding study abroad credits.

## Student Learning Outcomes

Linguistic proficiency. Students will demonstrate an Intermediate-Mid to Intermediate-High level of proficiency based on the ACTFL Performance Descriptors for Language Learners in the target language in three modes of communication: interpretive, interpersonal and presentational skills.

- Interpretive: Students are able to understand main ideas and some supporting details on familiar topics relevant to their immediate environment such as everyday life and particular interests. They have sufficient control of language (vocabulary, structure and conventional spoken and written language) to understand fully non-complex texts.
- Interpersonal: Students are able to participate in conversations on familiar topics, ask questions to initiate and sustain conversations, and communicate about self, others and everyday life.
- Presentational: Students are able to communicate information and express their thoughts about familiar topics using simple sentence structures. They are able to create messages in contexts relevant to themselves and others, and their immediate environment.

Intercultural and transcultural competence. Students will demonstrate knowledge and understanding of other cultures. They are able to think critically about and are able to recognize and accept culturally differences, and the uniqueness of other cultures and peoples. By the time they graduate from our program, they will be able to:

- Recognize and describe the target culture products and practices they have directly studied and interpret texts that are read, heard and viewed.
- Analyze and critique the cultural and social products of the target culture (film, literature, art, popular culture, media, etc.) within their context, including conducting basic research projects.
- Begin to question the validity of their own cultural beliefs, behaviors and norms, by contrasting and comparing them with those of the

target culture, and reflecting upon cultural differences related to spoken and written communication.

## College of Engineering and Physical Sciences

Cyndee Gruden, Dean

Sharon McCrone, Associate Dean for Academic Affairs

The College of Engineering and Physical Sciences (CEPS) provides an opportunity for students to achieve educational objectives appropriate to their interests in engineering, computer science, information technology, mathematics, the physical sciences, and the teaching of mathematics and physical sciences. The college offers an education in each of its primary disciplines leading to the bachelor of science, as well as bachelor of art degrees with majors in mathematics and each of the three physical sciences. All programs include an opportunity for study in the arts, humanities, and social sciences.

The key to an undergraduate program in the college is flexibility, with a strong emphasis on personal and individualized education. In addition to specific programs, a wide range of options within several majors are available. Special programs can be developed to meet the specific interests of individual students.

### Degree Requirements

MATH 425 Calculus I and MATH 426 Calculus II or the equivalent in transfer credits or advanced placement approved by the Department of Mathematics and Statistics are required by all departments of the college. The exceptions to this are the information technology major and the three computer science bachelor of arts majors, which only require MATH 425 Calculus I. The prerequisites for calculus are three years of college-preparatory mathematics, including a half-year of trigonometry. Before students can register for MATH 425 Calculus I, they are required to take the Mathematics Placement Test or to have taken MATH 418 Analysis and Applications of Functions (or its equivalent) and received a grade of C or better.

### Mathematics Placement

First-year students arrive with a wide range of mathematical skills based upon their high school preparation. The college wants students to have a solid mathematics foundation so that they will enjoy an enriched first-semester experience. A student's mathematics development will be assessed as part of the June orientation program. Based upon the Mathematics Placement Test, students are enrolled in the mathematics class that will allow them to continue that development. The initial mathematics entry course is MATH 418 Analysis and Applications of Functions. However, a student is placed into MATH 425 Calculus I if he or she demonstrated a certain level of proficiency in algebra and precalculus through the Mathematics Placement Test. Students with AP credit for Calculus I and/or Calculus II may elect to accept those credits and continue with a math course at the next level.

### Degrees OFFERED

The college offers two undergraduate degrees: the bachelor of arts and the bachelor of science. Some of the courses prescribed in these degree programs partially fulfill the University's Discovery requirements. There are entrance requirements in some programs, and it is not possible to guarantee all change-of-major requests. Students should see their advisers for specific information.

### Bachelor of Arts

Programs leading to a bachelor of arts degree are offered in the departments of chemistry, computer science, earth sciences, mathematics, and physics. These programs provide a broad liberal education along with a major in one of these fields. Students must accumulate 128 credits, attain a 2.0 cumulative grade-point average, satisfy Discovery requirements, and complete a foreign language requirement (see [University Academic Requirements](#) for specific B.A. language requirements). Check individual departmental listings for specific major requirements and minimum acceptable grades in major courses.

### Bachelor of Science

The programs leading to the bachelor of science degree, offered in each of the departments of the college, emphasize students' preparation for a professional career and continuing or graduate education. University requirements are the same as for the bachelor of arts degree, except that a foreign language is not required and minimum acceptable grades may differ in some programs. Check individual departmental or program listings for specific major requirements and minimum acceptable grades in major courses.

For more information on Degree requirements, see [University Academic Requirements > Degrees](#).

## INTERDISCIPLINARY PROGRAMS

### Bachelor of Science in Environmental Sciences

The Environmental Sciences program is offered jointly with the College of Life Sciences and Agriculture (COLSA).

### Architectural Studies Minor

The Architectural Studies Minor is managed jointly by the Civil Engineering Department, and Art & Art History Department in the College of Liberal Arts (COLA).

## OTHER Combined Programs of Study

In addition to pursuing a single major, students may combine programs of study as follows (See [University Academic Requirements > Majors, Minors, Options](#) for details):

**Minors:** Students may pursue one or more minors, each typically comprised of 5 courses. Minors enable students to obtain experience in a specialized area and to retain identification with their major professional area. Minors are available in nearly every discipline within the College of Engineering & Physical Sciences. For a comprehensive list of available minors, go to [Programs, Degrees & Majors](#).

**Cognates:** Students may pursue one or more cognates, each typically comprised of 3 courses and intended to develop career-oriented skills. Cognates in the College of Engineering & Physical Sciences are:

- [Computer Programming](#)
- [Information Technology](#)
- [Skills and Perspectives for the Digital World](#)

**Second majors:** Students may choose to fulfill the requirements of two dissimilar major programs.

**Dual majors:** Students may choose to fulfill the requirements of a dual major, typically comprised of 8 courses. Dual majors are designated programs that must be paired with another major of

any discipline. A list of dual majors can be found on the [Programs, Degrees & Majors page](#).

**Student-designed majors:** Under special circumstances, students may design their own majors. Proposal guidelines are available in the Office of the Provost and Vice President for Academic Affairs and on the Academic Affairs website, <https://www.unh.edu/provost/student-designed-majors-sdm>.

**Dual-degree programs:** Students may choose to fulfill the requirements of two separate degrees, such as a B.A. and a B.S. For more information, see [University Academic Requirements > Degrees](#).

**Accelerated Master's programs:** Students with senior standing and a minimum 3.20 cumulative grade-point average are eligible to take up to 12 credits of graduate level courses prior to completing their undergraduate degree, provided they have been admitted to the Graduate School. For more information on the process, see [University Academic Requirements > Degrees](#). For a comprehensive list of eligible accelerated master's programs through the College of Engineering & Physical Sciences, see [Programs, Degrees & Majors](#).

### Special Provisions

The requirement of a given topic/course prescribed to meet the requirements of major curriculum may be waived by the faculty of a student's department. This rule offers students the opportunity to develop a somewhat individualized plan of study with intellectual incentives and opportunities in addition to those found in a regular curriculum. The student's petition must be approved by his/her major adviser and the dean of the college. This power usually will be delegated by the faculty to the dean or to a committee (Senate Rule 05.21(s): Waiver of Requirements in a Prescribed Curriculum).

### Undeclared

Students who are uncertain about choosing a specific major may remain undeclared in the College of Engineering & Physical Sciences during their freshman and sophomore year. All first year undeclared students in the college will take the 1-credit seminar course, TECH 400 Introduction to CEPS Programs in their first semester in addition to their other required courses.

### Special Programs

#### Research Opportunities

The talents and expertise of the faculty in all departments are reflected in the number of ongoing research projects. Undergraduates are included in many of these research projects with the intent that they will discover and foster their creative talents. When involved with a funded research project, students may have an opportunity to receive pay while learning about the research area.

The college has world-class laboratories and computer facilities in many areas. A few of these are coastal and ocean mapping, space science, environmental engineering and science, fluid dynamics, wind turbulence, information systems, materials science, nanotechnology, sustainability, and medical imaging. These and other ongoing research areas within the college are described on the college's website: <https://ceps.unh.edu/research-facilities>.

Students have the opportunity to acquire applied experience by working with faculty members who undertake sponsored professional projects in

technical and managerial areas for business, industry, and federal, state, and local governments.

### Innovation Scholars Program

The Innovation Scholars program is a research driven introduction to the university for first-year students. Students will be part of a cohort of students under the direction of a faculty member that guides them through a year-long research experience culminating in a presentation of research results at the Undergraduate Research Conference or equivalent activity. Participants will develop skills that will open doors of opportunity at UNH and more broadly, and experience the interconnectedness of UNH scholarly activity with UNH Innovation and UNH Career and Professional Success.

There are currently four research topics, including advanced manufacturing; internet engineering; ocean and environmental sensing; and seacoast field science. Most cohorts work within a specific laboratory setting, including the Olson Advanced Manufacturing Center, Chase Ocean Engineering Laboratory and the UNH InterOperability Laboratory, to conduct their research. Students participating in the Innovation Scholars program will be enrolled in a 2-credit seminar both semesters of their first year for weekly cohort meetings.

### Independent Study and Projects

All departments within the college offer independent study opportunities and projects. The content of these courses varies and is based upon current scientific and technological needs in addition to the interests of the student and faculty involved.

Permission of the faculty member and/or department chairperson is required. One should review the course descriptions for the independent study and project courses for specific requirements. Students interested in working with a faculty member on a project or independent study should discuss this with the faculty member and their academic adviser prior to registering for the course.

### Preparing for Teaching

Degrees in mathematics education at the K-8 or secondary level are available through the department of Mathematics and Statistics.

Students interested in teaching chemistry, physics, or earth sciences should refer to the appropriate department advisors for program requirements.

### Study Abroad Programs

The College of Engineering and Physical Sciences and the Global Education Center work closely to support students and their Education Abroad experience. Students are able to take part in exchange programs including, but not limited to:

#### Scotland, Heriot-Watt University Exchange Program

College of Engineering and Physical Sciences students are eligible to participate in a spring semester exchange with Heriot-Watt University in Edinburgh, Scotland. The current program is designed for civil and environmental engineering majors. For more information, contact Ray Cook at (603) 862-1411 or the Global Education Center, Conant Hall. Details on the program can also be found at <https://www.unh.edu/global/exchange-program-heriot-watt-university>.

#### Global E3 Exchange Programs

All majors within the College of Engineering and Physical Sciences are eligible to participate in international exchange programs

through the Global E3 program. Programs are offered in the fall, spring, and summer, as well as for the full academic year. For more information on Global E3, please refer to [www.iie.org/programs/global-e3](http://www.iie.org/programs/global-e3). For more information on eligibility, contact Catherine D'Auteuil at [catherine.dauteuil@unh.edu](mailto:catherine.dauteuil@unh.edu).

To learn about additional study abroad programs available to students in the College of Engineering and Physical Sciences, contact Catherine D'Auteuil at [catherine.dauteuil@unh.edu](mailto:catherine.dauteuil@unh.edu). For a full list of international study abroad programs available to UNH students, see Study Abroad Programs.

Students interested in participating in a domestic exchange program should go to Domestic Study Programs.

### Accreditation

The baccalaureate-level programs in: Bioengineering; Chemical Engineering; Civil Engineering; Computer Engineering; Electrical Engineering; Environmental Engineering; Mechanical Engineering; and Ocean Engineering are accredited by the Engineering Accreditation Commission of ABET, Inc. The bachelor of science programs in Computer Science and Information Technology are accredited by the Computing Accreditation Commission of ABET, Inc. <https://www.abet.org>

The Department of Chemistry's undergraduate bachelor of science program is approved by the American Chemical Society.

<https://ceps.unh.edu/>

## Departments

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- Chemistry (p. 164)
- Civil and Environmental Engineering (p. 169)
- Computer Science (p. 176)
- Earth Sciences (p. 188)
- Electrical and Computer Engineering (p. 200)
- Materials Science (p. 209)
- Mathematics & Statistics (p. 210)
- Mechanical Engineering (p. 226)
- Physics and Astronomy (p. 232)

## Programs of Study

- Bioengineering (BENG) (p. 158)
- Chemical Engineering (CHE) (p. 160)
- Chemistry (CHEM) (p. 164)
- Civil and Environmental Engineering (CEE) (p. 169)
- Computer Science (CS) (p. 176)
- Earth Sciences (ESCI) (p. 188)
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- Environmental Sciences (p. 209)
- Materials Science (MS) (p. 209)
- Mathematics and Statistics (MATH) (p. 210)
- Mechanical Engineering (ME) (p. 226)
- Ocean Engineering (OE) (p. 230)
- Physics and Astronomy (p. 232)

## Bioengineering (BENG)

Bioengineering, as defined by the NIH, is "the application of life sciences, mathematics, and engineering principles to define and solve problems in biology, medicine, health care, and other fields."

### Mission

Our Bioengineering program empowers students with broad preparation for pursuing careers related to biotechnology, biomedical and engineering fields.

### Program Educational Objectives

The bioengineering program seeks to provide an environment and opportunities that enable students to pursue their goals in an innovative program with a diversity of offerings that is rigorous and challenging.

The program has the following major educational objectives with the expectation that our alumni will have successful careers in the many diverse areas of bioengineering profession. Within a few years of obtaining a bachelor's degree in bioengineering, we expect our graduates to have the following attributes:

**Depth:** To be effective in applying life science concepts and bioengineering principles in engineering practice or for advanced study.

**Breadth:** To have productive careers in the many diverse areas of bioengineering or in pursuit of graduate studies in engineering, law, medicine or business.

**Professionalism:** To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

<https://ceps.unh.edu/chemical-engineering>

## Programs

- [Bioengineering Major \(B.S.\)](#) (p. 158)

## Faculty

<https://ceps.unh.edu/chemical-engineering/people>

## Bioengineering Major (B.S.)

<https://ceps.unh.edu/chemical-engineering/bioengineering-bs>

## Description

Bioengineering, as defined by the NIH, is "the application of life sciences, mathematics, and engineering principles to define and solve problems in biology, medicine, health care, and other fields."

The bioengineering program will train graduates in biology and physiology as well as engineering. The program will provide graduates with capabilities in advanced mathematics (including differential equations and statics), science, and engineering. Graduates will be conversant with solving problems at the interface of biology and engineering that may arise in the fields of biotechnology and pharmaceuticals, as well as medicine and biofuels. By graduation, students will have experience measuring and interpreting data from living

systems and addressing the interactions between living and non-living materials.

Students are required to obtain a minimum 2.0 grade-point average in CHE 501 Introduction to Chemical Engineering I/CHE 502 Introduction to Chemical Engineering II and in overall standing at the end of the sophomore year in order to continue in the major. Study abroad (Exchange) students are required to have a cumulative GPA of 3.0 or better in math, physics, chemistry, and other required courses at the end of the semester prior to their exchange semester.

For more information on the bioengineering program, please contact [Xiaowei Teng \(XW.Teng@unh.edu\)](mailto:XW.Teng@unh.edu), professor and chair.

## Requirements

### Major Requirements

Code	Title	Credits
BENG 763	Bioengineering Design I	2
BENG 764	Bioengineering Design II	4
BENG 766	Biomaterials	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BMS 503	General Microbiology	3
BMS 504	General Microbiology Laboratory	2
BMS 508	Human Anatomy and Physiology II	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHE 400	Chemical Engineering Lectures	1
CHE 501	Introduction to Chemical Engineering I	3
CHE 502	Introduction to Chemical Engineering II	3
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 604	Chemical Engineering Thermodynamics	3
CHE 614	Separation Processes	3
CHE 761	Biochemical Engineering	4
CHE 762	Biomedical Engineering	4
CHEM 405	Chemical Principles for Engineers	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
GEN 604	Principles of Genetics	4
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 644	Statistics for Engineers and Scientists	4
PHYS 407	General Physics I	4

### Electives

Select five courses from the following: <sup>1</sup>

BENG 725	Cell Phenotyping and Tissue Engineering Laboratory <sup>1</sup>
BENG 755	Computational Molecular Bioengineering <sup>1</sup>
BMCB 753	Cell Culture
BMS 507	Human Anatomy and Physiology I
BMS 702	Endocrinology
BMS 704	Pathologic Basis of Disease
BMS 706 & BMS 708	Virology and Virology Laboratory
CEE 502	Project Engineering <sup>1</sup>
CEE 705	Introduction to Sustainable Engineering <sup>1</sup>
CEE 724	Environmental Engineering Microbiology <sup>1</sup>
CHE 602	Heat Transfer and Unit Operations <sup>1</sup>
CHE 603	Applied Mathematics for Chemical Engineers <sup>1</sup>
CHE 651	Biotech Experience/Biomanufacturing <sup>1</sup>
CHE 703	Mass Transfer and Stagewise Operations <sup>1</sup>
CHE 707	Chemical Engineering Kinetics <sup>1</sup>
CHE 709	Fundamentals of Air Pollution and Its Control <sup>1</sup>
CHE 712	Introduction to Nuclear Engineering <sup>1</sup>
CHE 714	Chemical Sensors <sup>1</sup>
CHE #722	Introduction to Microfluidics <sup>1</sup>



CHE 752	Process Dynamics and Control <sup>1</sup>	
ECE 537	Introduction to Electrical Engineering <sup>1</sup>	
ECE 541	Electric Circuits <sup>1</sup>	
ECE 543	Introduction to Digital Systems <sup>1</sup>	
ECE 633	Signals and Systems I <sup>1</sup>	
ECE 633H	Honors/Signals and Systems I <sup>1</sup>	
ECE 717	Introduction to Digital Image Processing <sup>1</sup>	
ECE 784	Biomedical Instrumentation <sup>1</sup>	
GEN 711	Genomics and Bioinformatics	
or GEN 711W	Genomics and Bioinformatics	
GEN 712	Programming for Bioinformatics	
GEN 717	Molecular Microbiology	
GEN 771	Molecular Genetics	
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology <sup>1</sup>	
TECH 780	Intellectual Property Law for Engineers & Scientists	
<b>Total Credits</b>		<b>85</b>

<sup>1</sup> At least four of the elective courses must be engineering.

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
CHE 400	Chemical Engineering Lectures	1
MATH 425	Calculus I <sup>1</sup>	4
CHEM 405	Chemical Principles for Engineers <sup>2</sup>	4
ENGL 401	First-Year Writing <sup>3</sup>	4
Discovery Program Elective		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 426	Calculus II	4
PHYS 407	General Physics I	4
BIOL 411	Introductory Biology: Molecular and Cellular <sup>4</sup>	4
Discovery Program Elective		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
CHE 501	Introduction to Chemical Engineering I	3
MATH 527	Differential Equations with Linear Algebra	4
CHEM 545	Organic Chemistry	3
CHEM 546	Organic Chemistry Laboratory	2
GEN 604	Principles of Genetics	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
CHE 502	Introduction to Chemical Engineering II <sup>5</sup>	3
MATH 644	Statistics for Engineers and Scientists	4
Discovery Program Elective		4
BMS 503	General Microbiology	3
BMS 504	General Microbiology Laboratory	2
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
CHE 601	Fluid Mechanics and Unit Operations	3

BENG 766	Biomaterials	4
BMCB 658	General Biochemistry	3
BMCB 659	General Biochemistry Lab	2
Bioengineering Program Elective		4

**Credits** **16**

### Spring

CHE 604	Chemical Engineering Thermodynamics	3
CHE 761	Biochemical Engineering	4
BMS 508	Human Anatomy and Physiology II	4
Bioengineering Program Elective		4

**Credits** **15**

### Fourth Year

#### Fall

BENG 763	Bioengineering Design I	2
BENG 762	Biomedical Engineering	4
Discovery Program Elective		4
Bioengineering Program Electives (2)		8

**Credits** **18**

#### Spring

BENG 764	Bioengineering Design II	4
CHE 614	Separation Processes	3
Discovery Program Elective		4
Bioengineering Program Elective		4

**Credits** **15**

**Total Credits** **129**

<sup>1</sup> MATH 425 Calculus I satisfies the Discovery Foundation Quantitative Reasoning category.

<sup>2</sup> CHEM 405 Chemical Principles for Engineers satisfies the Discovery Physical Science (with lab) category.

<sup>3</sup> ENGL 401 First-Year Writing satisfies the Discovery Foundation Writing Skills category.

<sup>4</sup> BIOL 411 Introductory Biology: Molecular and Cellular satisfies the Discovery Biological Science (with lab) category.

<sup>5</sup> CHE 502 Introduction to Chemical Engineering II satisfies the Discovery Inquiry category.

The Discovery ETS category requirement is met upon receiving a passing grade in CHE 400 Chemical Engineering Lectures; CHE 761 Biochemical Engineering; CHE 762 Biomedical Engineering; BENG 763 Bioengineering Design I; BENG 764 Bioengineering Design II. Students who do not complete these courses must take a Discovery ETS course to fulfill the requirement.

34 credits engineering, 16 credits math, 14 credits chemistry, 16 credits life science

Five electives: 15 to 16 credits engineering; 4 credits science, math, or engineering

## Student Learning Outcomes

- The ability to apply knowledge of mathematics, physical and life science and engineering.
- The ability to design and safely conduct experiments on living cells and nonliving materials.

- The ability to analyze and interpret data The ability to identify, formulate and solve bioengineering problems.
- The ability to design a process or device that meets desired specifications with consideration of environmental, safety, economic and ethical criteria.
- An appreciation of contemporary issues relevant to bioengineering.
- Completed the Discovery program and obtained a broad education useful to understand the impact of engineering solutions in a global and societal context.
- The ability to use computers effectively for engineering practice.

## Chemical Engineering (CHE)

The Department of Chemical Engineering currently offers the undergraduate degree program in chemical engineering with options in bioengineering, energy engineering, and environmental engineering.

The B.S. program in chemical engineering is accredited by the:

Engineering Accreditation Commission of ABET  
111 Market Place  
Suite 1050  
Baltimore, MD 21202-4012  
(410) 347-7700

Chemical engineering is concerned with the analysis and design of processes that deal with the transfer and transformation of energy and material into products of high value.

The practice of chemical engineering includes the conception, development, design, and application of physicochemical processes and their products; the development, design, construction, operation, control, and management of plants for these processes; and activities relating to public service, education, and research.

The curriculum prepares students for productive careers in industry or government and provides a foundation for graduate studies. The college's program emphasizes chemical engineering fundamentals while offering opportunities for focused study in energy, environmental, or bio-engineering.

Traditional employment areas in the chemical process industries include industrial chemicals, petroleum and petrochemicals, plastics, pharmaceuticals, metals, textiles, and food. Chemical engineers are also working in increasing numbers in the areas of energy engineering, pollution abatement, and biochemical and biomedical engineering; in addition, they are employed by many government laboratories and agencies as well as private industries and institutions.

## Mission

The department strives to prepare students for productive careers in industry or government as well as to provide a foundation for graduate studies. The program emphasizes chemical engineering fundamentals while offering opportunities for focused study in energy, environmental, or bio-engineering.

## Program Educational Objectives

The chemical engineering program seeks to provide an environment that enables students to pursue their goals in an innovative, rigorous, and challenging program with a diversity of offerings.

The program has the following major educational objectives with the expectation that our alumni will have successful careers in the many diverse areas of the chemical engineering profession. Within a few years of obtaining a bachelor's degree in chemical engineering, we expect our graduates to have the following attributes:

**Depth.** To be effective in applying chemical engineering principles in engineering practice or for advanced study in chemical engineering.

**Breadth.** To have a productive career in the many diverse fields of chemical engineering such as bio-engineering, energy, and the environment, or in the pursuit of graduate education in disciplines such as chemical engineering, medicine, law, or business.

**Professionalism.** To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

<https://ceps.unh.edu/chemical-engineering>

## Programs

- [Chemical Engineering Major \(B.S.\)](#) (p. 160)
- [Chemical Engineering Major: Bioengineering Option \(B.S.\)](#) (p. 162)
- [Chemical Engineering Major: Energy Option \(B.S.\)](#) (p. 163)
- [Chemical Engineering Major: Environmental Engineering Option \(B.S.\)](#) (p. 164)

## Faculty

<https://ceps.unh.edu/chemical-engineering/people>

## Chemical Engineering Major (B.S.)

<https://ceps.unh.edu/chemical-engineering/program/bs/chemical-engineering-major>

## Description

Chemical engineering is concerned with the analysis and design of processes that deal with the transfer and transformation of energy and material.

The practice of chemical engineering includes the conception, development, design, and application of physicochemical processes and their products; the development, design, construction, operation, control, and management of plants for these processes; and activities relating to public service, education, and research.

The curriculum prepares students for productive careers in industry or government and provides a foundation for graduate studies. The program emphasizes chemical engineering fundamentals while offering opportunities for focused study in energy, environmental, or bio-engineering.

Traditional employment areas in the chemical process industries include industrial chemicals, petroleum and petrochemicals, plastics, pharmaceuticals, metals, textiles, and food. Chemical engineers also are working in increasing numbers in the areas of energy engineering, pollution abatement, and biochemical and biomedical engineering;

in addition, they are employed by many government laboratories and agencies as well as private industries and institutions.

Graduates from the program have the ability to apply knowledge of mathematics, science, and engineering to identify, formulate, and solve chemical engineering problems as well as to design and conduct experiments safely and analyze and interpret data. They are prepared to pursue advanced studies in chemical engineering. Program graduates gain a sense of professional and ethical responsibility with the ability to apply environmental, safety, economic, and ethical criteria in the design of engineering processes. They learn to function in individual and group working environments, and learn skills in written and oral communication and the effective use of computers for engineering practice, including information search in the library and on the Internet. They also understand the need for lifelong learning and the significance of societal and global issues relevant to chemical engineering.

A minimum of 129 credits is required for graduation with the degree of bachelor of science in chemical engineering. There are ten electives in the chemical engineering curriculum. Six of these are for the Discovery Program requirements. The remaining four electives should consist of three chemical engineering electives and one additional technical elective.

Students are required to obtain a minimum 2.0 grade-point average in CHE 501 Introduction to Chemical Engineering I-CHE 502 Introduction to Chemical Engineering II and in overall standing at the end of the sophomore year in order to continue in the major. Study abroad (Exchange) chemical engineering students are required to have a cumulative GPA of 3.0 or better in math, physics, chemistry, and CHE courses at the end of the semester prior to their exchange semester.

## Requirements

### Required Courses

Code	Title	Credits
CHE 400	Chemical Engineering Lectures	1
CHE 501	Introduction to Chemical Engineering I	3
CHE 502	Introduction to Chemical Engineering II	3
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 602	Heat Transfer and Unit Operations	3
CHE 603	Applied Mathematics for Chemical Engineers	4
CHE 604	Chemical Engineering Thermodynamics	3
CHE 612	Chemical Engineering Laboratory I	3
CHE 614	Separation Processes	3
CHE 703	Mass Transfer and Stagewise Operations	3
CHE 707	Chemical Engineering Kinetics	3
CHE 708	Chemical Engineering Design	3
CHE 713	Chemical Engineering Laboratory II	3
CHE 752	Process Dynamics and Control	4
CHEM 405	Chemical Principles for Engineers	4
CHEM 683	Physical Chemistry I	3
CHEM 684	Physical Chemistry II	3
CHEM 685	Physical Chemistry Laboratory	2
CHEM 686	Physical Chemistry Laboratory	2
CHEM 651	Organic Chemistry I	3
CHEM 653	Organic Chemistry Laboratory	2
CHEM 652A	Organic Chemistry II	3
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 644	Statistics for Engineers and Scientists	4

PHYS 407	General Physics I	4
PHYS 408	General Physics II	4

### Elective Courses

Select three of the following:

Code	Title	Credits
BENG 755	Computational Molecular Bioengineering	4
CHE 651	Biotech Experience/Biomanufacturing	4
CHE 705	Fossil Fuels and Renewable Energy Sources	4
CHE 706	Electrochemical Methods for Energy Applications	4
CHE 709	Fundamentals of Air Pollution and Its Control	4
CHE 712	Introduction to Nuclear Engineering	4
CHE #722	Introduction to Microfluidics	4
CHE 744	Corrosion	4
CHE 761	Biochemical Engineering	4
CHE 762	Biomedical Engineering	4
CHE 766	Biomaterials	4

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ENGL 401	First-Year Writing <sup>1</sup>	4
MATH 425	Calculus I <sup>2</sup>	4
CHEM 405	Chemical Principles for Engineers <sup>3</sup>	4
CHE 400	Chemical Engineering Lectures	1
Discovery Program Electives <sup>7</sup>		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 426	Calculus II	4
PHYS 407	General Physics I <sup>3</sup>	4
Discovery Program Electives (2) <sup>7</sup>		8
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
CHEM 683	Physical Chemistry I	3
CHEM 685	Physical Chemistry Laboratory	2
MATH 527	Differential Equations with Linear Algebra	4
PHYS 408	General Physics II	4
CHE 501	Introduction to Chemical Engineering I <sup>4</sup>	3
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
CHEM 684	Physical Chemistry II	3
CHEM 686	Physical Chemistry Laboratory	2
CHE 502	Introduction to Chemical Engineering II	3
MATH 740	Design of Experiments I <sup>5</sup>	4
or MATH 644	or Statistics for Engineers and Scientists	
Discovery Program Elective <sup>7</sup>		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
CHEM 651	Organic Chemistry I	3
CHEM 653	Organic Chemistry Laboratory	2
CHE 601	Fluid Mechanics and Unit Operations	3

CHE 603	Applied Mathematics for Chemical Engineers	4
CHE Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
CHEM 652A	Organic Chemistry II	3
CHE 602	Heat Transfer and Unit Operations	3
CHE 604	Chemical Engineering Thermodynamics	3
CHE 612	Chemical Engineering Laboratory I	3
Discovery Program Elective <sup>7</sup>		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
CHE 703	Mass Transfer and Stagewise Operations	3
CHE 707	Chemical Engineering Kinetics	3
CHE 713	Chemical Engineering Laboratory II	3
CHE 752	Process Dynamics and Control	4
CHE Elective		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
CHE 614	Separation Processes	3
CHE 708	Chemical Engineering Design <sup>6</sup>	4
CHE Electives		4
Discovery Elective <sup>7</sup>		4
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>129</b>

<sup>1</sup> ENGL 401 First-Year Writing satisfies the Discovery Foundation Writing Skills category.

<sup>2</sup> MATH 425 Calculus I satisfies the Discovery Foundation Quantitative Reasoning category.

<sup>3</sup> PHYS 407 General Physics I or CHEM 405 Chemical Principles for Engineers satisfies the Discovery Physical Science (with lab) category.

<sup>4</sup> CHE 502 Introduction to Chemical Engineering II satisfies the Discovery Inquiry requirement.

<sup>5</sup> MATH 740 Design of Experiments I or MATH 644 Statistics for Engineers and Scientists is the recommended technical elective.

<sup>6</sup> CHE 708 Chemical Engineering Design satisfies the Discovery Capstone Experience/Course.

<sup>7</sup> CHE students do not have to take a course in the Discovery ETS category since they satisfy this requirement through a combination of courses in the CHE curriculum.

- Completed the UNH general education/Discovery program and obtained a broad education useful to understand the impact of engineering solutions in a global and societal context.
- The ability to use computers effectively for engineering practice.
- An appreciation of professional and ethical responsibility.
- The ability to communicate effectively.
- Skills to search for information in the library and on the internet. These skills will be used in their pursuit of lifelong learning.
- The capacity to function and work effectively alone and in a team environment.

## Chemical Engineering Major: Bioengineering Option (B.S.)

<https://ceps.unh.edu/chemical-engineering/program/bsche/chemical-engineering-major-bioengineering-option>

### Description

Under this option, the required courses deal with the application of basic biological sciences and chemical engineering principles to the design and operation of large-scale bioprocesses for the production of high-value medicinal, food and beverage, pharmaceutical, biomedical, genetic engineering, and health care products. The elective courses permit the student to study topics of special interest in more depth or gain a broader perspective in bioengineering or some closely related subjects such as biochemistry or biotechnology experience in manufacturing or research. Three courses are required, and a minimum of two additional courses of at least three credits each should be selected from the electives list. Students interested in the bioengineering option should declare their intention to the department faculty during the sophomore year.

### Requirements

Code	Title	Credits
<b>Required Courses</b>		
CHE 400	Chemical Engineering Lectures	1
CHE 501	Introduction to Chemical Engineering I	3
CHE 502	Introduction to Chemical Engineering II	3
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 602	Heat Transfer and Unit Operations	3
CHE 603	Applied Mathematics for Chemical Engineers	4
CHE 604	Chemical Engineering Thermodynamics	3
CHE 612	Chemical Engineering Laboratory I	3
CHE 614	Separation Processes	3
CHE 703	Mass Transfer and Stagewise Operations	3
CHE 707	Chemical Engineering Kinetics	3
CHE 708	Chemical Engineering Design	4
CHE 713	Chemical Engineering Laboratory II	3
CHE 752	Process Dynamics and Control	4
CHEM 405	Chemical Principles for Engineers	4
CHEM 683	Physical Chemistry I	3
CHEM 684	Physical Chemistry II	3
CHEM 685	Physical Chemistry Laboratory	2
CHEM 686	Physical Chemistry Laboratory	2
CHEM 651	Organic Chemistry I	3
CHEM 653	Organic Chemistry Laboratory	2
CHEM 652A	Organic Chemistry II	3
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4

### Student Learning Outcomes

- The ability to apply knowledge of mathematics, science and engineering.
- The ability to design and conduct experiments safely, as well as to analyze and interpret data.
- The ability to identify, formulate and solve chemical engineering problems.
- The ability to design a process that meets desired specifications with consideration of environmental, safety, economic and ethical criteria.
- An appreciation of contemporary issues relevant to chemical engineering.

MATH 644	Statistics for Engineers and Scientists	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
CHE 651	Biotech Experience/Biomanufacturing	4
CHE 761	Biochemical Engineering	4
CHE 766	Biomaterials	4
<b>Elective Courses</b>		
Select one of the following:		3-4
BENG 755	Computational Molecular Bioengineering	
CHE 695	Chemical Engineering Project	
CHE 696	Independent Study	
CHE 762	Biomedical Engineering	
BMCB 750	Physical Biochemistry	
BMCB 751	Principles of Biochemistry	
BMCB 752	Principles of Biochemistry	
<b>Total Credits</b>		<b>104-105</b>

## Student Learning Outcomes

- The ability to apply knowledge of mathematics, science and engineering.
- The ability to design and conduct experiments safely, as well as to analyze and interpret data.
- The ability to identify, formulate and solve chemical engineering problems.
- The ability to design a process that meets desired specifications with consideration of environmental, safety, economic and ethical criteria.
- An appreciation of contemporary issues relevant to chemical engineering.
- Completed the UNH general education/Discovery program and obtained a broad education useful to understand the impact of engineering solutions in a global and societal context.
- The ability to use computers effectively for engineering practice.
- An appreciation of professional and ethical responsibility.
- The ability to communicate effectively.
- Skills to search for information in the library and on the internet. These skills will be used in their pursuit of lifelong learning.
- The capacity to function and work effectively alone and in a team environment.

## Chemical Engineering Major: Energy Option (B.S.)

<https://ceps.unh.edu/chemical-engineering/energy-option>

### Description

This option covers the major areas of current interest in the energy field. The required courses provide students with a general background knowledge of fossil fuels, nuclear power, solar energy, and other alternative energy resources. The elective courses will permit the student to study topics of special interest in more depth or gain a broader perspective on energy and some closely related subjects. Three courses are required, and a minimum of two additional courses of at least three credits each should be selected from the electives list. Students interested in the energy option should declare their intention to the department faculty during the sophomore year.

## Requirements

Code	Title	Credits
<b>Required Courses</b>		
CHE 400	Chemical Engineering Lectures	1
CHE 501	Introduction to Chemical Engineering I	3
CHE 502	Introduction to Chemical Engineering II	3
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 602	Heat Transfer and Unit Operations	3
CHE 603	Applied Mathematics for Chemical Engineers	4
CHE 604	Chemical Engineering Thermodynamics	3
CHE 612	Chemical Engineering Laboratory I	3
CHE 614	Separation Processes	3
CHE 703	Mass Transfer and Stagewise Operations	3
CHE 707	Chemical Engineering Kinetics	3
CHE 708	Chemical Engineering Design	4
CHE 713	Chemical Engineering Laboratory II	3
CHE 752	Process Dynamics and Control	4
CHEM 405	Chemical Principles for Engineers	4
CHEM 683	Physical Chemistry I	3
CHEM 684	Physical Chemistry II	3
CHEM 685	Physical Chemistry Laboratory	2
CHEM 686	Physical Chemistry Laboratory	2
CHEM 651	Organic Chemistry I	3
CHEM 653	Organic Chemistry Laboratory	2
CHEM 652A	Organic Chemistry II	3
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 644	Statistics for Engineers and Scientists	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
CHE 705	Fossil Fuels and Renewable Energy Sources	4
CHE 706	Electrochemical Methods for Energy Applications	4
CHE 712	Introduction to Nuclear Engineering	4
<b>Elective Courses</b>		
Select one of the following:		3-4
CHE 695	Chemical Engineering Project	
CHE 696	Independent Study	
CHE 761	Biochemical Engineering	
ME 705	Thermal System Analysis and Design	
Special Topics on Energy <sup>1</sup>		
<b>Total Credits</b>		<b>104-105</b>

<sup>1</sup> This requires approval of the department; students should check with their advisor. Courses offered in the past include Renewable Electrical Power, Renewable Energy, and Peak Oil.

## Student Learning Outcomes

- The ability to apply knowledge of mathematics, science and engineering.
- The ability to design and conduct experiments safely, as well as to analyze and interpret data.
- The ability to identify, formulate and solve chemical engineering problems.
- The ability to design a process that meets desired specifications with consideration of environmental, safety, economic and ethical criteria.
- An appreciation of contemporary issues relevant to chemical engineering.



- Completed the UNH general education/Discovery program and obtained a broad education useful to understand the impact of engineering solutions in a global and societal context.
- The ability to use computers effectively for engineering practice.
- An appreciation of professional and ethical responsibility.
- The ability to communicate effectively.
- Skills to search for information in the library and on the internet. These skills will be used in their pursuit of lifelong learning.
- The capacity of function and work effectively alone and in a team environment.

## Chemical Engineering Major: Environmental Engineering Option (B.S.)

<https://ceps.unh.edu/chemical-engineering/environmental-engineering-option>

### Description

The chemical engineering program, with its substantial requirements in chemistry, fluid dynamics, heat transfer, mass transfer, unit operations, and reaction kinetics, provides students with a unique preparation to deal with many aspects of environmental pollution problems. The option gives students a special focus on the application of chemical engineering principles and processes to the solution of problems relating to air pollution, water pollution, and the disposal of solid and hazardous waste. Three required courses must be selected, plus two electives from the electives list. Each course must carry a minimum of three credits. Students interested in the environmental engineering option should declare their intention to the department faculty during the sophomore year.

### Requirements

Code	Title	Credits
<b>Required Courses</b>		
CHE 400	Chemical Engineering Lectures	1
CHE 501	Introduction to Chemical Engineering I	3
CHE 502	Introduction to Chemical Engineering II	3
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 602	Heat Transfer and Unit Operations	3
CHE 603	Applied Mathematics for Chemical Engineers	4
CHE 604	Chemical Engineering Thermodynamics	3
CHE 612	Chemical Engineering Laboratory I	3
CHE 614	Separation Processes	3
CHE 703	Mass Transfer and Stagewise Operations	3
CHE 707	Chemical Engineering Kinetics	3
CHE 708	Chemical Engineering Design	4
CHE 713	Chemical Engineering Laboratory II	3
CHE 752	Process Dynamics and Control	4
CHEM 405	Chemical Principles for Engineers	4
CHEM 683	Physical Chemistry I	3
CHEM 684	Physical Chemistry II	3
CHEM 685	Physical Chemistry Laboratory	2
CHEM 686	Physical Chemistry Laboratory	2
CHEM 651	Organic Chemistry I	3
CHEM 653	Organic Chemistry Laboratory	2
CHEM 652A	Organic Chemistry II	3
MATH 425	Calculus I	4

MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 644	Statistics for Engineers and Scientists	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
CHE 709	Fundamentals of Air Pollution and Its Control	4
CEE 720	Solid and Hazardous Waste Engineering	3
ESCI 654	Fate and Transport in the Environment	4
<b>Elective Courses</b>		
Select one of the following:		3-4
CHE 695	Chemical Engineering Project	
CHE 696	Independent Study	
CHE 744	Corrosion	
CEE 724	Environmental Engineering Microbiology	
CEE 723	Environmental Water Chemistry	
<b>Total Credits</b>		<b>103-104</b>

### Student Learning Outcomes

- The ability to apply knowledge of mathematics, science and engineering.
- The ability to design and conduct experiments safely, as well as to analyze and interpret data.
- The ability to identify, formulate and solve chemical engineering problems.
- The ability to design a process that meets desired specifications with consideration of environmental, safety, economic and ethical criteria.
- An appreciation of contemporary issues relevant to chemical engineering.
- Completed the UNH general education/Discovery program and obtained a broad education useful to understand the impact of engineering solutions in a global and societal context.
- The ability to use computers effectively for engineering practice.
- An appreciation of professional and ethical responsibility.
- The ability to communicate effectively.
- Skills to search for information in the library and on the internet. These skills will be used in their pursuit of lifelong learning.
- The capacity of function and work effectively alone and in a team environment.

## Chemistry (CHEM)

Chemistry is a dynamic, an extremely creative, and yet also a practical discipline. Chemists *analyze* and *quantitate*, like when testing environmental or forensic samples; they *measure* specific characteristics of substances, like the defects present in a material, or the optical properties of atmospheric particles; they *design* and *synthesize* new substances, like antibiotics, catalysts for hydrogen production, and polymers for flexible electronics; they also generate *models* and *theories* that can explain what happens in the laboratory or in Nature. Chemistry is integral to modern science and, ultimately, most phenomena in biology, engineering, environmental science, geology, materials science, and medicine can be described in terms of the chemical and physical behavior of atoms and molecules—because of this, chemistry is often called “The Central Science”. Chemists are vital members of the interdisciplinary teams tackling the complicated problems facing our world, including issues in energy, health, security, and defense. Chemists are essential in developing the technologies and materials that support modern life!

The study of chemistry provides students with the critical thinking and problem-solving skills necessary to be successful in a wide variety of careers. You'll find chemists in many industries, including agricultural/food products, biotechnology, coatings, materials, paper, personal care products, petrochemicals, pharmaceuticals, plastics, renewable energy, semiconductors, and solar cells. Chemists are also involved in environmental and health-related sciences, making public policies, patent law and intellectual property, and educating future generations of scientists.

Students are also well-prepared for graduate-level work in chemistry, chemical biology, chemical physics, biochemistry, biophysics, materials chemistry, and other related fields. Students who excel in undergraduate chemistry coursework are often able to obtain funding for their graduate work through teaching or research assistantships and fellowships. Chemistry majors have also been successful in a variety of professional programs where they have studied medicine, pharmacy, dentistry, veterinary medicine, business, or law.

The chemistry program at The University of New Hampshire is small enough to be personal, but broad enough to provide excellent opportunities for challenge and growth. Students interested in pursuing chemistry as an undergraduate degree have two options available to them. These are the Bachelor of Science in Chemistry (B.S.) degree and a Bachelor of Arts (B.A.) degree. The B.S. Chemistry degree is certified by the American Chemical Society; the B.A. degree may also lead to ACS certification, depending on program plan. Since the required courses for each degree program are very similar in the first and second years, it is easy to change from one program to another. A chemistry faculty adviser is assigned to a student once she/he enters the program. The student's adviser provides academic guidance concerning the choice of courses to meet both major and university requirements.

<https://ceps.unh.edu/chemistry>

## Programs

- [Chemistry Major \(B.A.\)](#) (p. 165)
- [Chemistry Major \(B.S.\)](#) (p. 167)
- [Chemistry Minor](#) (p. 168)

## Faculty

<https://ceps.unh.edu/chemistry/people>

## Chemistry Major (B.A.)

<https://ceps.unh.edu/chemistry/program/ba/chemistry-major>

## Description

### Chemistry Major (B.A.)

The B.A. degree exposes students to the major fields of chemistry but provides more flexibility in course selection than the B.S. degree. The curriculum offers a comprehensive introduction to chemistry's traditional subdisciplines (analytical, inorganic, organic, and physical chemistry) via foundational classroom and laboratory experiences. Undergraduate research is an option, but not a requirement for this degree. The B.A. degree is directed towards students who have interdisciplinary interests

and are not planning to either attend a traditional graduate program in chemistry or find immediate employment in the chemical industry. Instead, this degree is geared toward students who plan to attend graduate school in an interdisciplinary field where chemical knowledge will be beneficial, and students who are interested in chemistry but plan to pursue post-graduate degrees in the health sciences, education, business, or other pre-professional programs. With careful selection of elective courses, the B.A. degree may also lead to American Chemical Society certification.

## Requirements

### Required Courses

Code	Title	Credits
CHEM 400	Freshman Seminar	1
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 517 & CHEM 518	Quantitative Analysis and Quantitative Analysis Laboratory	5
CHEM 547 & CHEM 549	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 548 & CHEM 550	Organic Chemistry II and Organic Chemistry Laboratory	5
CHEM 574 & CHEM 576	Chemistry Across the Periodic Table and Experimental Inorganic Chemistry	6
CHEM 683 & CHEM 685	Physical Chemistry I and Physical Chemistry Laboratory	5
CHEM 684 & CHEM 686	Physical Chemistry II and Physical Chemistry Laboratory	5
CHEM 762 & CHEM 763	Instrumental Methods of Chemical Analysis and Instrumental Methods of Chemical Analysis Laboratory	5
CHEM 798	Senior Seminar <sup>1</sup>	1
MATH 425	Calculus I	4
MATH 426	Calculus II	4
PHYS 407 or PHYS 401 & PHYS 402	General Physics I Introduction to Physics I and Introduction to Physics II	4
Total Credits		58

<sup>1</sup> CHEM 798 Senior Seminar satisfies the Discovery Capstone experience requirement. Students work with the instructor to prepare presentations based on a research project or chemistry-related professional engagement. This is a Writing Intensive course.

## Degree Plan

This is the suggested degree plan for B.A. Chemistry majors. A student can alter this plan in consultation with an academic adviser.

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
CHEM 400	Freshman Seminar	1
CHEM 403	General Chemistry I	4
MATH 425	Calculus I	4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Total Credits</b>		<b>17</b>

Course	Title	Credits
<b>First Year</b>		
<b>Spring</b>		
CHEM 404	General Chemistry II	4
MATH 426	Calculus II	4
ENGL 401	First-Year Writing	4
PHYS 407	General Physics I	4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>16</b>

Course	Title	Credits
<b>Second Year</b>		
<b>Fall</b>		
CHEM 517	Quantitative Analysis	4
CHEM 518	Quantitative Analysis Laboratory	1
CHEM 547	Organic Chemistry I	3
CHEM 549	Organic Chemistry Laboratory	2
Language 1 (first semester of an elementary foreign language sequence)		4
The B.A. requires either 2 semesters of elementary foreign language or 1 semester of intermediate (or higher).		
Discovery Course		4
<b>Credits</b>		<b>18</b>
<b>Total Credits</b>		<b>18</b>

Course	Title	Credits
<b>Second Year</b>		
<b>Spring</b>		
CHEM 548	Organic Chemistry II	3
CHEM 550	Organic Chemistry Laboratory	2
CHEM 574	Chemistry Across the Periodic Table	4
CHEM 576	Experimental Inorganic Chemistry	2
Language 2 (second semester of an elementary foreign language sequence)		4
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>15</b>

Course	Title	Credits
<b>Third Year</b>		
<b>Fall</b>		
CHEM 683	Physical Chemistry I	3
CHEM 685	Physical Chemistry Laboratory	2
Advanced Chemistry Elective - Advisor's Discretion. Can be CHEM 696, 708, 740, 755, 774, 776, 795 or 799.		3
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>16</b>

Course	Title	Credits
<b>Third Year</b>		
<b>Spring</b>		
CHEM 684	Physical Chemistry II	3
CHEM 685	Physical Chemistry Laboratory	2

CHEM 762	Instrumental Methods of Chemical Analysis	3
CHEM 763	Instrumental Methods of Chemical Analysis Laboratory	2
Discovery Course		4
<b>Credits</b>		<b>14</b>
<b>Total Credits</b>		<b>14</b>

Course	Title	Credits
<b>Fourth Year</b>		
<b>Fall</b>		
Discovery Course		4
Elective Course		4
Elective Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>16</b>

Course	Title	Credits
<b>Fourth Year</b>		
<b>Spring</b>		
CHEM 798	Senior Seminar	1
Elective Course		4
Elective Course		4
Elective Course		4
Elective Course		4
<b>Credits</b>		<b>17</b>
<b>Total Credits</b>		<b>17</b>

## Student Learning Outcomes

At the time of graduate, a student should be able to:

- **Reason with Chemistry's anchoring concepts:** that matter consists of atoms that have internal structures that dictate their chemical and physical behavior; that atoms interact via electrostatic forces to form chemical bonds that chemical compounds have geometric structures that influence their chemical and physical behaviors; that intermolecular forces—electrostatic forces between molecules—dictate the physical behavior of matter; that matter changes, forming products that have new chemical and physical properties that energy is the key currency of chemical reactions in molecular scale systems as well as macroscopic systems; that chemical changes have a time scale over which they occur; that all chemical changes are, in principle, reversible, and chemical processes often reach a state of dynamic equilibrium; that Chemistry is generally advanced via experimental observations; and that Chemistry constructs meaning interchangeably at the particulate and macroscopic levels.
- **Use Chemistry's cross-cutting concepts to interrogate and explain phenomena:** chemical identity (how do we identify chemical substances?); structure-property relationships (how do we predict the properties of materials?); chemical causality (why do chemical processes occur?); chemical mechanism (how do chemical processes occur?); chemical control (how can we control chemical processes?); benefits-costs-risks (how do we evaluate the impacts of chemically transforming matter?)

- **Demonstrate the following general scientific practices when displaying knowledge of chemical ideas and concepts:** asking questions; developing and using models; constructing explanations; planning and carrying out investigations; engaging in argument from evidence; analyzing and interpreting data; using mathematics and computational thinking; obtaining, evaluating, and communicating information OR Demonstrate the following Chemistry core practices when displaying knowledge of chemical ideas and concepts (a) analysis: development and application of strategies for detecting, identifying, separating, and quantifying chemical substances (b) synthesis: the design of new substances and synthetic routes (c) transformation: controlling chemical processes for non-synthetic purposes.

## Chemistry Major (B.S.)

<https://ceps.unh.edu/chemistry/program/bs/chemistry-major>

### Description

#### Chemistry Major (B.S.)

The B.S. Chemistry degree is certified by the American Chemical Society and provides a deep, rigorous experience that prepares students for graduate work or a career in chemical industry and related fields. The curriculum offers thorough training in the major fields of chemistry, covering analytical, inorganic, organic, and physical chemistry, as well as biochemistry and chemical biology. Students gain laboratory experience in molecular synthesis and characterization, chemical biology, analytical and instrumental methods, physical chemical measurements and data analysis, and spectroscopy. At the same time, the program requires students to participate in scientific inquiry, via both advanced laboratory experiences and independent research.

### Requirements

#### Required Courses

Code	Title	Credits
CHEM 400	Freshman Seminar	1
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 517 & CHEM 518	Quantitative Analysis and Quantitative Analysis Laboratory	5
CHEM 547 & CHEM 549	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 548 & CHEM 550	Organic Chemistry II and Organic Chemistry Laboratory	5
CHEM 574 & CHEM 576	Chemistry Across the Periodic Table and Experimental Inorganic Chemistry	6
BMCB 658 or CHEM 740	General Biochemistry <sup>1, 3</sup> Chemical Biology	3
CHEM 683 & CHEM 685	Physical Chemistry I and Physical Chemistry Laboratory	5
CHEM 684 & CHEM 686	Physical Chemistry II and Physical Chemistry Laboratory	5
CHEM 755	Advanced Organic Chemistry	3
CHEM 762 & CHEM 763	Instrumental Methods of Chemical Analysis and Instrumental Methods of Chemical Analysis Laboratory	5
CHEM 774	Inorganic Chemistry	3
CHEM 776	Physical Chemistry III	3
CHEM 777	Advanced Synthesis and Characterization	3
CHEM 798	Senior Seminar	1
CHEM 799	Senior Thesis <sup>2</sup>	8
MATH 425	Calculus I	4

MATH 426	Calculus II	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
Total Credits		85

- <sup>1</sup> BMCB 658 General Biochemistry satisfies the Discovery Biological Sciences requirement (for BS Chem majors only)
- <sup>2</sup> CHEM 799 Senior Thesis is a year-long experience of 4 credits per semester and satisfies the Discovery Capstone Experience requirement.
- <sup>3</sup> **CHEM 740** Chemical Biology meets the ACS BIOCHEM requirement. Students can take CHEM 740 or BCMB 658. **CHEM 740 DOES NOT meet the Biological Sciences Discovery criteria. Students can meet this requirement with one of their discovery electives.**

### Degree Plan

This is the suggested degree plan for B.S. Chemistry majors. A student can alter this plan in consultation with an academic adviser.

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
CHEM 400	Freshman Seminar	1
CHEM 403	General Chemistry I	4
MATH 425	Calculus I	4
PHYS 407	General Physics I	4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Total Credits</b>		<b>17</b>

Course	Title	Credits
<b>First Year</b>		
<b>Spring</b>		
CHEM 404	General Chemistry II	4
MATH 426	Calculus II	4
ENGL 401	First-Year Writing	4
PHYS 408	General Physics II	4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>16</b>

Course	Title	Credits
<b>Second Year</b>		
<b>Fall</b>		
CHEM 517	Quantitative Analysis	4
CHEM 518	Quantitative Analysis Laboratory	1
CHEM 547	Organic Chemistry I	3
CHEM 549	Organic Chemistry Laboratory	2
Discovery Courses (2 courses at 4 credits each)		8
<b>Credits</b>		<b>18</b>
<b>Total Credits</b>		<b>18</b>

Course	Title	Credits
<b>Second Year</b>		
<b>Spring</b>		
CHEM 548	Organic Chemistry II	3

CHEM 550	Organic Chemistry Laboratory	2
CHEM 574	Chemistry Across the Periodic Table	4
CHEM 576	Experimental Inorganic Chemistry	2
Discovery Course		4
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>15</b>

Course	Title	Credits
<b>Third Year</b>		
<b>Fall</b>		
CHEM 683	Physical Chemistry I	3
CHEM 685	Physical Chemistry Laboratory	2
CHEM 755	Advanced Organic Chemistry	3
CHEM 774	Inorganic Chemistry	3
CHEM 777	Advanced Synthesis and Characterization	3
Discovery Course		4
<b>Credits</b>		<b>18</b>
<b>Total Credits</b>		<b>18</b>

Course	Title	Credits
<b>Third Year</b>		
<b>Spring</b>		
CHEM 684	Physical Chemistry II	3
CHEM 686	Physical Chemistry Laboratory	2
CHEM 762	Instrumental Methods of Chemical Analysis	3
CHEM 763	Instrumental Methods of Chemical Analysis Laboratory	2
Elective Course		4
Discovery Course		4
<b>Credits</b>		<b>18</b>
<b>Total Credits</b>		<b>18</b>

Course	Title	Credits
<b>Fourth Year</b>		
<b>Fall</b>		
CHEM 776	Physical Chemistry III	3
CHEM 799	Senior Thesis ((first semester of a yearlong experience))	4
BMCB 658	General Biochemistry (or CHEM 740 Chemical Biology in the Spring)	3
Elective Course (1 course at 4 credits or 2 Electives at 4 credits each if not taking BMCB 658 and taking CHEM 740 in the Spring)		4
<b>Credits</b>		<b>14</b>
<b>Total Credits</b>		<b>14</b>

Course	Title	Credits
<b>Fourth Year</b>		
<b>Spring</b>		
CHEM 740	Chemical Biology	3
CHEM 798	Senior Seminar	1
CHEM 799	Senior Thesis ((second semester of a yearlong experience))	4

Elective Courses (2 courses at 4 credits each or 1 Elective at 4 credits if taking CHEM 740)	8
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>16</b>

## Student Learning Outcomes

- Reason with Chemistry's anchoring concepts: that matter consists of atoms that have internal structures that dictate their chemical and physical behavior; that atoms interact via electrostatic forces to form chemical bonds that chemical compounds have geometric structures that influence their chemical and physical behaviors; that intermolecular forces—electrostatic forces between molecules—dictate the physical behavior of matter; that matter changes, forming products that have new chemical and physical properties that energy is the key currency of chemical reactions in molecular scale systems as well as macroscopic systems; that chemical changes have a time scale over which they occur; that all chemical changes are, in principle, reversible, and chemical processes often reach a state of dynamic equilibrium; that Chemistry is generally advanced via experimental observations; and that Chemistry constructs meaning interchangeably at the particulate and macroscopic levels.
- Use Chemistry's cross-cutting concepts to interrogate and explain phenomena: chemical identity (how do we identify chemical substances?); structure-property relationships (how do we predict the properties of materials?); chemical causality (why do chemical processes occur?); chemical mechanism (how do chemical processes occur?); chemical control (how can we control chemical processes?); benefits-costs-risks (how do we evaluate the impacts of chemically transforming matter?).
- Demonstrate the following general scientific practices when displaying knowledge of chemical ideas and concepts: asking questions; developing and using models; constructing explanations; planning and carrying out investigations; engaging in argument from evidence; analyzing and interpreting data; using mathematics and computational thinking; obtaining, evaluating, and communicating information OR demonstrate the following Chemistry core practices when displaying knowledge of chemical ideas and concepts (a) analysis: development and application of strategies for detecting, identifying, separating, and quantifying chemical substances (b)synthesis: the design of new substances and synthetic routes (c)transformation: controlling chemical processes for non-synthetic purposes.

## Chemistry Minor

<https://ceps.unh.edu/chemistry/chemistry-minor>

## Description

If you are interested in obtaining a Chemistry Minor, please contact Cindi Rohwer, Academic Department Coordinator, Chemistry Department Office at (603) 862-1795 or [Cindi.Rohwer@unh.edu](mailto:Cindi.Rohwer@unh.edu). She will connect you to our Intent to Minor form and the Chemistry Department Undergraduate Coordinator so you can discuss your plans to minor in Chemistry.



## Requirements

1. Complete a total of 20 credit hours in Chemistry (CHEM) courses.
2. A minimum of 12 credit hours at the 500 level or higher are required.
3. Chemistry courses for the minor cannot be completed on a pass/fail basis.
4. Grade of C- or better is required in all chemistry minor coursework.
5. A cumulative GPA of 2.00 is required for all chemistry minor coursework.
6. Biochemistry (BMCB) courses do not count toward a chemistry minor.
7. Transfer credits can only be applied to the minor with permission of the Chemistry Department Undergraduate Coordinator or Chair. Maximum of 8 transfer credit hours. Transfer courses must meet minimum grade requirements.
8. The following courses can NOT be applied to the Chemistry minor: CHEM 400, CHEM 408, CHEM 409, CHEM 411, CHEM 413, CHEM 501, CHEM 502, CHEM 503 and CHEM 798.

## Civil and Environmental Engineering (CEE)

<https://ceps.unh.edu/civil-environmental-engineering>

### Overview

Civil and Environmental Engineering involves the sustainable planning, design, and construction of public works for the benefit of society while minimizing environmental impact. Civil Engineering concerns the design of buildings, bridges, roads, dams, water transmission systems, water treatment systems, tunnels, and more. Environmental Engineering specializes in environmental cleanup, drinking water systems, wastewater treatment systems, and solid and hazardous waste disposal systems, environmental remediation, all with consideration of people, planet, and profits - known as the triple bottom line. Resulting infrastructure facilities must provide efficient service, be cost effective, and be compatible with the environment. Moreover, civil and environmental engineers work under a code of ethics in which their primary, overriding responsibility, is to uphold the public's trust by working to plan, design, build, and restore safe, sustainable, and environmentally responsible public works.

The Department of Civil and Environmental Engineering has two degree programs: one resulting in a Bachelor of Science in Civil Engineering (the BSCIVE) and another resulting in a Bachelor of Science in Environmental Engineering (the BSENVE). Both programs are accredited by ABET.

As civil engineering is such a broad field, it is traditionally divided into sub-disciplines. At the University of New Hampshire, multiple courses are offered in six: transportation, environmental engineering, geotechnical engineering, structural engineering, sustainable engineering, and water resources engineering.

Environmental engineering focuses on environmental pollution and public health protection; water, wastewater, reuse and stormwater technology; solid and hazardous waste engineering and remediation; engineering

sustainability; environmental microbiology and chemistry; contaminant transport and fate, hydraulics, and hydrology.

Students may readily transfer between the BSCIVE and BSENVE programs within the first three semesters. Transferring between the two programs is also possible later on in the programs, but additional courses may result.

Both engineering degrees provide a firm base in mathematics and engineering, and all majors are expected to develop excellent communication and computer skills. Graduates are prepared to enter the profession and to pursue advanced study. Because of the broad technical background attained, some graduates also successfully pursue further education in business, architecture, education, and law.

### Mission

The mission of the Department of Civil and Environmental Engineering at the University of New Hampshire is fourfold:

- To pursue and disseminate knowledge through teaching, scholarship, outreach and public service.
- To provide excellent undergraduate and graduate education.
- To advance the state-of-the-art in science and engineering by conducting research.
- To enhance the quality of life for people in New Hampshire, New England, and beyond.

### BSCIVE Program Overview

Civil engineers work as private consultants, for large contracting firms, and for government agencies in a wide variety of indoor and outdoor settings around the world. There is a strong and constant market for civil engineers due to the demands placed on the profession to design, construct, maintain, and repair the infrastructure.

### Educational Objectives

In accordance with its University, College, and Department missions, the faculty of the Department of Civil & Environmental Engineering has established clear educational objectives for our BSCIVE graduates, five years after obtaining the degree:

1. Professional employment, primarily in the civil and environmental engineering disciplines.
2. Commitment to continuous learning through graduate and post-graduate education, coursework, and research.
3. Being resourceful in finding solutions, and retaining ownership and accountability for their work.
4. Positions of leadership, directing the work of others.
5. Professional licensure or certification in civil and environmental engineering disciplines and other professions.
6. Positions and active participation in community, public, and professional service.

### Student Outcomes

To enable our graduates to achieve our educational objectives, the BSCIVE program is designed to provide the following student outcomes at the time of graduation:

1. To have obtained a working knowledge<sup>1</sup> in the civil engineering areas of environmental, geotechnical, materials, structural, sustainability, and water resources.

2. To be able to locate, assess, and compile data, and to conduct experiments to gather data, and analyze and interpret data using engineering judgement to draw conclusions.
3. To have an ability to acquire and apply new knowledge, techniques, skills, and software necessary for engineering practice.
4. To be able to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, use project management skills to establish goals, plan tasks, and meet objectives.
5. To be able to effectively communicate and support ideas in documents and presentations to a range of audiences.
6. To be able to apply principles of mathematics, science, and engineering to identify, formulate, and solve complex engineering problems.
7. To have been prepared for the Fundamentals of Engineering examination and understand the importance of professional licensure.
8. To have an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, social, economic, public policy, and environmental issues.
9. To recognize the roles and responsibilities of public institutions, private organization, and businesses in project development, management, and regulatory compliance.
10. To be able to apply engineering design to produce solutions<sup>2</sup> that meet specified needs with consideration of public health, safety, and welfare as well as global, cultural, social, environmental, and economic factors.

<sup>1</sup> A “working knowledge” is defined as understanding and being able to apply a sub-discipline in analysis and design as demonstrated by successful completion of two or more courses with a substantial focus in at least four sub-disciplines.

<sup>2</sup> “Solutions” consists of systems, components, or processes that may consider risk, uncertainty, sustainability, life-cycle principles, and environmental impacts.

## BSENV Program Overview

Environmental engineers work as private consultants, in industry and for government agencies in a wide variety of indoor and outdoor settings around the world. There is a strong and constant market for environmental engineers due to the demands placed on the profession to construct, maintain, and repair the drinking water, wastewater, water reuse and stormwater, and solid and hazardous waste management infrastructure. The curriculum prepares students to plan, using triple bottom line considerations, and design systems to minimize the impact of human activity on the environment and protect human health.

## Educational Objectives

In accordance with its University, College, and Department missions, the faculty of the Department of Civil & Environmental Engineering has established clear educational objectives for our BSENV graduates, five years after obtaining the degree:

1. Professional employment, primarily in the environmental engineering disciplines.
2. Commitment to continuous learning through graduate and post-graduate education, coursework, and research.

3. Being resourceful in finding solutions and retaining ownership and accountability for their work.

4. Positions of leadership, directing the work of others.

5. Professional licensure or certification in environmental engineering discipline and other professions.

6. Positions and active participation in community, public, and professional service.

## Student Outcomes

To enable our graduates to achieve our educational objectives, the BSENV program is designed to provide the following student outcomes at the time of graduation:

1. To have obtained a working knowledge<sup>1</sup> in the environmental engineering areas of water and wastewater treatment, environmental health and safety, solid and hazardous waste engineering, sustainability, and water resources.
2. To be able to locate, assess, and compile data, and to conduct experiments to gather data, and analyze and interpret data using engineering judgement to draw conclusions.
3. To have an ability to acquire and apply new knowledge, techniques, skills, and software necessary for engineering practice.
4. To be able to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, use project management skills to establish goals, plan tasks, and meet objectives.
5. To be able to effectively communicate and support ideas in documents and presentations to a range of audiences.
6. To be able to apply principles of mathematics, science, and engineering to identify, formulate, and solve complex engineering problems.
7. To have been prepared for the Fundamentals of Engineering examination and understand the importance of professional licensure.
8. To have an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, social, economic, public policy, and environmental issues.
9. To recognize the roles and responsibilities of public institutions, private organization, and businesses in project development, management, and regulatory compliance.
10. To be able to apply engineering design to produce solutions<sup>2</sup> that meet specified needs with consideration of public health, safety, and welfare as well as global, cultural, social, environmental, and economic factors.

<sup>1</sup> A “working knowledge” is defined as understanding and being able to apply a sub-discipline in analysis and design as demonstrated by successful completion of two or more courses with a substantial focus in at least four sub-disciplines.

<sup>2</sup> “Solutions” consists of systems, components, or processes that may consider risk, uncertainty, sustainability, life-cycle principles, and environmental impacts.

## Programs

- [Civil Engineering Major \(B.S\)](#) (p. 171)
- [Environmental Engineering Major \(B.S.\)](#) (p. 174)
- [Environmental Engineering Minor](#) (p. 176)

## Faculty

<https://ceps.unh.edu/cee/faculty-staff-directory>

## Civil Engineering Major (B.S)

<https://ceps.unh.edu/civil-environmental-engineering/program/bs/civil-engineering-major>

## Description

Matriculating students should have strong aptitudes in mathematics and science along with imagination, spatial and graphic abilities, communication skills, and creativity. Students then follow a four-year program that conforms to the guidelines of, and is accredited by the Engineering Accreditation Commission of ABET, the global accreditor of college and university programs in applied and natural science, computing, engineering and engineering technology. ABET accreditation assures that programs meet standards to produce graduates ready to enter critical technical fields that are leading the way in innovation and emerging technologies, and anticipating the welfare and safety needs of the public.

The first two years of the program provide the necessary technical knowledge in mathematics, chemistry, and physics, while introducing and developing problem-solving techniques in eight courses tailored to civil engineering students. The junior year provides courses in each of the civil engineering sub-disciplines, providing students with skills in each and allowing students to determine which they wish to pursue further. The senior year is flexible, allowing students to choose where to focus attention by selecting from more than forty elective courses in civil and environmental engineering.

The required curriculum includes seven writing-intensive courses, thereby not only satisfying, but exceeding, the University's writing requirement. (See University Academic Requirements.)

Additional opportunities exist for study abroad, cognates, minors, and dual majors, a three-year accelerated track, and early admission into two masters of science degree programs.

## Requirements

More than half of the major's total credits and nearly all of the senior-level courses are elected by the student. Of these, there are Discovery Program electives required by the University and other electives required by the department in order to satisfy departmental objectives and accreditation requirements.

The Discovery Program is described in University Academic Requirements. Courses required by the BSCIVE program fulfill Discovery

requirements in Inquiry and Environment, Technology, and Society; Writing Skills; Quantitative Reasoning; Physical Sciences and Discovery Lab; and Capstone.

To graduate with a bachelor of science in civil engineering, a student must achieve the following: 129 or more credits, credit for the civil engineering program's major and elective courses, satisfaction of the University's Discovery Program requirements, satisfaction of the University's writing-intensive course requirements, a cumulative grade-point average of 2.0 or better for all courses, and a cumulative grade-point average of 2.0 or better in all CEE courses.

Code	Title	Credits
<b>Major Requirements</b>		
CEE 400	Introduction to Civil Engineering	4
CEE 402	2D Computer Aided Design	3
CEE 403	GIS for Civil and Environmental Engineering	3
or CEE 404	Surveying and Mapping	
or NR 658	Introduction to Geographic Information Systems	
or FORT 581	Applied Geospatial Techniques	
or ANTH 674	Archaeological Survey and Mapping in Belize	
CEE 500	Statics for Civil Engineers	3
CEE 501	Strength of Materials	3
CEE 502	Project Engineering	3
CEE 520	Environmental Pollution and Protection: A Global Context	4
CEE 620	Fundamental Aspects of Environmental Engineering	4
CEE 635	Engineering Materials	4
CEE 650	Fluid Mechanics	4
CEE 665	Soil Mechanics	4
CEE 680	Classical Structural Analysis	3
CEE 797	Introduction to Project Planning and Design	2
CHEM 405	Chemical Principles for Engineers	4
or CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	
CEE 798	Project Planning and Design	2
ENGL 502	Professional and Technical Writing	4
or ENGL 602	Advanced Professional and Technical Writing	
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 539	Introduction to Statistical Analysis	4
or MATH 644	Statistics for Engineers and Scientists	
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
<b>Electives</b>		
Choose seven courses from the "700-level CEE Electives Course List" below with the following restrictions:		
1. Courses must be taken in four of six different areas (sustainability, environmental, transportation, water resources, geotechnical, structural).		
2. At least three design courses; including one Project-based Design Elective PDE course.		
3. One of the seven 700-level courses is a senior technical elective.		
Design/Area Elective (Project-based Design Elective PDE)		3-4
Design/Area Elective		3-4
Design/Area Elective		3-4
Area Elective		3-4
CEE Elective		3-4
CEE Elective		3-4
Senior Technical Elective (choose a course from the "700-level CEE Electives Course List" below, CEPS 700-level course, GEOG 757, INCO 795, NR 757, TECH 750, or TECH 780).		3-4
<b>700-Level CEE Electives Course List</b>		
Project-based Design Elective (PDE) courses:		
CEE 733	Public Infrastructure Asset Management	
CEE #734	Bioenvironmental Engineering Design	
CEE 749 & CEE 748	Pavement Design and Analysis and Pavement Design Project	
CEE 755	Design of Pressurized Water Transmission Systems	
CEE 758	Stormwater Management Designs	
CEE 759	Stream Restoration	
CEE 778	Foundation Design I	

CEE 791	Reinforced Concrete Design
CEE 793	Structural Design in Steel
Additional Design courses:	
CEE 719	Green Building Design
CEE 730	Public Health Engineering for Rural and Developing Communities
CEE 731	Advanced Water Treatment Processes
CEE 732	Solid and Hazardous Waste Design
CEE 779	Foundation Design II
CEE 789	Timber Design
CEE 790	Structural Design in Masonry
CEE 792	Pre-stressed Concrete
CEE 794	Bridge Design
Structural Engineering (STR) area courses:	
CEE 735	Properties and Production of Concrete
CEE 780	Matrix Structural Analysis and Modeling
CEE 781	Dynamics of Structures
CEE 789	Timber Design
CEE 790	Structural Design in Masonry
CEE 791	Reinforced Concrete Design
CEE 792	Pre-stressed Concrete
CEE 793	Structural Design in Steel
CEE 794	Bridge Design
Geotechnical Engineering (GEO) area courses:	
CEE 765	Engineering Behavior of Soils
CEE 766	Introduction to Geotechnical Earthquake Engineering
CEE 767	Geological Engineering
CEE 768	Geo-Environmental Engineering
CEE 778	Foundation Design I
CEE 779	Foundation Design II
Transportation (TRA) area courses:	
CEE 704	Transportation Eng & Planning
CEE 733	Public Infrastructure Asset Management (PDE)
CEE 735	Properties and Production of Concrete
CEE 736	Asphalt Mixtures and Construction
CEE 737	Pavement Rehabilitation, Maintenance, and Management
CEE 749	Pavement Design and Analysis
Water Resources WAT area courses:	
CEE #750	Ecohydrology
CEE 751	Open Channel Flow
CEE 754	Engineering Hydrology
CEE 755	Design of Pressurized Water Transmission Systems
CEE #757	Coastal Engineering and Processes
CEE 758	Stormwater Management Designs
CEE 759	Stream Restoration
Environmental Engineering (ENV) area courses:	
CEE 720	Solid and Hazardous Waste Engineering
CEE 721	Environmental Sampling and Analysis
CEE 722	Introduction to Marine Pollution and Control
CEE 723	Environmental Water Chemistry
CEE 724	Environmental Engineering Microbiology
CEE 730	Public Health Engineering for Rural and Developing Communities
CEE 731	Advanced Water Treatment Processes
CEE 732	Solid and Hazardous Waste Design
CEE 733	Public Infrastructure Asset Management
CEE #734	Bioenvironmental Engineering Design (PDE)
CEE 768	Geo-Environmental Engineering
Sustainability (SUS) area courses:	
CEE 705	Introduction to Sustainable Engineering
CEE 706	Environmental Life Cycle Assessment
CEE 719	Green Building Design
Additional CEE Electives:	
CEE 700	Building Information Modeling
CEE #702	Issues in Engineering Practice and Management
CEE 703	Site Design and Project Development

## Program Policies and Requirements

To transfer into the BSCIVE major, a student must satisfy the following:

1. Be a CEPS major or have at least 12 credits of graded work at UNH along with Calculus I, and either chemistry or calculus-based physics.
2. Have an overall UNH grade-point average of 2.33 or greater.
3. Have an overall grade-point average of 2.33 or greater in all CEE courses taken to date;
4. Have a grade-point average of 2.33 or greater in courses taken to date at UNH of MATH 425, PHYS 407, CHEM 403 or CHEM 405, CEE 500 or ME 525 , and CEE 501 or ME 526 .
5. Have a grade-point average of 2.33 or greater in courses taken to date of CEE 500, CEE 501, ME 525, ME 526

At the time of transferring into the BSCIVE program, only CEE 600-level and CEE 700-level classes with a grade of C- or better may be transferred in.

BSCIVE majors wishing to participate in domestic or international exchange programs must achieve a cumulative grade-point average of 2.50 or better in all CEE courses taken to date at the time of application to the exchange program.

To begin taking the required CEE 600-level courses in the junior year, students must meet the following requirements:

1. MATH 425, PHYS 407, CHEM 403 or CHEM 405, CEE 500 or ME 525 , and CEE 501 or ME 526 must have been completed with passing grades.
2. The student must have a grade-point average of 2.00 or greater in all CEE courses.
3. The student must have a grade-point average of 2.00 or greater in MATH 425, PHYS 407, CHEM 403 or CHEM 405, CEE 500 or ME 525 , and CEE 501 or ME 526 .
4. The student must have a grade-point average of 2.00 or greater in CEE 500 or ME 525 and CEE 501 or ME 526 .

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
CEE 400	Introduction to Civil Engineering	4
CEE 520	Environmental Pollution and Protection: A Global Context	4
MATH 418	Analysis and Applications of Functions (if necessary, 0-4 credits)	
Elective AutoCAD <sup>3</sup>		3
Elective Discovery Program requirement <sup>1</sup>		4
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
MATH 425	Calculus I	4
PHYS 407	General Physics I	4
Elective Spatial Metrics <sup>3</sup>		4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>16</b>

**Second Year****Fall**

CEE 500	Statics for Civil Engineers	3
MATH 426	Calculus II	4
PHYS 408	General Physics II	4
Elective Technical Writing <sup>3</sup>		4
Elective Discovery Program requirement <sup>1</sup>		4
<b>Credits</b>		<b>19</b>

**Spring**

CEE 501	Strength of Materials	3
CEE 502	Project Engineering	3
CHEM 405	Chemical Principles for Engineers	4
MATH 527	Differential Equations with Linear Algebra	4
Elective Discovery Program requirement		4
<b>Credits</b>		<b>18</b>

**Third Year****Fall**

CEE 635	Engineering Materials	4
CEE 650	Fluid Mechanics	4
CEE 680	Classical Structural Analysis	3
Elective Discovery Program requirement <sup>1</sup>		4
<b>Credits</b>		<b>15</b>

**Spring**

CEE 620	Fundamental Aspects of Environmental Engineering	4
CEE 665	Soil Mechanics	4
Elective Statistics <sup>3</sup>		4
Elective Discovery Program requirement <sup>1</sup>		4
<b>Credits</b>		<b>16</b>

**Fourth Year****Fall**

CEE 797	Introduction to Project Planning and Design	2
Elective Project-Based Design Elective <sup>3</sup>		4
Elective Area Elective 2 <sup>3</sup>		3
Elective Civil Engineering <sup>3</sup>		3
Elective Discovery Program requirement <sup>1</sup>		4
<b>Credits</b>		<b>16</b>

**Spring**

CEE 798	Project Planning and Design	2
Elective Area Elective 3 <sup>3</sup>		3
Elective Area Elective 4 <sup>3</sup>		3
Elective Civil Engineering <sup>3</sup>		3
Elective Senior Technical Elective <sup>3</sup>		3
<b>Credits</b>		<b>14</b>
<b>Total Credits</b>		<b>129</b>

<sup>1</sup> A course satisfying one each of the Discovery Program categories of Biological Science, Humanities, Fine and Performing Arts, Historical Perspectives, Social Science and World Cultures, preferably taken in this order. The Discovery Social Science elective must be selected from CEP 415, CSL 401, ECON 401, ECON 402, ECON 444, EREC 411, GEOG 582, GEOG 584, or POLT 402.

<sup>2</sup> Satisfies capstone requirement for Discovery.

<sup>3</sup> Approved list available in the CEE office.

## Student Learning Outcomes

### BSCIVE Program Student Outcomes[3]

(What students are expected to know and be able to do by the time of graduation.)

- To have obtained a working knowledge[4] in the civil engineering areas of environmental, geotechnical, structural, sustainability, transportation, and water resources.
- To be able to locate, assess, and compile data, and to conduct experiments to gather data, and analyze and interpret data using engineering judgement to draw conclusions.
- To have an ability to acquire and apply new knowledge, techniques, skills, and software necessary for engineering practice.
- To be able to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, use project management skills to establish goals, plan tasks, and meet objectives.
- To be able to effectively communicate and support ideas in documents and presentations to a range of audiences.
- To be able to apply principles of mathematics, science, and engineering to identify, formulate, and solve complex engineering problems.
- To have been prepared for the Fundamentals of Engineering examination and understand the importance of professional licensure.
- To have an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, social, economic, public policy, and environmental issues.
- To recognize the roles and responsibilities of public institutions, private organization, and businesses in project development, management, and regulatory compliance.
- To be able to apply engineering design to produce solutions [5] that meet specified needs with consideration of public health, safety, and welfare as well as global, cultural, social, environmental, and economic factors.

[1] Approved by the Faculty on 29 Oct 2013, Feb 2015, 12 Dec 2016, 2 Oct 2018, May 2019; 3 Sept 2019.

[2] Approved by the Faculty on 10 Oct 2013, 24 Feb 2015, 22 May 2015, 12 Dec 2016, 2 Oct 2018, May 2019, 3 Sept 2019.

[3] Approved by the Faculty on 17 Oct 2013, 24 Feb 2015, 22 May 2015, 12 Dec 2016, 27 Mar 2017, May 2019. Updated 3 Sept 2019.

[4] A "working knowledge" is defined as understanding and being able to apply a sub-discipline in analysis and design as demonstrated by successful completion of two or more courses with a substantial focus in at least four sub-disciplines.

[5] "Solutions" consists of systems, components, or processes that may consider risk, uncertainty, sustainability, life-cycle principles, and environmental impacts.



# Environmental Engineering Major (B.S.)

<https://ceps.unh.edu/civil-environmental-engineering/program/bs/environmental-engineering-major>

## Description

The Environmental Engineering program is accredited by the:

Engineering Accreditation Commission of ABET  
111 Market Place  
Suite 1050  
Baltimore, MD 21202-4012,  
(410) 347-7700  
<http://www.abet.org>

Environmental engineers graduating with a B.S. EnvE degree will plan, design, and construct public and private facilities to minimize the impact of human activity on the environment and to protect human health. For example, environmental engineers design and build drinking water treatment systems, municipal and industrial wastewater treatment plants, solid waste management facilities, contaminated ground water remediation systems, and hazardous waste remediation facilities. These facilities must meet regulatory requirements, be cost effective to build and maintain, be safe to operate, and have minimal environmental impact. EnvE students can also focus on sustainable engineering with a required course (CEE 705 Introduction to Sustainable Engineering) in junior year and two or three senior year electives, including design electives.

In CEE 420 Environmental Engineering Lectures I, students are introduced to the full spectrum of environmental engineering projects that they will subsequently explore in design teams during their degree program. In (CEE 520 Environmental Pollution and Protection: A Global Context), students tour field sites and through junior and senior year classes and student organizations (ASCE, EWRI, EWB), they interact with engineers who talk about engineering consulting and design practices applied to local projects. As part of these projects, students:

1. analyze treatment alternatives;
2. recommend a system that meets regulatory operational needs, and is sustainable; and
3. prepare an implementation schedule and project budget.

Design projects are performed in CEE 731 Advanced Water Treatment Processes and a minimum of two design electives. CEE 797 Introduction to Project Planning and Design/ and CEE 798 Project Planning and Design/ serve as a capstone design experience where students work on a multi-disciplinary environmental engineering project and apply skills learned in other courses while working with real-world problems/ clients. EnvE students do not have to take a course in the Discovery Biological Science category since they satisfy this category with CEE 724 Environmental Engineering Microbiology.

At the end of the sophomore year, students are required to have a minimum overall grade-point average of 2.00 and a minimum grade-point average of 2.00 in the following to be permitted to enroll in junior-level courses:

Code	Title	Credits
CEE 420	Environmental Engineering Lectures I	3
MATH 425	Calculus I	4
CHEM 405	Chemical Principles for Engineers	4
PHYS 407	General Physics I	4
MATH 426	Calculus II	4
CEE 500	Statics for Civil Engineers	3
CEE 520	Environmental Pollution and Protection: A Global Context	4

To qualify for graduation, an EnvE major must: have satisfied the previously specified course requirements, have satisfied the University's Academic Requirements, have a minimum cumulative grade-point average of 2.00, and have a minimum grade-point average of 2.00 in engineering courses.

## Requirements

These are the required major courses. For a full listing of the requirements within the four years of study please refer to the degree plan tab.

Code	Title	Credits
CEE 402	2D Computer Aided Design	3
CEE 420	Environmental Engineering Lectures I	3
CEE 500	Statics for Civil Engineers	3
CEE 502	Project Engineering	3
CEE 520	Environmental Pollution and Protection: A Global Context	4
CEE 620	Fundamental Aspects of Environmental Engineering	4
CEE 650	Fluid Mechanics	4
CEE 705	Introduction to Sustainable Engineering	3
CEE 720	Solid and Hazardous Waste Engineering	3
CEE 721	Environmental Sampling and Analysis	4
CEE 723	Environmental Water Chemistry	4
CEE 724	Environmental Engineering Microbiology	4
CEE 731	Advanced Water Treatment Processes	4
CEE 797	Introduction to Project Planning and Design	2
CEE 798	Project Planning and Design	2
CHEM 405	Chemical Principles for Engineers	4
or CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	
ENGL 502	Professional and Technical Writing	4
ESCI 654	Fate and Transport in the Environment	4
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 644	Statistics for Engineers and Scientists	4
PHYS 407	General Physics I	4

### CEE Electives (lists are subject to change, check with advisor)

1. For Design and Non-Design, four courses are required, two of which must be Design, and total credits at least 12.
2. One course is required from each of the other sections.
3. Hydraulics, hydrology and public health electives cannot be used to cover more than one category.

### Design Electives:

Code	Title	Credits
CEE 719	Green Building Design	3
CEE 730	Public Health Engineering for Rural and Developing Communities	3
CEE 732	Solid and Hazardous Waste Design	4
CEE 733	Public Infrastructure Asset Management	4
CEE #734	Bioenvironmental Engineering Design	4
CEE 755	Design of Pressurized Water Transmission Systems	4

CEE 758	Stormwater Management Designs	3
CEE 759	Stream Restoration	4

## Non-Design Electives:

Code	Title	Credits
CEE 706	Environmental Life Cycle Assessment	3
CEE 722	Introduction to Marine Pollution and Control	4
CEE #750	Ecohydrology	3
CEE 751	Open Channel Flow	3
CEE 754	Engineering Hydrology	3
CEE #757	Coastal Engineering and Processes	3
CEE 768	Geo-Environmental Engineering	3
SAFS 632	Urban Agriculture	4
CHE 709	Fundamentals of Air Pollution and Its Control	4

## CEE Lab Electives: One course required

Code	Title	Credits
CEE 665	Soil Mechanics	4
CEE 721	Environmental Sampling and Analysis	4

## Geospatial Electives: One course required

Code	Title	Credits
CEE 403	GIS for Civil and Environmental Engineering	3
FORT 581	Applied Geospatial Techniques	4
NR 658	Introduction to Geographic Information Systems	4
NR 757	Remote Sensing of the Environment	4

## Hydraulics Electives: One course required

Code	Title	Credits
CEE 755	Design of Pressurized Water Transmission Systems	4
CEE 758	Stormwater Management Designs	3
CEE 759	Stream Restoration	4
CEE 751	Open Channel Flow	3
CEE 754	Engineering Hydrology	3
CEE #757	Coastal Engineering and Processes	3

## Hydrology Electives: One course required

Code	Title	Credits
CEE #750	Ecohydrology	3
CEE 754	Engineering Hydrology	3
ESCI 705	Principles of Hydrology	4
ESCI 710	Groundwater Hydrology	4

## Public Health Electives: One course required

Code	Title	Credits
HMP 403	Introduction to Public Health	4
HMP #444A	Global Public Health Issues	4
HMP 501	Epidemiology and Community Medicine	4
HMP 715	Environmental Health	4
CEE 730	Public Health Engineering for Rural and Developing Communities	3

## Degree Plan

The following schedule is a sample of a planned program for environmental engineering students completing the major.

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
CEE 420	Environmental Engineering Lectures I	3
ENGL 401	First-Year Writing	4

MATH 425	Calculus I <sup>1</sup>	4
CHEM 405	Chemical Principles for Engineers	4
Discovery Electives <sup>2</sup>		4
<b>Credits</b>		<b>19</b>

**Spring**

ENGL 502	Professional and Technical Writing	4
MATH 426	Calculus II <sup>1</sup>	4
PHYS 407	General Physics I	4
Discovery Electives <sup>2</sup>		4
<b>Credits</b>		<b>16</b>

**Second Year****Fall**

CEE 402	2D Computer Aided Design	3
CEE 500	Statics for Civil Engineers	3
CEE 520	Environmental Pollution and Protection: A Global Context	4
MATH 527	Differential Equations with Linear Algebra	4
Discovery Elective		4
<b>Credits</b>		<b>18</b>

**Spring**

MATH 644	Statistics for Engineers and Scientists	4
CEE 502	Project Engineering	3
Discovery Elective		4
Public Health Elective		4
Discovery or Geospatial Course		4
<b>Credits</b>		<b>19</b>

**Third Year****Fall**

CEE 650	Fluid Mechanics	4
CEE 705	Introduction to Sustainable Engineering	3
CEE 720	Solid and Hazardous Waste Engineering	3
ESCI 654	Fate and Transport in the Environment	4
<b>Credits</b>		<b>14</b>

**Spring**

CEE 620	Fundamental Aspects of Environmental Engineering	4
CEE 724	Environmental Engineering Microbiology	4
Hydrology Elective <sup>4</sup>		3-4
Discovery		4
<b>Credits</b>		<b>15-16</b>

**Fourth Year****Fall**

CEE 721	Environmental Sampling and Analysis	4
CEE 723	Environmental Water Chemistry	4
CEE 797	Introduction to Project Planning and Design	2
CEE Design Electives (2)		6-8
<b>Credits</b>		<b>16-18</b>

**Spring**

CEE 731	Advanced Water Treatment Processes	4
CEE 798	Project Planning and Design	2
CEE Electives (2)		6-8

Hydraulics Elective	3-4
<b>Credits</b>	<b>15-18</b>
<b>Total Credits</b>	<b>132-138</b>

<sup>1</sup> Students who are required to take MATH 418 Analysis and Applications of Functions because they did not pass the placement examination as determined by the Mathematics Department prior to the fall semester, will enroll in MATH 425 Calculus I during the spring semester. Subsequent MATH courses (MATH 426 Calculus II, MATH 527 Differential Equations with Linear Algebra, MATH 644 Statistics for Engineers and Scientists) will be taken one semester later than shown here.

<sup>2</sup> See Discovery Program requirements. The Discovery requirements for Writing, Quantitative Reasoning, and Physical Science are fulfilled by ENGL 401 First-Year Writing, MATH 425 Calculus I, and PHYS 407 General Physics I, respectively. CEE 520 Environmental Pollution and Protection: A Global Context fulfills the Environmental, Technology, and Society requirement. CEE 797 Introduction to Project Planning and Design and CEE 798 Project Planning and Design fulfill the Senior Capstone requirement. Environmental Engineering Microbiology fulfills the Biological Science requirement. Courses in the EnvE curriculum designated Discovery Electives can be selected from the University's approved Discovery Program courses in Fine and Performing Arts, Humanities, Historical Perspectives, World Cultures, and Social Science. One of these electives must have an Inquiry attribute.

<sup>3</sup> Approved lists of technical, hydrology, hydraulics, and design and non-design electives are available from the EnvE administrator, Paula Mouser. Students must take a minimum of four 700-level CEE electives totaling at least 12 credits. A minimum of two CEE elective courses must be from the design category.

The EnvE program requires a minimum of 132 total credits for graduation.

## Student Learning Outcomes

- To have obtained a working knowledge in the environmental engineering areas of water and wastewater treatment, environmental health and safety, solid and hazardous waste engineering, sustainability, and water resources.
- To be able to locate, assess, and compile data, and to conduct experiments to gather data, and analyze and interpret data using engineering judgement to draw conclusions.
- To have an ability to acquire and apply new knowledge, techniques, skills, and software necessary for engineering practice.
- To be able to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, use project management skills to establish goals, plan tasks, and meet objectives.
- To be able to effectively communicate and support ideas in documents and presentations to a range of audiences.
- To be able to apply principles of mathematics, science, and engineering to identify, formulate, and solve complex engineering problems.
- To have been prepared for the Fundamentals of Engineering examination and understand the importance of professional licensure.

- To have an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, social, economic, public policy, and environmental issues.
- To recognize the roles and responsibilities of public institutions, private organization, and businesses in project development, management, and regulatory compliance.
- To be able to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare as well as global, cultural, social, environmental, and economic factors.

## Environmental Engineering Minor

<https://ceps.unh.edu/civil-environmental-engineering/program/minor/environmental-engineering>

### Description

The environmental engineering minor is intended primarily for students in engineering and physical sciences who are not in the chemical, civil, or environmental engineering degree programs. Students contemplating such a minor should plan on a strong background in the sciences and mathematics (including differential equations).

The minor provides a comprehensive introduction to major areas of interest in environmental protection through the three required courses. Further breadth in environmental engineering or depth in specific areas can be attained through the choice of appropriate elective courses.

### Requirements

The minor requires a minimum of five courses, as follows:

Code	Title	Credits
CEE 620	Fundamental Aspects of Environmental Engineering	4
CEE 705	Introduction to Sustainable Engineering	3
CEE 731	Advanced Water Treatment Processes	4
or CEE 721	Environmental Sampling and Analysis	
A minimum of two elective ENE courses.		

Choice of elective courses should be made in consultation with the minor area advisor, Nancy Kinner. Students normally start this program in the junior year and should declare their intention to enter the program as early as possible during the sophomore year. During the final semester, students must apply to the dean to have the minor appear on the transcript.

## Computer Science (CS)

Undergraduate students may choose from one of seven degree options: the B.S. in computer science, which is intended for students interested in the design and implementation of software systems; the B.A. in Computer Science- Algorithms Option, which focuses on fundamental concepts in the areas of algorithms, artificial intelligence and machine learning; the B.A. in Computer Science- Cybersecurity Option, which is designed for students who are interested in computer and network security; the B.A. in Computer Science- systems option, which focuses on fundamental concepts in the areas of computing systems and data communication; the B.S. in Information Technology, which focuses on the application of existing computing technologies to meet the information needs of organizations and individual computer users; or the either

of the two B.S. degrees in Analytics and Data Science: the analytics option, which emphasizes the application of data science in business and industry, or the data science option, which focuses on the theoretical and computational underpinnings of modern data science.

<https://ceps.unh.edu/computer-science/>

## Programs

- [Analytics and Data Science Major: Analytics Option \(B.S.\)](#) (p. 177)
- [Analytics and Data Science Major: Data Science Option \(B.S.\)](#) (p. 178)
- [Analytics Minor](#) (p. 179)
- [Computer Programming Cognate](#) (p. 179)
- [Computer Science Major \(B.S.\)](#) (p. 180)
- [Computer Science Major: Algorithms Option \(B.A.\)](#) (p. 182)
- [Computer Science Major: Cybersecurity Option \(B.A.\)](#) (p. 183)
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- [Computer Science Minor](#) (p. 184)
- [Data Science Minor](#) (p. 185)
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- [Information Technology Minor](#) (p. 187)

## Faculty

<https://ceps.unh.edu/directory/all>

## Analytics and Data Science Major: Analytics Option (B.S.)

<https://ceps.unh.edu/computer-science/program/bs/analytics-data-science-major-analytics-option>

## Description

The option in Analytics is intended for students interested in either heading into industry immediately upon graduation, or pursuing graduate work in a professionally oriented program such as the Master of Science in Analytics at UNH. The option in Analytics places its emphasis on applications of data science in business and industry.

## Program Objectives

This program has been designed to prepare students for professional careers working with data, with an emphasis on the extraction of meaning from data. The program is not targeted to any one industry; rather, it provides a flexible, practical skillset that can be applied widely. This skillset includes elements of computer science, applied mathematics and statistics, communication skills, and business savvy. Graduates of the bachelor of science in analytics and data science program are expected to have:

- An understanding of the role of data in guiding decision-making in industry
- An understanding of how data is generated, stored, and accessed
- An understanding of data security

- An understanding of the ethical use of data
- An understanding of structured vs. unstructured data
- An understanding of the methods, statistical and other, used to derive actionable information from data
- Experience with multiple programming languages
- Experience with multiple statistical and data analysis software programs
- The ability to communicate detailed, technical information to a variety of audiences clearly and concisely, without the use of jargon
- The ability to work effectively, both as an individual or as a member of a team
- The ability to successfully lead a team
- The ability to adapt to a dynamic, rapidly changing work environment
- Completed projects and other work experiences on a larger scale than is typical in a bachelor's degree program.

During the course of the program, students will demonstrate their acquisition of these skills by successfully completing their program coursework, their internship experience, and their capstone project.

## Requirements

Successful completion of the program entails earning at least 128 credits, meeting the requirements of the University's Discovery program, completing all of the 24 required courses in the major as listed below, including the capstone course, the internship preparedness course, and a three-credit internship. In all major courses, the minimum allowable grade is a C-. The minimum overall GPA for graduation is 2.0. Transfer students may transfer up to a maximum of 32 credits to satisfy major requirements (not counting those courses used to satisfy Discovery requirements).

## Program Requirements

Code	Title	Credits
<b>Mathematics</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 644	Statistics for Engineers and Scientists	4
or COMP 570	Statistics in Computing and Engineering	
or MATH 539	Introduction to Statistical Analysis	
MATH 645	Linear Algebra for Applications	4
or MATH 545	Introduction to Linear Algebra	
MATH 739	Applied Regression Analysis	4
<b>Computer Science</b>		
CS 400	Introduction to Computing	2
CS 415	Introduction to Computer Science I	4
or CS 410P	Introduction to Scientific Programming/Python	
or COMP 424	Applied Computing 1: Foundations of Programming	
CS 416	Introduction to Computer Science II	4
or COMP 525	Data Structures Fundamentals	
CS 457	Introduction to Data Science and Analytics	4
or DATA 557	Introduction to Data Science and Analytics	
CS 515	Data Structures and Introduction to Algorithms	4
or COMP 625	Data Structures and Algorithms	
IT 505	Integrative Programming	4
or COMP 520	Database Design and Development	
IT 520	Computer Architecture	4
or CS 520	Computer Organization and System-Level Programming	
or COMP 430	Systems Fundamentals	
<b>Business</b>		
In Consultation with your advisor select:		
1 Course in Introduction to Business		4

1 Course in Organizational Behavior	4
1 Course in Organizational Leadership	4
<b>English</b>	
ENGL 502 Professional and Technical Writing	4
<b>Analytics Courses</b>	
DATA 674 Predictive and Prescriptive Analytics I & DATA 675 and Predictive and Prescriptive Analytics II	8
or DATA 674 Predictive and Prescriptive Analytics I & CS 750 and Machine Learning	
or MATH 738 Data Mining and Predictive Analytics & CS 750 and Machine Learning	
DATA 690 Internship Experience	4
DATA #757 Mining Massive Datasets <sup>1</sup>	4
or COMP 721 Big Data for Data Engineers	
<b>Capstone</b>	
DATA #790 Capstone Project	4
or CS 791 Senior Project I & CS 792 and Senior Project II	
or CS 799 Thesis	
Select three electives <sup>2</sup>	12
<b>Total Credits</b>	<b>94</b>

<sup>1</sup> Or another suitable 700-level data science or data engineering course chosen in consultation with the program coordinator.

<sup>2</sup> Must be 600 or 700-level and approved by advisor.

For additional information about the Analytics and Data Science: Analytics Option, contact [Matt Magnusson](mailto:matt.magnusson@unh.edu) ([matt.magnusson@unh.edu](mailto:matt.magnusson@unh.edu)), program co-director (Durham campus), or [Jeremiah Johnson](mailto:jeremiah.johnson@unh.edu) ([jeremiah.johnson@unh.edu](mailto:jeremiah.johnson@unh.edu)), program co-director (Manchester campus), at (603) 641-4127.

## Student Learning Outcomes

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply theory, techniques, and tools throughout the data analysis lifecycle and employ the resulting knowledge to satisfy stakeholders' needs.

## Analytics and Data Science Major: Data Science Option (B.S.)

<https://ceps.unh.edu/computer-science/program/bs/analytics-data-science-major-data-science-option>

### Description

The option in Data Science is intended for students interested in pursuing advanced degrees and conducting original research in data science. The option in data science places its emphasis on a rigorous introduction

to the theoretical mathematical and computational underpinnings of modern data science.

## Program Objectives

This program has been designed to prepare students for professional careers working with data, with an emphasis on the extraction of meaning from data. The program is not targeted to any one industry; rather, it provides a flexible, practical skillset that can be applied widely. This skillset includes elements of computer science, applied mathematics and statistics, communication skills, and business savvy. Graduates of the bachelor of science in analytics and data science program are expected to have:

- An understanding of the role of data in guiding decision-making in industry
- An understanding of how data is generated, stored, and accessed
- An understanding of data security
- An understanding of the ethical use of data
- An understanding of structured vs. unstructured data
- An understanding of the methods, statistical and other, used to derive actionable information from data
- Experience with multiple programming languages
- Experience with multiple statistical and data analysis software programs
- The ability to communicate detailed, technical information to a variety of audiences clearly and concisely, without the use of jargon
- The ability to work effectively, both as an individual or as a member of a team
- The ability to successfully lead a team
- The ability to adapt to a dynamic, rapidly changing work environment
- Completed projects and other work experiences on a larger scale than is typical in a bachelor's degree program.

During the course of the program, students will demonstrate their acquisition of these skills by successfully completing their program coursework, their internship experience, and their capstone project.

## Requirements

Successful completion of the program entails earning at least 128 credits, meeting the requirements of the University's Discovery program, completing all of the 20 required courses in the major as listed below, including the capstone course, the internship preparedness course, and a three-credit internship. In all major courses, the minimum allowable grade is a C-. The minimum overall GPA for graduation is 2.0. Transfer students may transfer up to a maximum of 32 credits to satisfy major requirements (not counting those courses used to satisfy Discovery requirements).

## Program Requirements

Code	Title	Credits
<b>Mathematics</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 528	Multidimensional Calculus	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
or MATH 644	Statistics for Engineers and Scientists	
or COMP 570	Statistics in Computing and Engineering	



MATH 645	Linear Algebra for Applications	4
MATH 755	Probability with Applications	4
MATH 756	Principles of Statistical Inference	4
<b>Computer Science</b>		
CS 400	Introduction to Computing	2
CS 415	Introduction to Computer Science I	4
or CS 410P	Introduction to Scientific Programming/Python	
or COMP 424	Applied Computing 1: Foundations of Programming	
CS 416	Introduction to Computer Science II	4
or COMP 525	Data Structures Fundamentals	
CS 420	Foundations of Programming for Digital Systems	4
CS 457	Introduction to Data Science and Analytics	4
or DATA 557	Introduction to Data Science and Analytics	
CS 515	Data Structures and Introduction to Algorithms	4
or COMP 625	Data Structures and Algorithms	
CS 659	Introduction to the Theory of Computation	4
CS 750	Machine Learning	8
& MATH 738	and Data Mining and Predictive Analytics	
or DATA 674	Predictive and Prescriptive Analytics I	
& DATA 675	and Predictive and Prescriptive Analytics II	
or DATA 674	Predictive and Prescriptive Analytics I	
& CS 750	and Machine Learning	
CS 758	Algorithms	4
CS 775	Database Systems	4
<b>English</b>		
ENGL 502	Professional and Technical Writing	4
<b>Analytics Course Capstone:</b>		
DATA #790	Capstone Project <sup>1</sup>	4
or CS 791	Senior Project I	
& CS 792	and Senior Project II	
or CS 799	Thesis	
<b>Select Approved Minor <sup>2</sup></b>		<b>20</b>
<b>Total Credits</b>		<b>102</b>

<sup>1</sup> Fulfills capstone requirement

<sup>2</sup> Minor must be approved by an academic advisor and must be in a discipline to which Analytics & Data Science can be applied (i.e. Economics or Applied Mathematics).

For additional information about the Analytics and Data Science: Analytics Option, contact [Matt Magnusson](mailto:Matt.Magnusson@unh.edu) ([mattthew.magnusson@unh.edu](mailto:mattthew.magnusson@unh.edu)), program co-director (Durham campus), or [Jeremiah Johnson](mailto:Jeremiah.Johnson@unh.edu) ([jeremiah.johnson@unh.edu](mailto:jeremiah.johnson@unh.edu)), program co-director (Manchester campus), at (603) 641-4127.

## Student Learning Outcomes

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply theory, techniques, and tools throughout the data analysis lifecycle and employ the resulting knowledge to satisfy stakeholders' needs.

## Analytics Minor

<https://ceps.unh.edu/computer-science/program/minor/analytics>

### Description

The objective of this minor is to provide a basic background in analytics for those interested in applications.

### Requirements

Students must complete five courses (20 credits) with a cumulative minimum grade point average of 2.0 and with no grade below a C-grade. Transfer course approval for the minor is limited to at most, two relevant courses successfully completed at another accredited institution, subject to syllabi review and approval. Some preparation in [MATH 425](#): Calculus I and programming ([CS 415](#): Introduction to Computer Science I, or [COMP 425](#): Introduction to Programming) is required.

Code	Title	Credits
<b>Requirements</b>		
CS 417	From Programs to Computer Science (Durham Students)	4
or COMP 525	Data Structures Fundamentals	
CS 457	Introduction to Data Science and Analytics	4
or DATA 557	Introduction to Data Science and Analytics	
MATH 545	Introduction to Linear Algebra	4
MATH 645	Linear Algebra for Applications	4
Select one of the following:		4
DATA 674	Predictive and Prescriptive Analytics I	
DATA 675	Predictive and Prescriptive Analytics II	
DATA 750	Neural Networks	
DATA #757	Mining Massive Datasets	
<b>Total Credits</b>		<b>20</b>

For more information, contact Matthew Magnusson, program coordinator and minor supervisor, at [Matthew.Magnusson@unh.edu](mailto:Matthew.Magnusson@unh.edu) ([mattthew.magnusson@unh.edu](mailto:mattthew.magnusson@unh.edu)).

## Computer Programming Cognate

<https://ceps.unh.edu/computer-science/program/cognate/computer-programming>

### Description

The Cognate in Programming is designed so that students who wish to go beyond an introductory computer programming course are able to meet the challenges that technology imposes.

This cognate is for UNH students who are interested in acquiring skills beyond just a basic programming language. This cognate would be an alternative to students who are not going to pursue a minor in Computer Science or Information Technology but still want to have the opportunity to partake a coherent, if short, curriculum that gives them a foundation to participate in programming activities as applicable to their technical areas.

The cognate consists of three courses in total, with one required course and two courses selected from four different sequence options. The Cognate will appear on each student's transcript.

## Requirements

### Required Course:

Code	Title	Credits
IT 403	Introduction to Internet Technologies	4

### Choose one of the following two-course sequences:

Code	Title	Credits
Sequence one:		
CS 415	Introduction to Computer Science I	4
CS 416	Introduction to Computer Science II	4
or IT 505	Integrative Programming	

Code	Title	Credits
Sequence two:		
CS 414	From Problems to Algorithms to Programs	4
CS 417	From Programs to Computer Science	4
or IT 505	Integrative Programming	

Code	Title	Credits
Sequence three:		
CS 410P	Introduction to Scientific Programming/Python	4
or CS 410C	Introduction to Scientific Programming/C	
CS 417	From Programs to Computer Science	4
or IT 505	Integrative Programming	

Code	Title	Credits
Sequence four:		
CS 405	Introduction to Applications Programming	4
IT 505	Integrative Programming	4

## Computer Science Major (B.S.)

<https://ceps.unh.edu/computer-science/program/bs/computer-science>

## Description

Computer science focuses on problem solving with a particular emphasis on the design of computer-efficient solutions. Within a few years of obtaining a bachelor's degree alumni will have:

1. Engaged in successful careers in diverse areas of software development and will be pursuing advanced education in computer science or related fields;
2. Applied the full range of core computer science concepts and techniques to fill software development needs of an organization;
3. Adapted to changing directions of computing technology and used state-of-the-art techniques to confront new problems effectively;
4. Navigated the complex interconnections between software and the goals and constraints of the organization served;
5. Participated responsibly in the pervasive and changing role of computing technology in global society as both software engineers and citizens;
6. Operated collaboratively in a team environment and assumed leadership roles.

The B.S. in computer science program is accredited by the Computing Accreditation Commission of [ABET](#).

## Requirements

Computer science majors must complete the following coursework in computer science, mathematics, computer engineering, and science. (all courses are 4 credits unless indicated otherwise):

Code	Title	Credits
<b>Computer Science Courses</b>		
Select one of the following:		
CS 400	Introduction to Computing	2
CS 415	Introduction to Computer Science I	4
or CS 410C	Introduction to Scientific Programming/C	
or CS 410P	Introduction to Scientific Programming/Python	
CS 416	Introduction to Computer Science II	4
CS 420	Foundations of Programming for Digital Systems	4
IT 403	Introduction to Internet Technologies	4
CS 501	Professional Ethics and Communication in Technology-related Fields	4
CS 515	Data Structures and Introduction to Algorithms	4
CS 518	Introduction to Software Engineering	4
CS 520	Computer Organization and System-Level Programming	4
CS 527	Fundamentals of Cybersecurity	4
CS 619	Introduction to Object-Oriented Design and Development	4
CS 620	Operating System Fundamentals	4
CS 659	Introduction to the Theory of Computation	4
CS 758	Algorithms	4
CS 761	Programming Language Concepts and Features	4
CS 791 & CS 792	Senior Project I and Senior Project II	4
or CS 799	Thesis	
<b>Computer Science Electives:</b>		
Select one course from the following implementation electives:		4
CS 712	Compiler Design	
CS 720	Systems Programming	
CS 730	Introduction to Artificial Intelligence	
CS 735	Introduction to Parallel and Distributed Programming	
CS 770	Computer Graphics	
Select one course from the following theory electives:		4
CS 723	Performance Evaluation of Computer Systems	
CS 745	Formal Specifications and Verification of Software Systems	
CS 750	Machine Learning	
CS 755	Computer Vision	
CS 757	Mathematical Optimization for Applications	
Select two additional CS courses numbered 690-799 as general electives		8
<b>Professional Electives <sup>1</sup></b>		
Select one course from the following:		3-4
CS 700-level course		
IT 502	Intermediate Web Design	
IT 604	Server-side Web Development	
IT 605	Client-side Web Development	
IT 612	Scripting Languages	
IT 630	Data Science and Analytics	
IT 666	Cybersecurity Practices	
IT 705	Project Management for Information Technology	
IT 780	Topics in Information Technology	
MATH 525	Linearity I	
MATH 526	Linearity II	
MATH 527	Differential Equations with Linear Algebra	
MATH 528	Multidimensional Calculus	
MATH 545	Introduction to Linear Algebra	
MATH 645	Linear Algebra for Applications	
MATH 647	Complex Analysis for Applications	
MATH 736	Advanced Statistical Modeling	
MATH 737	Statistical Methods for Quality Improvement and Design	
MATH 739	Applied Regression Analysis	
MATH 740	Design of Experiments I	
MATH 741	Survival Analysis	
MATH 743	Time Series Analysis	

MATH 744	Design of Experiments II	
MATH 745	Foundations of Applied Mathematics I	
MATH 746	Foundations of Applied Mathematics II	
MATH 747	Introduction to Nonlinear Dynamics and Chaos	
MATH 753	Introduction to Numerical Methods I	
MATH 755	Probability with Applications	
MATH 756	Principles of Statistical Inference	
MATH 760	Geometry	
MATH 761	Abstract Algebra	
MATH 767	One-Dimensional Real Analysis	
MATH 776	Logic	
MATH 783	Set Theory	
MATH 784	Topology	
MATH 788	Complex Analysis	
ECE 562	Computer Organization	
ECE 649	Embedded Microcomputer Based Design	
ECE 700-level course		
ENGL 502	Professional and Technical Writing	
GEN 604	Principles of Genetics	
GEN 711	Genomics and Bioinformatics	
<b>Mathematics Courses</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
or MATH 644	Statistics for Engineers and Scientists	
<b>Science courses<sup>2</sup></b>		
One Discovery Biological Science (BS) with Discovery Lab		4
One Discovery Physical Science (PS) with Discovery Lab		4
<b>Other Courses</b>		
Discovery requirements not already covered by required courses <sup>3</sup>		24
<b>Total Credits</b>		<b>129-130</b>

<sup>1</sup> Professional electives must either be chosen from the list of approved courses or another non-introductory CEPS course with significant science and/or engineering focus approved on a per-course basis by the undergraduate studies committee.

<sup>2</sup> Courses must carry the Discovery attributes of Biological Science or Physical Science and include Discovery lab (DLAB).

<sup>3</sup> One of these courses must be writing intensive.

Computer science majors must maintain an overall grade-point average of 2.0 or better in all required computer science, mathematics, and computer engineering courses in order to graduate. If at the end of any semester, including the first, a student's cumulative grade-point average in these courses falls below 2.0, the student may not be allowed to continue as a CS major.

In order to meet the CS major requirements, the following courses must be passed with a grade of C- or better CS 410C, CS 410P, CS 415, CS 416, CS 420, CS 515, CS 520, IT 403

If a student wishing to transfer into the computer science major has any coursework that is applicable to the major, the grades in those courses must satisfy the minimum grade requirements for the B.S. degree in computer science. The student must have an overall grade-point average of 2.0 or better in all courses taken at the university.

## Degree Plan

### Recommended Plan of Study

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
CS 400	Introduction to Computing	2
CS 415	Introduction to Computer Science I	4
IT 403	Introduction to Internet Technologies	4
MATH 425	Calculus I	4
Discovery I		4
<b>Credits</b>		<b>18</b>
<b>Spring</b>		
CS 416	Introduction to Computer Science II	4
CS 420	Foundations of Programming for Digital Systems	4
MATH 426	Calculus II	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
CS 515	Data Structures and Introduction to Algorithms	4
CS 518	Introduction to Software Engineering	4
or CS 527	or Fundamentals of Cybersecurity	
MATH 531	Mathematical Proof	4
or MATH 539	or Introduction to Statistical Analysis	
or MATH 644	or Statistics for Engineers and Scientists	
CS 501	Professional Ethics and Communication in Technology-related Fields (Or Discovery II)	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
CS 520	Computer Organization and System-Level Programming	4
MATH 539	Introduction to Statistical Analysis	4
or MATH 644	or Statistics for Engineers and Scientists	
or MATH 531	or Mathematical Proof	
CS 527	Fundamentals of Cybersecurity	4
or CS 518	or Introduction to Software Engineering	
Discovery II (or CS 501)		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
CS 619	Introduction to Object-Oriented Design and Development	4
CS 620	Operating System Fundamentals	4
CS 659	Introduction to the Theory of Computation (Or Professional Elective)	4
CS 761	Programming Language Concepts and Features (or Discovery III)	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Professional Elective (or CS 659)		4

Discovery III (or CS 761)	4
Discovery IV	4
CS 758      Algorithms (Or CS 700-level General Elective or Discovery V)	4

**Credits** **16**

#### Fourth Year

##### Fall

CS 791      Senior Project I	2
CS 700-level Implementation or Theory Elective	4
CS 700-level General Elective (or Discovery V)	4
Discovery V (or CS 758)	4
Discovery VI	4

**Credits** **18**

##### Spring

CS 792      Senior Project II	2
CS 700-level Implementation or Theory Elective	4
CS 700-level General Elective (or CS 758)	4
Discovery VII	4

**Credits** **14**

**Total Credits** **130**

Discovery (7): Historical Perspectives, Humanities, Fine and Performing Arts, Social Science, World Cultures, Physical Science Discovery Lab, Biological Science Discovery Lab with ONE mandatory course with Writing Intensive (WI) attribute

## Student Learning Outcomes

Graduates of the UNH BS CS program will have an ability to:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.
- Learn independently about new technologies, and develop the skills needed to understand them.

## Computer Science Major: Algorithms Option (B.A.)

<https://ceps.unh.edu/computer-science/program/ba/computer-science-major-algorithms-option>

## Description

The B.A. in Computer Science will allow students to combine the study of computer science with the study of another field. Given the emergence of computational approaches to virtually all areas of scholarship and creative expression, it is important to offer this flexibility. The three tracks in the B.A. program contain the same computer science core as the B.S. program, but give more control to the student to choose the complementary and advanced courses.

## Requirements

Code	Title	Credits
<b>Computer Science Courses</b>		
CS 400	Introduction to Computing	2
CS 415	Introduction to Computer Science I	4
or CS 410P	Introduction to Scientific Programming/Python	
or CS 410C	Introduction to Scientific Programming/C	
CS 416	Introduction to Computer Science II	4
IT 403	Introduction to Internet Technologies	4
CS 420	Foundations of Programming for Digital Systems	4
CS 501	Professional Ethics and Communication in Technology-related Fields	4
CS 515	Data Structures and Introduction to Algorithms	4
CS 520	Computer Organization and System-Level Programming	4
CS 527	Fundamentals of Cybersecurity	4
CS 619	Introduction to Object-Oriented Design and Development	4
CS 791 & CS 792	Senior Project I and Senior Project II	4
or CS 799	Thesis	
<b>Computer Science Electives</b>		
Select three courses from the advanced CS course pool <sup>1</sup>		12
<b>Mathematics Courses</b>		
MATH 425	Calculus I	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
CS 659	Introduction to the Theory of Computation	4
<b>Science Courses <sup>2</sup></b>		
One Discovery Biological Science (BS) with Discovery Lab		4
One Discovery Physical Science (PS) with Discovery Lab		4
Discovery requirements not already covered by required courses		20
<b>Total Credits</b>		<b>98</b>

<sup>1</sup> Advanced CS course pool consists of the following:

- Any CS course at the 700-level
- One professional elective from the [list of B.S. in Computer Science Electives](#)

<sup>2</sup> Courses must carry the Discovery attributes of Biological Science or Physical Science and include Discovery lab (DLAB).

Computer science majors must maintain an overall grade-point average of 2.0 or better in all required computer science, mathematics, and computer engineering courses in order to graduate. If at the end of any semester, including the first, a student's cumulative grade-point average in these courses falls below 2.0, the student may not be allowed to continue as a CS major.

The following courses must be passed with a grade of C- or better: CS 410C, CS 410P, CS 415, CS 416, CS 420, CS 515, CS 520, IT 403

If a student wishing to transfer into the computer science major has any coursework that is applicable to the major, the grades in those courses must satisfy the minimum grade requirements for the B.S. degree in

computer science. The student must have an overall grade-point average of 2.0 or better in all courses taken at the university.

## Student Learning Outcomes

Graduates of the UNH B.A. CS programs will have an ability to:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.
- Learn independently about new technologies, and have the skills needed to understand them.

## Computer Science Major: Cybersecurity Option (B.A.)

<https://ceps.unh.edu/computer-science/program/ba/computer-science-major-cybersecurity-option>

### Description

The B.A. in Computer Science will allow students to combine the study of computer science with the study of another field. Given the emergence of computational approaches to virtually all areas of scholarship and creative expression, it is important to offer this flexibility. The three tracks in the B.A. program contain the same computer science core as the B.S. program, but give more control to the student to choose the complementary and advanced courses.

### Requirements

Code	Title	Credits
<b>Computer Science Classes</b>		
CS 400	Introduction to Computing	2
CS 415	Introduction to Computer Science I	4
or CS 410C	Introduction to Scientific Programming/C	
or CS 410P	Introduction to Scientific Programming/Python	
CS 416	Introduction to Computer Science II	4
IT 403	Introduction to Internet Technologies	4
CS 501	Professional Ethics and Communication in Technology-related Fields	4
CS 420	Foundations of Programming for Digital Systems	4
CS 515	Data Structures and Introduction to Algorithms	4
CS 520	Computer Organization and System-Level Programming	4
CS 527	Fundamentals of Cybersecurity	4
CS 620	Operating System Fundamentals	4
CS 727	Software Security	4
IT 666	Cybersecurity Practices	4
CS 791 & CS 792	Senior Project I and Senior Project II	4
or CS 799	Thesis	

### Computer Science Electives

Select one of the following:		4
CS 725	Computer Networks	
IT 609	Network/Systems Administration	
HLS 515	Critical Infrastructure Security and Resilience	
POLT 568	International Security	
<b>Mathematics Courses</b>		
MATH 425	Calculus I	4
MATH 539	Introduction to Statistical Analysis	4
Select two MATH or CS Theory Courses <sup>1</sup>		8
<b>Science Courses <sup>2</sup></b>		
One Discovery Biological Science (BS) with Discovery Lab		4
One Discovery Physical Science (PS) with Discovery Lab		4
Discovery requirements not already covered by required courses		20
<b>Total Credits</b>		<b>98</b>

<sup>1</sup> CS Theory courses

include: CS 659, CS 723, CS 745, CS 750, CS 755, CS 757, CS 758

<sup>2</sup> Courses must carry the Discovery attributes of Biological Science or Physical Science and include Discovery lab (DLAB).

Computer science majors must maintain an overall grade-point average of 2.0 or better in all required computer science, mathematics, and computer engineering courses in order to graduate. If at the end of any semester, including the first, a student's cumulative grade-point average in these courses falls below 2.0, the student may not be allowed to continue as a CS major.

The following courses must be passed with a grade of C- or better: CS 410C, CS 410P, CS 415, CS 416, CS 420, CS 515, CS 520, IT 403

If a student wishing to transfer into the computer science major has any coursework that is applicable to the major, the grades in those courses must satisfy the minimum grade requirements for the B.S. degree in computer science. The student must have an overall grade-point average of 2.0 or better in all courses taken at the university.

## Student Learning Outcomes

Graduates of the UNH B.A. CS programs will have an ability to:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.
- Learn independently about new technologies, and have the skills needed to understand them.



## Computer Science Major: Systems Option (B.A.)

<https://ceps.unh.edu/computer-science/program/ba/computer-science-major-systems-option>

### Description

The B.A. in Computer Science will allow students to combine the study of computer science with the study of another field. Given the emergence of computational approaches to virtually all areas of scholarship and creative expression, it is important to offer this flexibility. The three tracks in the B.A. program contain the same computer science core as the B.S. program, but give more control to the student to choose the complementary and advanced courses.

### Requirements

Code	Title	Credits
<b>Computer Science Courses</b>		
CS 400	Introduction to Computing	2
CS 415	Introduction to Computer Science I	4
or CS 410C	Introduction to Scientific Programming/C	
or CS 410P	Introduction to Scientific Programming/Python	
CS 416	Introduction to Computer Science II	4
IT 403	Introduction to Internet Technologies	4
CS 501	Professional Ethics and Communication in Technology-related Fields	4
CS 420	Foundations of Programming for Digital Systems	4
CS 515	Data Structures and Introduction to Algorithms	4
CS 520	Computer Organization and System-Level Programming	4
CS 619	Introduction to Object-Oriented Design and Development	4
CS 527	Fundamentals of Cybersecurity	4
CS 620	Operating System Fundamentals	4
CS 791	Senior Project I	4
& CS 792	and Senior Project II	
or CS 799	Thesis	
<b>Computer Science Electives</b>		
Select two courses from the advanced CS course pool <sup>1</sup>		8
<b>Mathematics Courses</b>		
MATH 425	Calculus I	4
MATH 539	Introduction to Statistical Analysis	4
Select two MATH or CS Theory Courses <sup>2</sup>		8
<b>Science Courses <sup>3</sup></b>		
One Discovery Biological Science (BS) with Discovery Lab		4
One Discovery Physical Science (PS) with Discovery Lab		4
Discovery requirements not already covered by required courses		20
<b>Total Credits</b>		<b>98</b>

<sup>1</sup> Advanced CS course pool consists of the following:

- Any CS course at the 700-level
- One professional elective from the [list of B.S. in Computer Science Electives](#)

<sup>2</sup> CS Theory courses

include: CS 659, CS 723, CS 745, CS 750, CS 755, CS 757, CS 758

<sup>3</sup> Courses must carry the Discovery attributes of Biological Science or Physical Science and include Discovery lab (DLAB).

Computer science majors must maintain an overall grade-point average of 2.0 or better in all required computer science, mathematics, and computer engineering courses in order to graduate. If at the end of any semester, including the first, a student's cumulative grade-point average

in these courses falls below 2.0, the student may not be allowed to continue as a CS major.

The following courses must be passed with a grade of C- or better: CS 410C, CS 410P, CS 415, CS 416, CS 420, CS 515, CS 520, IT 403

If a student wishing to transfer into the computer science major has any coursework that is applicable to the major, the grades in those courses must satisfy the minimum grade requirements for the B.S. degree in computer science. The student must have an overall grade-point average of 2.0 or better in all courses taken at the university.

### Student Learning Outcomes

Graduates of the UNH B.A. CS programs will have an ability to:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.
- Learn independently about new technologies, and have the skills needed to understand them.

## Computer Science Minor

<https://ceps.unh.edu/computer-science/program/minor/computer-science>

### Description

The minor in computer science is designed for students in other majors who want to learn the fundamentals of designing and implementing computer software.

Credit toward the minor will be given only for courses passed with C- or better, and a 2.0 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean of the student's major college to have the minor shown on the academic record. Students must consult with their major adviser and also the minor supervisor.

### Requirements

Code	Title	Credits
<b>Requirements</b>		
CS 415	Introduction to Computer Science I	4
or CS 410C	Introduction to Scientific Programming/C	
or CS 410P	Introduction to Scientific Programming/Python	
CS 416	Introduction to Computer Science II	4

or CS 417	From Programs to Computer Science	
CS 420	Foundations of Programming for Digital Systems	4
CS 515	Data Structures and Introduction to Algorithms	4
<b>Other Courses</b>		
Select one of the following:		
CS 619	Introduction to Object-Oriented Design and Development	
CS 520	Computer Organization and System-Level Programming	
CS 620	Operating System Fundamentals	
CS 659	Introduction to the Theory of Computation <sup>1</sup>	
CS 761	Programming Language Concepts and Features	
An approved CS 700-level course		

<sup>1</sup> CS 659 Introduction to the Theory of Computation has mathematics prerequisites: MATH 425 Calculus I, MATH 426 Calculus II, and MATH 531 Mathematical Proof.

## Data Science Minor

<https://ceps.unh.edu/computer-science/program/minor/data-science>

### Description

The objective of this minor is to provide a basic background in data science for those who are more interested in the theoretical underpinnings of analytics and data science.

### Requirements

Students must complete five courses (20 credits) with a cumulative minimum grade point average of 2.0 and with no grade below a C-grade. Transfer course approval for the minor is limited to at most, two relevant courses successfully completed at another accredited institution, subject to syllabi review and approval. Some preparation in [MATH 425](#): Calculus I and programming ([CS 415](#): Introduction to Computer Science I, or [COMP 425](#): Introduction to Programming) is required.

Code	Title	Credits
<b>Requirements</b>		
CS 515	Data Structures and Introduction to Algorithms	4
Select one course from the following:		
CS 417	From Programs to Computer Science (Durham Students)	
CS 416	Introduction to Computer Science II	
COMP 525	Data Structures Fundamentals (Manchester Students)	
Select three courses from the following: <sup>1</sup>		
CS 730	Introduction to Artificial Intelligence	
CS 750	Machine Learning	
CS 753	Information Retrieval	
CS 757	Mathematical Optimization for Applications	
CS 775	Database Systems	
MATH 645	Linear Algebra for Applications	
MATH 736	Advanced Statistical Modeling	
MATH 738	Data Mining and Predictive Analytics	
MATH 739	Applied Regression Analysis	
DATA 750	Neural Networks	
DATA #757	Mining Massive Datasets	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Must select at least one CS and one MATH course. Must select [CS 750](#): Machine Learning or [MATH 738](#): Data Mining and Predictive Analytics.

For more information, contact Matthew Magnusson, program coordinator and minor supervisor, at [matthew.magnusson@unh.edu](mailto:matthew.magnusson@unh.edu).

## Information Technology Cognate

<https://ceps.unh.edu/computer-science/program/cognate/information-technology>

### Description

The Toolbox Cognate in Information Technology is designed to provide students with knowledge and skills required by essentially any job today.

With introductory level options, including courses from outside the department, the cognate is of value to students who wish to get a firm foundation in areas related to computing and information technology. The cognate also gives students considering study of Information Technology or Computer Science an opportunity to sample a broad range of courses in the field.

The Cognate will appear on each student's transcript.

### Requirements

The cognate consists of three courses with no more than two courses to be taken from the same category (some courses may have pre-requisites).

Code	Title	Credits
<b>Computer Applications</b>		
CS #401	Computers and Their Applications	4
<b>Web</b>		
IT 403	Introduction to Internet Technologies	4
IT 502	Intermediate Web Design	4
<b>Computing/Programming</b>		
CS 405	Introduction to Applications Programming	4
CS 410C or CS 410P	Introduction to Scientific Programming/C Introduction to Scientific Programming/Python	4
MATH 445	Mathematics and Applications with MATLAB	4
IT 505	Integrative Programming	4
IT 520	Computer Architecture	4
<b>Statistics</b>		
MATH 439	Statistical Discovery for Everyone	4
MATH 539	Introduction to Statistical Analysis	4

## Information Technology Major (B.S.)

<https://ceps.unh.edu/computer-science/program/bs/information-technology>

### Description

Information technology is concerned primarily with the application of existing computing technologies to the information needs of organizations and individual computer users. The IT program aims to provide graduates with the skills and knowledge to take on appropriate professional positions in information technology upon graduation and grow into leadership positions in the field. Potential careers include network administrator, database developer, system administrator, and webmaster.

The broad objectives for B.S. in information technology graduates are:

1. Apply the full range of core IT concepts and techniques to fill the IT needs of an organization and be prepared to assume managerial and other advanced responsibilities,
2. Confront new problems effectively and anticipate the changing directions of technology,
3. Communicate effectively with diverse stakeholders as well as function appropriately in a team environment,
4. Navigate within the complex relationships between IT and larger organizational goals, and
5. Understand the pervasive and changing role of computing technology in global society, and participate responsibly as both IT professional and citizen.

The B.S. in information technology program is accredited by the Computing Accreditation Commission of [ABET](#).

## Requirements

Code	Title	Credits
<b>Information Technology Courses</b>		
CS 400	Introduction to Computing	2
CS 415	Introduction to Computer Science I <sup>1</sup>	4
or CS 410C	Introduction to Scientific Programming/C	
or CS 410P	Introduction to Scientific Programming/Python	
or CS 414	From Problems to Algorithms to Programs	
CS 417	From Programs to Computer Science <sup>1</sup>	4
CS 501	Professional Ethics and Communication in Technology-related Fields	4
CS 518	Introduction to Software Engineering	4
CS 527	Fundamentals of Cybersecurity	4
IT 403	Introduction to Internet Technologies	4
IT 505	Integrative Programming	4
IT 520	Computer Architecture	4
IT 609	Network/Systems Administration	4
IT 699	Internship	1
IT 705	Project Management for Information Technology	4
IT 775	Database Technology	4
IT 791 & IT 792	Senior Project I and Senior Project II	4
<b>IT Electives (select three)</b>		<b>12</b>
IT 502	Intermediate Web Design	
IT 604	Server-side Web Development	
IT 605	Client-side Web Development	
IT 612	Scripting Languages	
IT 630	Data Science and Analytics	
IT 666	Cybersecurity Practices	
IT #704	Advanced Web Development	
IT 718	Cloud Computing Principles	
IT 725	Network Technology	
IT 780	Topics in Information Technology	
<b>Mathematics Courses</b>		
MATH 425	Calculus I	4
MATH 539	Introduction to Statistical Analysis	4
<b>Science Courses <sup>2</sup></b>		
One Discovery Biological Science (BS) with Discovery Lab		4
One Discovery Physical Science (PS) with Discovery Lab		4
<b>Other Courses</b>		
Discovery requirements not already covered by required courses		24
General Electives		6-8
<b>Minor, Second Major, or Dual Degree <sup>3</sup></b>		<b>20</b>
<b>Total Credits</b>		<b>129-131</b>

sequence. CS 414 From Problems to Algorithms to Programs will be discontinued starting Fall 2022.

- 2 Courses must carry the Discovery attributes of Biological Science or Physical Science and include Discovery lab (DLAB).
- 3 Students must complete a Minor (from an approved list) or a Second major or Dual degree

Information technology majors must maintain an overall grade-point average of 2.0 or better in all required information technology and computer science required courses in order to graduate. If at the end of any semester, including the first, a student's cumulative grade-point average in these courses falls below 2.0, the student may not be allowed to continue as an IT major. In order to meet the IT major requirements, the following courses must be passed with a grade of C- or better: CS 410P, CS 410C, CS 414, CS 415, CS 416, CS 417, IT 403, IT 505, IT 520.

If a student wishing to transfer into the information technology major has any coursework that is applicable to the major, the grades in those courses must satisfy the minimum grade requirements for the B.S. degree in information technology. The student must have an overall grade-point average of 2.0 or better in all courses taken at the University.

In addition to the core IT requirements, each student must complete a complementary set of courses in a particular domain outside of IT to which the student's IT skills can be applied. This set of courses can be completed in one of the following ways:

1. An approved minor\*\*.
2. A second major or UNH dual degree.

\*\*An [approved list of minors](#) is available from the CS Department and requires at least (5) courses to complete.

## Degree Plan

The following is a sample schedule depicting the necessary requirements and the layout of the curriculum. Students must consult with their advisers in order to come up with the proper schedule for themselves.

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
CS 400	Introduction to Computing	2
CS 415	Introduction to Computer Science I	0-4
IT 403	Introduction to Internet Technologies	4
MATH 425	Calculus I	4
Discovery		4
<b>Credits</b>		<b>14-18</b>
<b>Spring</b>		
CS 417	From Programs to Computer Science	4
ENGL 401	First-Year Writing (Discovery)	4
Discovery		4
Physical Science (DLAB)		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
IT 505	Integrative Programming	4

<sup>1</sup> Starting in 2022-2023, all Information technology majors will be recommended to take CS 415 Introduction to Computer Science I and CS 417 From Programs to Computer Science as their two-semester

IT 520	Computer Architecture	4
CS 501	Professional Ethics and Communication in Technology-related Fields	4
Discovery		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
CS 518	Introduction to Software Engineering	4
CS 527	Fundamentals of Cybersecurity	4
MATH 539	Introduction to Statistical Analysis	4
Biological Science (DLAB)		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
IT 609	Network/Systems Administration	4
IT 705	Project Management for Information Technology	4
IT Elective (1 of 3)		4
Minor (1 of 5)		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
IT 699	Internship	1
IT 775	Database Technology	4
Minor (2 of 5)		4
Discovery		4
Free Elective		4
<b>Credits</b>		<b>17</b>
<b>Fourth Year</b>		
<b>Fall</b>		
IT 791	Senior Project I	2
IT Elective (2 of 3)		4
Minor (3 of 5)		4
Discovery		4
Free Elective (optional)		
<b>Credits</b>		<b>14</b>
<b>Spring</b>		
IT 792	Senior Project II	2
IT Elective (3 of 3)		4
Minor (4 of 5)		4
Minor (5 of 5)		4
Free Elective or Fourth Writing Intensive		4
<b>Credits</b>		<b>18</b>
<b>Total Credits</b>		<b>127-131</b>

## Student Learning Outcomes

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.

- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing-based systems.
- Self-learning skills, exposure to technologies new to the students, practice in understanding those technologies on their own.

## Information Technology Minor

<https://ceps.unh.edu/computer-science/program/minor/information-technology>

### Description

The information technology (IT) minor is a way for students in non-technical majors to bridge the gap between a primarily non-technical education and a technical world. Graduates from a variety of fields are discovering that there is a great need to have computer competency in addition to the knowledge they gain in their major; the IT minor, which is tailored to grow students' understanding of computer and information technology applications, helps prepare students for the future.

Students who minor in IT must complete a minimum of 20 credits of IT courses. All students must take IT 520 Computer Architecture as well as an approved introductory programming course. The other three courses may be chosen from the list below.

Credit toward the minor will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean (of the student's major college) to have the minor shown on their academic record. Students must consult with their major adviser and also the minor coordinator.

### Requirements

Code	Title	Credits
<b>Requirements</b>		
IT 520	Computer Architecture	4
One programming course chosen from the following list:		4
CS 410C	Introduction to Scientific Programming/C	
or CS 410P	Introduction to Scientific Programming/Python	
or CS 415	Introduction to Computer Science I	
Three courses chosen from the following list:		12
CS 417	From Programs to Computer Science	
CS 518	Introduction to Software Engineering	
CS 527	Fundamentals of Cybersecurity	
IT 403	Introduction to Internet Technologies	
IT 502	Intermediate Web Design	
IT 505	Integrative Programming	
IT 604	Server-side Web Development	
IT 605	Client-side Web Development	
IT 609	Network/Systems Administration	
IT 612	Scripting Languages	
IT 630	Data Science and Analytics	
IT 666	Cybersecurity Practices	

Other courses are eligible by permission of the minor coordinator

Total Credits

20

## Skills and Perspectives for the Digital World Cognate

<https://ceps.unh.edu/computer-science/program/cognate/skills-perspectives-digital-world>

### Description

Engage with and reflect on the technology associated with the digital world. This cognate provides a foundation for the development of technical and critical skills aligned with one of the 21st century's defining areas: information technology. A recent statement by General Electric's CEO asserts that if you join the company today, as opposed to 20 years ago, you're going to learn to code even though you may be in sales, finance or operations. This cognate gives students and future employees a fundamental introduction into technologies that are necessary for high functioning in today's world, both in the workplace and beyond.

The curriculum consists of three courses: one to strengthen understanding of the technologies that drive the World Wide Web, one course to explore computer programming, and one course to consider the impact of the technologies on society.

### Requirements

Code	Title	Credits
<b>Required Course</b>		
IT 403	Introduction to Internet Technologies	4
Select one course from the following:		
CS 405	Introduction to Applications Programming	4
CS 410C	Introduction to Scientific Programming/C	
or CS 410P	Introduction to Scientific Programming/Python	
CS 414	From Problems to Algorithms to Programs	
Select one course from the following:		
WS 444D	Cyborgs, Avatars, and Feminists: Gender in the Virtual World	4
CS 408	Living in a Networked World: The Good, the Bad, and the Ugly	
ENGL #415E	Literature and Cyberculture	
<b>Total Credits</b>		<b>12</b>

Credit toward the cognate will only be given for courses passed with C- or better, and a 2.00 grade-point average must be maintained in courses for the cognate. Courses taken on a pass/fail basis may not be used for the cognate.

## Earth Sciences (ESCI)

The courses offered in the Department of Earth Sciences cover the broad spectrum of geosciences, with emphases on climate, geochemistry, geology, geophysics, hydrology, and oceanography. The curriculum encompasses a group of related disciplines concerned with an understanding of Earth and its environment. Studies of the processes that shape the continents and oceans, drive the hydrologic cycle and ocean circulation, and affect climate change and the evolution of life are based on a foundation of basic mathematics, physics, and chemistry.

The need for well trained Earth and environmental scientists has been increasing in response to growing societal demands for sound environmental and resource management. Issues of particular concern

include global climate change impacts, management of water resources, development of energy and mineral resources, waste disposal, and assessments of natural hazards. In addition, the demand for well-trained secondary school teachers of Earth sciences has been steadily increasing.

The Department of Earth Sciences offers three majors: B.S. Earth Sciences, B.S. Environmental Sciences (interdisciplinary with the College of Life Sciences and Agriculture) and B.A. Earth Sciences. These programs prepare students for advanced study in the geosciences; for secondary-school teaching of Earth sciences; and for entry-level professional employment in public or private institutions concerned with environmental and resource management, including consulting firms, government agencies, energy- and resource-extraction firms, utilities, and nonprofit organizations; and for secondary-school teaching of Earth sciences.

The Department of Earth Sciences also offers a minor in Earth Sciences, as well as an interdisciplinary minor in oceanography.

Descriptions and requirements for the majors and minors are arranged alphabetically.

<https://ceps.unh.edu/earth-sciences>

### Programs

- [Earth Sciences Major \(B.A.\)](#) (p. 188)
- [Earth Sciences Major \(B.S.\)](#) (p. 190)
- [Earth Sciences Minor](#) (p. 194)
- [Environmental Sciences Major: Geosystems Option \(B.S.\)](#) (p. 194)
- [Environmental Sciences Major: Hydrology Option \(B.S.\)](#) (p. 197)
- [Oceanography Minor](#) (p. 199)

### Faculty

<https://ceps.unh.edu/earth-sciences/faculty-staff-directory>

## Earth Sciences Major (B.A.)

<https://ceps.unh.edu/earth-sciences/program/ba/earth-sciences-major>

### Description

The bachelor of arts in Earth sciences is offered through the Department of Earth Sciences. This program provides students an opportunity to obtain a broad education and a general background in the Earth sciences with a greater degree of freedom in choosing electives than in the bachelor of science programs. Through careful choice of electives, students can prepare for business, industry, public service, the non-profit sector, graduate school or, in combination with a M.Ed. or M.A.T. certification program, a career teaching in secondary schools.

### Requirements

Code	Title	Credits
Satisfy the Discovery Program Requirements <sup>1</sup>		
Satisfy the bachelor of arts degree requirements		
Complete (with a C- or better in each course) a minimum of eight courses in the department, including the following:		



ESCI 401	Dynamic Earth	4
or ESCI 409	Geology and the Environment	
ESCI 402	Earth History	4
ESCI 512	Principles of Mineralogy	4
CHEM 403	General Chemistry I	4
Five advanced-level courses, two of which must be 700-level or above		15-20
<b>Math Requirements</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
or MATH 539	Introduction to Statistical Analysis	
or BIOL 528	Applied Biostatistics I	
<b>Capstone</b>		
<b>Total Credits</b>		<b>39-44</b>

<sup>1</sup> Note that ESCI 401 Dynamic Earth, ESCI 402 Earth History, ESCI 405 Global Environmental Change, ESCI 409 Geology and the Environment, ESCI 420 Our Solar System, ESCI 501 Introduction to Oceanography cannot be taken to fulfill Discovery Program requirements for majors in the Department of Earth Sciences.

It is strongly advised that students complete, as early as possible, a year each of college chemistry and physics.

## Capstone Experience

A capstone experience is required of all undergraduate Earth sciences majors during their senior year. All capstone experiences at UNH must meet one or more of the following criteria:

1. The capstone synthesizes and applies disciplinary knowledge and skills.
2. The capstone fosters reflection on undergraduate learning and experience.
3. The capstone demonstrates emerging professional competencies.
4. The capstone applies, analyzes, and/or interprets research or data or artistic expression.
5. The capstone explores areas of interest based on the integration of prior learning.

Suggested ways of meeting the capstone requirement in the Department of Earth Sciences include approved INCO 790 Advanced Research Experience, ESCI 795 Topics/ESCI 796 Topics field courses, ESCI 799 Senior Thesis, URA/SURF/IROP projects, internships, environmental/geologic field camps, REU programs, or Earth Sciences education and outreach activities designed according to the above criteria. Capstone experiences must be equivalent to a minimum of 2 academic credits. Students should work closely with their faculty advisors to define the most appropriate capstone experience for their Earth Sciences degree program, although the capstone mentor can be someone other than their primary faculty advisor. All capstone experiences must be approved and certified by the faculty advisor and the capstone mentor. Presentation of projects or experiences developed for the capstone is encouraged at the annual UNH Undergraduate Research Conference or other appropriate venue.

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ESCI 400	Freshman Field Seminar	1

ESCI 401	Dynamic Earth	4
MATH 425	Calculus I	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing	4

**Credits 17**

### Spring

ESCI 402	Earth History	4
MATH 426	Calculus II	4
or MATH 439	or Statistical Discovery for Everyone	
or BIOL 528	or Applied Biostatistics I	
CHEM 404	General Chemistry II (Recommended)	4
Inquiry Discovery Course <sup>1</sup>		4

**Credits 16**

### Second Year

#### Fall

ESCI 5/6__ (number > 512)		4
ESCI 530	Geological Field Methods	4
or ESCI 534	or Techniques in Environmental Sciences	
Discovery Course <sup>1</sup>		4
Foreign Language <sup>2</sup>		4

**Credits 16**

#### Spring

ESCI 512	Principles of Mineralogy	4
Discovery Course <sup>1</sup>		4
Foreign Language <sup>2</sup>		4
Discovery Course <sup>1</sup>		4

**Credits 16**

### Third Year

#### Fall

ESCI 5/6/7__ (number > 512)		4
PHYS 407	General Physics I (/PHYS 401)	4
or BIOL 411	or Introductory Biology: Molecular and Cellular	
Free Elective <sup>3</sup>		4
Discovery Course <sup>1</sup>		4

**Credits 16**

#### Spring

PHYS 408	General Physics II (/PHYS 402)	4
or BIOL 412	or Introductory Biology: Evolution, Biodiversity and Ecology	
ESCI 6__		4
Free Elective <sup>3</sup>		4
Discovery Course <sup>1</sup>		4

**Credits 16**

### Fourth Year

#### Fall

ESCI 7__		4
Free Elective <sup>3</sup>		4
Free Elective <sup>3</sup>		4
Discovery Course <sup>1</sup>		4

**Credits 16**

**Spring**

ESCI 7__	4
Free Elective <sup>3</sup>	4
Free Elective <sup>3</sup>	4
Senior Capstone	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>129</b>

<sup>1</sup> One course must be taken in each of the remaining Disciplinary Groups of the University Discovery Program (Biological Sciences; Environment Technology & Society; Historical Perspectives; World Culture; Fine & Performing Arts; Social Science; Humanities).

<sup>2</sup> The foreign language requirement may be fulfilled by a full year (8 UNH credits or equivalent) elementary course in any foreign language including American Sign Language, 1 semester (4 UNH credits or equivalent) of any foreign language beyond the elementary level, or by taking a College Board foreign language achievement test.

<sup>3</sup> Students should consider additional courses in Earth Sciences and other science and math courses.

## Student Learning Outcomes

- Recognize common Earth materials and structures.
- Describe how Earth scientists construct the geological time scale and apply geochronologic dating techniques.
- Describe the broad attributes of and interactions within the Earth System, as well as its geological history, how and why it is changing today, and how those changes impact society.
- Understand Earth processes and cycles.
- Perform simple calculations to process and evaluate quantitative Earth science data.
- Interpret a geologic map and cross section in terms of the sequence of geologic events and understand the processes that caused those events.
- Collect, interpret, and synthesize basic field observations and measurements to develop and test multiple working hypotheses to explain them.
- Become proficient in basic geological and Earth science laboratory skills.
- Describe the basic dynamics governing the evolution of the Earth's climate.
- Successfully apply basic calculus and chemistry to Earth science problems.
- Effectively communicate results of scientific inquiries orally, visually, and in writing.

## Earth Sciences Major (B.S.)

<https://ceps.unh.edu/earth-sciences/program/bs/earth-sciences-major>

### Description

The bachelor of science in Earth sciences is offered through the Department of Earth Sciences. The program represents a strong concentration in the Earth sciences, built upon a solid formation in mathematics, physics and chemistry. The B.S. degree is especially well-suited for students who wish a strong foundation for secondary teaching

or plan to continue their studies in graduate school. Beyond a central core of courses, there are several possible specializations (climate, geology, geophysics, oceanography) from which students must choose in order to develop depth in a particular area of Earth sciences. Students are encouraged to participate in research, field or internship experiences to round out their experiences in the degree program.

## Requirements

Code	Title	Credits
<b>Requirements</b>		
Satisfy the Discovery Program requirements and the bachelor of science degree requirements		
MATH 425	Calculus I <sup>1</sup>	4
MATH 426	Calculus II	4
CHEM 403	General Chemistry I <sup>1,2</sup>	4
CHEM 404	General Chemistry II <sup>1,2</sup>	4
PHYS 407	General Physics I <sup>1</sup>	4
PHYS 408	General Physics II <sup>1</sup>	4
<b>Core Curriculum</b>		
ESCI 401	Dynamic Earth	4
or ESCI 409	Geology and the Environment	
ESCI 402	Earth History	4
ESCI 501	Introduction to Oceanography	4
ESCI 512	Principles of Mineralogy	4
ESCI 530	Geological Field Methods <sup>3</sup>	4
or ESCI 534	Techniques in Environmental Sciences	
Select one of the following:		4
ESCI 654	Fate and Transport in the Environment	
ESCI 701	Quantitative Methods in Earth Sciences <sup>4</sup>	
<b>Specializations</b>		
Select one of the following approved specializations:		
Climate		
Geology		
Geophysics		
Oceanography		
<b>Science/Math Electives</b>		
Complete three additional approved science/math electives <sup>5</sup>		
<b>Capstone</b>		
Complete the capstone requirement		
<b>Total Credits</b>		<b>48</b>

<sup>1</sup> Some of these courses may also satisfy Discovery Program requirements.

<sup>2</sup> Or CHEM 405 Chemical Principles for Engineers if applicable

<sup>3</sup> ESCI 530 Geological Field Methods is required for the geology and geophysics specializations

<sup>4</sup> Geophysics track must select ESCI 701 Quantitative Methods in Earth Sciences

<sup>5</sup> The following should be considered: additional 700-level Earth sciences courses; additional chemistry, mathematics, and physics courses; courses in computer science, engineering, and the biological sciences; and an off-campus field camp.

## Specializations

### Climate

Code	Title	Credits
ESCI 514	Introduction to Climate	3
ESCI 561	Landscape Evolution	4
Select at least two of the following:		6-7
ESCI 758	Introductory Physical Oceanography	
ESCI 760	Paleoceanography	
ESCI 762	Glacial Geology	
ESCI 765	Paleoclimatology	

Select three advanced-level approved electives	9-12
<b>Total Credits</b>	<b>22-26</b>

## Geology

Code	Title	Credits
ESCI 561	Landscape Evolution	4
ESCI 614	Introduction to Petrology	4
ESCI 631	Structural Geology	4
ESCI #652	Paleontology	4
Two approved 700-level electives		6-8
<b>Total Credits</b>		<b>22-24</b>

## Geophysics

Code	Title	Credits
MATH 527	Differential Equations with Linear Algebra	4
MATH 528	Multidimensional Calculus	4
ESCI 561	Landscape Evolution	4
or ESCI 614	Introduction to Petrology	
ESCI 631	Structural Geology	4
Select at least two of the following:		8
ESCI #734	Geophysics	
ESCI 756	Geotectonics	
ESCI 759	Geological Oceanography	
One approved 700-level elective		3-4
<b>Total Credits</b>		<b>27-28</b>

## Oceanography

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular	4
ESCI 514	Introduction to Climate	3
Select at least three of the following:		10-11
ESCI 752	Chemical Oceanography	
ESCI 758	Introductory Physical Oceanography	
ESCI 759	Geological Oceanography	
MEFB 755	Biological Oceanography	
Complete three advanced-level approved electives		9-12
<b>Total Credits</b>		<b>26-30</b>

## Capstone Experience

A capstone experience is required of all undergraduate Earth sciences majors during their senior year. All capstone experiences at UNH must meet one or more of the following criteria:

1. The capstone synthesizes and applies disciplinary knowledge and skills.
2. The capstone fosters reflection on undergraduate learning and experience.
3. The capstone demonstrates emerging professional competencies.
4. The capstone applies, analyzes, and/or interprets research or data or artistic expression.
5. The capstone explores areas of interest based on the integration of prior learning.

Suggested ways of meeting the capstone requirement in the Department of Earth Sciences include approved INCO 790 Advanced Research Experience, ESCI 795 Topics/ESCI 796 Topics, ESCI 799 Senior Thesis, URA/SURF/IROP projects, internships, environmental/geologic field camps, REU programs, or Earth Sciences education and outreach activities designed according to the above criteria. Capstone experiences must be equivalent to a minimum of 2 academic credits. Students should work closely with their faculty advisors to define the most appropriate capstone experience for their Earth Sciences degree program, although the capstone mentor can be someone other than their primary faculty

advisor. All capstone experiences must be approved and certified by the faculty advisor and the capstone mentor. Presentation of projects or experiences developed for the capstone is encouraged at the annual UNH Undergraduate Research Conference or other appropriate venue.

## Degree Plan

## Climate Track

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ESCI 400	Freshman Field Seminar	1
ESCI 401	Dynamic Earth	4
MATH 425	Calculus I	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing	4

**Credits 17**

<b>Spring</b>		
ESCI 402	Earth History	4
MATH 426	Calculus II	4
CHEM 404	General Chemistry II	4
Inquiry Discovery Course <sup>1</sup>		4

**Credits 16**

<b>Second Year</b>		
<b>Fall</b>		
ESCI 501	Introduction to Oceanography	4
ESCI 530	Geological Field Methods	4
or ESCI 534	or Techniques in Environmental Sciences	
PHYS 407	General Physics I	4
Discovery Course <sup>1</sup>		4

**Credits 16**

<b>Spring</b>		
ESCI 512	Principles of Mineralogy	4
ESCI 514	Introduction to Climate	3
PHYS 408	General Physics II	4
Discovery Course <sup>1</sup>		4

**Credits 15**

<b>Third Year</b>		
<b>Fall</b>		
ESCI 561	Landscape Evolution	4
ESCI 758	Introductory Physical Oceanography (or	3
or ESCI 760	6/7__)	
	or Paleoceanography	
ESCI __ or Free Elective		4
Discovery Course <sup>1</sup>		4
Seminar or Research Experience		1

**Credits 16**

<b>Spring</b>		
ESCI 654	Fate and Transport in the Environment	4
or ESCI 701	or Quantitative Methods in Earth Sciences	

ESCI 762 or ESCI 765	Glacial Geology (or 6/7__) or Paleoclimatology	4
Science Elective <sup>2</sup>		4
Discovery course		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
ESCI 6/7__		4
ESCI 758 or ESCI 760	Introductory Physical Oceanography (or 6/7__) or Paleoceanography	3
Science Elective <sup>2</sup>		4
Discovery Course <sup>1</sup>		4
Seminar or Research Experience		1
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ESCI 762 or ESCI 765	Glacial Geology (or 6/7__) or Paleoclimatology	4
Science Elective <sup>2</sup>		4
Discovery Course <sup>1</sup>		4
Senior Capstone		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>128</b>

## Geology Track

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ESCI 400	Freshman Field Seminar	1
ESCI 401	Dynamic Earth	4
MATH 425	Calculus I	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing (or pass placement test)	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
ESCI 402	Earth History	4
MATH 426	Calculus II	4
CHEM 404	General Chemistry II	4
Inquiry Discovery Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
ESCI 530	Geological Field Methods	4
ESCI 561	Landscape Evolution	4
PHYS 407	General Physics I	4
Discovery Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ESCI 501	Introduction to Oceanography	4
ESCI 512	Principles of Mineralogy	4
PHYS 408	General Physics II	4

Discovery Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
ESCI 614	Introduction to Petrology	4
ESCI 631	Structural Geology	4
ESCI #652	Paleontology	4
Discovery Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ESCI 654 or ESCI 701	Fate and Transport in the Environment (or 6__) or Quantitative Methods in Earth Sciences	4
Free Elective		4
Science Elective <sup>2</sup>		4
Discovery Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
ESCI 7__		4
Free Elective		4
Science Elective <sup>2</sup>		4
Discovery Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ESCI 7__		4
Science Elective <sup>2</sup>		4
Discovery Course <sup>1</sup>		4
Senior Capstone		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>129</b>

## Geophysics Track

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ESCI 400	Freshman Field Seminar	1
ESCI 401	Dynamic Earth	4
MATH 425	Calculus I	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing (or pass placement test)	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
ESCI 402	Earth History	4
MATH 426	Calculus II	4
CHEM 404	General Chemistry II	4
Inquiry Discovery Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
ESCI 530	Geological Field Methods	4

ESCI 561	Landscape Evolution (or 6/7__)	4
PHYS 407	General Physics I	4
Discovery Course <sup>1</sup>		4

**Credits** 16

### Spring

ESCI 501	Introduction to Oceanography	4
ESCI 512	Principles of Mineralogy	4
PHYS 408	General Physics II	4
Discovery Course <sup>1</sup>		4

**Credits** 16

### Third Year

#### Fall

ESCI 614	Introduction to Petrology (or 6/7__)	4
ESCI 631	Structural Geology	4
MATH 527	Differential Equations with Linear Algebra	4
Discovery Course <sup>1</sup>		4

**Credits** 16

#### Spring

ESCI 701	Quantitative Methods in Earth Sciences	4
MATH 528	Multidimensional Calculus	4
Science Elective <sup>2</sup>		4
Discovery Course <sup>1</sup>		4

**Credits** 16

### Fourth Year

#### Fall

ESCI 759	Geological Oceanography	4
Free Elective		4
Science Elective <sup>2</sup>		4
Discovery Course <sup>1</sup>		4

**Credits** 16

#### Spring

ESCI #734	Geophysics (or ESCI 756)	4
Science Elective <sup>2</sup>		4
Discovery Course <sup>1</sup>		4
Senior Capstone		4

**Credits** 16

**Total Credits** 129

## Oceanography Track

Course	Title	Credits
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### First Year

#### Fall

ESCI 400	Freshman Field Seminar	1
ESCI 401	Dynamic Earth	4
MATH 425	Calculus I	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing (or pass placement test)	4

**Credits** 17

#### Spring

ESCI 402	Earth History	4
MATH 426	Calculus II	4
CHEM 404	General Chemistry II	4

Inquiry Discovery Course <sup>1</sup>	4
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**Credits** 16

### Second Year

#### Fall

ESCI 501	Introduction to Oceanography	4
ESCI 530	Geological Field Methods	4
or ESCI 534	or Techniques in Environmental Sciences	
PHYS 407	General Physics I	4
Discovery Course <sup>1</sup>		4

**Credits** 16

#### Spring

ESCI 512	Principles of Mineralogy	4
ESCI 514	Introduction to Climate	3
PHYS 408	General Physics II	4
Discovery Course <sup>1</sup>		4

**Credits** 15

### Third Year

#### Fall

ESCI 758	Introductory Physical Oceanography (or 6/7__)	3
ESCI 6/7__ or Free Elective		4
Science Elective <sup>2</sup>		4
Discovery Course <sup>1</sup>		4
Seminar or Research Experience		1

**Credits** 16

#### Spring

ESCI 654	Fate and Transport in the Environment (or 6/7__)	4
or ESCI 710	or Groundwater Hydrology	
ESCI 6/7__ or Free Elective		4
MEFB 755	Biological Oceanography	4
Discovery Course		4

**Credits** 16

### Fourth Year

#### Fall

ESCI 6/7__		4
ESCI 759	Geological Oceanography (or 6/7__)	4
Science Elective <sup>2</sup>		4
Discovery Course <sup>1</sup>		4

**Credits** 16

#### Spring

ESCI 752	Chemical Oceanography (or 6/7__)	3
Science Elective <sup>2</sup>		4
Discovery Course <sup>1</sup>		4
Senior Capstone		4
Seminar or Research Experience		1.0

**Credits** 16

**Total Credits** 128

<sup>1</sup> One course must be taken in each of the remaining Disciplinary Groups of the University Discovery Program (Biological Sciences; Environment



Technology & Society; Historical Perspectives; World Culture; Fine & Performing Arts; Social Science; Humanities).

<sup>2</sup> Three science electives must be approved in consultation with departmental advisor.

## Student Learning Outcomes

- Recognize common Earth materials and structures.
- Describe how Earth scientists construct the geological time scale and apply geochronologic dating techniques.
- Describe the broad attributes of and interactions within the Earth System, as well as its geological history, how and why it is changing today, and how those changes impact society.
- Understanding Earth processes and cycles.
- Perform simple calculations to process and evaluate quantitative Earth science data.
- Interpret a geologic map and cross section in terms of the sequence of geologic events and understand the processes that caused those events.
- Collect, interpret, and synthesize basic field observations and measurements to develop and test multiple working hypotheses to explain them.
- Become proficient in basic geological and Earth science laboratory skills.
- Describe the basic dynamics governing the evolution of the Earth's climate.
- Successfully apply basic calculus and chemistry to Earth science problems.
- Summarize, analyze, and evaluate student-generated scientific data and the primary Earth sciences literature.
- Effectively communicate results of scientific inquiries orally, visually, and in writing.

## Earth Sciences Minor

<https://ceps.unh.edu/earth-sciences/program/minor/earth-sciences>

### Description

The Department of Earth Sciences offers a minor in Earth Sciences available to all University students. The Earth Sciences minor provides an opportunity for students to complement their major field of study with foundational knowledge and essential skills in the geosciences. As with all minors offered at UNH, the Earth Sciences minor adheres to the following University requirements:

The minor consists of at least 20 semester hours of credit. For the Earth Sciences minor, the 20 credits typically come from five ESCI courses and may include research credits supervised by an Earth Sciences faculty member. A grade of C- or better must be earned in each course, and an overall 2.00 grade point average must be maintained for all courses applied toward the minor. Courses taken on a pass/fail basis may not be used for the minor. No more than two courses (8 credits) can be used to satisfy simultaneously requirements for a student's major and minor, or two minors. No more than two courses (8 credits) may be transferred from another accredited institution and applied toward the minor, provided UNH has accepted them as transfer credits.

## Requirements

Courses in the Earth Sciences minor must include both introductory and more advanced ESCI courses. Strongly recommended introductory courses include ESCI 401 Dynamic Earth or ESCI 409 Geology and the Environment (students may not receive credit for both ESCI 401 Dynamic Earth and ESCI 409 Geology and the Environment) and ESCI 402 Earth History. More advanced courses must include at least one at the 600 or 700 level. Specific courses in the program are selected in consultation with a minor adviser in the Department of Earth Sciences, with flexibility in approved courses to accommodate interests in different aspects of the geosciences. Interested students should contact the Department of Earth Sciences ([earth.sciences@unh.edu](mailto:earth.sciences@unh.edu)) to arrange to complete an Intent to Minor form no later than their junior year. Forms can be picked up in the Earth Sciences main office, 214 James Hall.

## Environmental Sciences Major: Geosystems Option (B.S.)

<https://ceps.unh.edu/earth-sciences/program/bs/environmental-sciences-major-geosystems-option>

### Description

The College of Engineering and Physical Sciences (CEPS) and the College of Life Science and Agriculture (COLSA) jointly offer a bachelor of science degree in environmental sciences. Environmental sciences, an interdisciplinary field, focuses on the interaction of biological, chemical, and physical processes that shape our natural environment. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, the ability to communicate effectively with both scientific and lay audiences, competency in field methods appropriate for entry-level environmental science positions, competency in the use and application of Geographic Information Systems (GIS), a basic understanding of environmental policy, and the ability to contribute to multidisciplinary teams. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. The full-time faculty members comprising this program have major teaching and research emphases in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, geospatial science, global change, hydrology, plant ecology, soil science, and water resource management.

Employment opportunities include environmental consulting firms, educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants; the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment. Students should consult with their adviser early if their goals include further study.

The Program has four options, and specific course requirements for the major vary by option. The geosystems and hydrology options are both managed by the Department of Earth Sciences in CEPS, and the ecosystems and soils and watersheds options are both managed by the Department of Natural Resources and the Environment in the COLSA.

The geosystems option provides students with a solid grounding in quantitative reasoning, with an emphasis on geochemical and geospatial systems.

## Requirements

In addition to the Discovery Program and University writing requirements, all students will take Introduction to Environmental Science NR 403 Introduction to Environmental Science and Professional Perspectives in Natural Resources (NR 400 Professional Perspectives in Natural Resources), plus one other elective introductory environmental science course. Foundation courses include introductions to biology, physics, chemistry, geology, calculus, and statistics.

## INTRODUCTORY

Code	Title	Credits
NR 400	Professional Perspectives in Natural Resources	1
NR 403	Introduction to Environmental Science	4
Plus one other elective introductory environmental science course		4
<b>Total Credits</b>		<b>9</b>

## FOUNDATION

Code	Title	Credits
<b>Biology</b>		
BIOL 411	Introductory Biology: Molecular and Cellular	4
or BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	
<b>Chemistry</b>		
Select one of the following:		4-8
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	
or CHEM 405	Chemical Principles for Engineers	
<b>Physics</b>		
PHYS 407 & PHYS 408	General Physics I and General Physics II	8
<b>Calculus</b>		
MATH 425 & MATH 426	Calculus I and Calculus II	8
<b>Statistics</b>		
MATH 644	Statistics for Engineers and Scientists	4
or BIOL 528	Applied Biostatistics I	
<b>Geology</b>		
Select one of the following:		4
ESCI 401	Dynamic Earth	
ESCI 402	Earth History	
ESCI 409	Geology and the Environment	
<b>Total Credits</b>		<b>32-36</b>

## CORE COURSES

Code	Title	Credits
ESCI 534	Techniques in Environmental Sciences	3
ESCI 654	Fate and Transport in the Environment	4
ESCI 777	GIS for Earth & Environmental Sciences	4
or NR 658	Introduction to Geographic Information Systems	
NR 602	Natural Resources and Environmental Policy	4
Capstone Experience <sup>1</sup>		
<b>Total Credits</b>		<b>15</b>

<sup>1</sup> NR 791 Preparation for Capstone and an independent study or capstone course taken in the senior year and approved by their adviser and the program coordinator.

## Geosystems

Code	Title	Credits
<b>Mineralogy</b>		
ESCI 512	Principles of Mineralogy	4
<b>Geomorphology</b>		
ESCI 561	Landscape Evolution	4
<b>Biogeosciences</b>		
ESCI 642	Biogeosciences in the Earth System	3
<b>Geochemistry</b>		
Approved Geochemistry Elective		4
ESCI 741	Geochemistry	
ESCI 745	Isotope Geochemistry	
ESCI 747	Aqueous Geochemistry	
ESCI 796	Topics (Biogeochemistry)	
or NR 744	Biogeochemistry	
A course in quantitative or spatial analysis		4
Select two or three approved electives		8-12
<b>Total Credits</b>		<b>27-31</b>

Some students enroll in the EcoQuest program (a study abroad opportunity in New Zealand), which satisfies the policy requirement, and capstone requirement if taken senior year.

Students must complete additional courses for the geosystems option to total 88 credits in the major.

For a list of approved elective courses and for further information about the geosystems option, students may contact [earth.sciences@unh.edu](mailto:earth.sciences@unh.edu). ([earth.sciences@unh.edu](mailto:earth.sciences@unh.edu))

## Capstone Experience

A capstone experience is required of all undergraduate Earth sciences majors during their senior year. All capstone experiences at UNH must meet one or more of the following criteria:

1. The capstone synthesizes and applies disciplinary knowledge and skills.
2. The capstone fosters reflection on undergraduate learning and experience.
3. The capstone demonstrates emerging professional competencies.
4. The capstone applies, analyzes, and/or interprets research or data or artistic expression.
5. The capstone explores areas of interest based on the integration of prior learning.

Suggested ways of meeting the capstone requirement in the Department of Earth Sciences include approved INCO 790 experiences, ESCI 795/796 field courses, senior thesis (ESCI 799/799H), URA/SURF/IROP projects, internships, environmental/geologic field camps, REU programs, or Earth Sciences education and outreach activities designed according to the above criteria. Capstone experiences must be equivalent to a minimum of 2 academic credits. Students should work closely with their faculty advisors to define the most appropriate capstone experience for their Earth Sciences degree program, although the capstone mentor can be someone other than their primary faculty advisor. All capstone experiences must be approved and certified by the faculty advisor and the capstone mentor. Presentation of projects or experiences developed for the capstone is encouraged at the annual UNH Undergraduate Research Conference or other appropriate venue.

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
NR 400 or ESCI 400	Professional Perspectives in Natural Resources or Freshman Field Seminar	1
NR 403	Introduction to Environmental Science	4
MATH 425	Calculus I	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
ESCI 409	Geology and the Environment	4
MATH 426	Calculus II	4
CHEM 404	General Chemistry II	4
Inquiry Discovery Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
BIOL 411 or BIOL 412	Introductory Biology: Molecular and Cellular or Introductory Biology: Evolution, Biodiversity and Ecology	4
ESCI 534	Techniques in Environmental Sciences	3
PHYS 407	General Physics I	4
Discovery Course <sup>1</sup>		4
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
ESCI 501 or ESCI 514	Introduction to Oceanography or Introduction to Climate	4
ESCI 512	Principles of Mineralogy	4
PHYS 408	General Physics II	4
Discovery Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
ESCI 561	Landscape Evolution	4
ESCI 741 or ESCI 747	Geochemistry or Aqueous Geochemistry	4
ESCI 777	GIS for Earth & Environmental Sciences	4
Discovery Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ESCI 654	Fate and Transport in the Environment	4
MATH 644 or BIOL 528	Statistics for Engineers and Scientists or Applied Biostatistics I	4
ESCI 642	Biogeosciences in the Earth System	3
NR 791	Preparation for Capstone	1
NR 602	Natural Resources and Environmental Policy	4
<b>Credits</b>		<b>16</b>

## Fourth Year

### Fall

Elective	4
Approved Technical Elective <sup>2</sup>	4
Quantitative/Spatial Analysis Elective <sup>2</sup>	4
Discovery Course <sup>1</sup>	4
<b>Credits</b>	<b>16</b>

### Spring

Discovery Course <sup>1</sup>	4
Senior Capstone (ESCI 799, INCO 790) or elective if capstone is satisfied	4
Approved Technical Elective <sup>2</sup>	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>128</b>

<sup>1</sup> One course must be taken in each of the remaining Disciplinary Groups of the University Discovery Program (Environment Technology & Society; Historical Perspectives; World Culture; Fine & Performing Arts; Social Science; Humanities).

<sup>2</sup> Three technical electives must be approved in consultation with departmental advisor.

All students must take four writing intensive courses, including ENGL 401, a course in the major, and a course at the 600/700 level.

## Student Learning Outcomes

- Recognize common Earth and environmental materials and dynamic processes in the Earth System and environment.
- Understand the Earth as a system and be able to describe the broad attributes of and interactions within the Earth System and the environment through both short- and long-term perspectives, evaluate how and why it is changing today, and assess coupled human and natural system interactions. Understand the ecological and chemical systems of the environment.
- Understand Earth processes and cycles using a strong foundation of physical, biological and chemical sciences.
- Perform field measurements and simple calculations to collect, evaluate and interpret quantitative environmental or geological data. Understand the role that spatially explicit data and time series play in understanding environmental and hydrological sciences.
- Collect, interpret, and synthesize basic field observations and measurements to develop and test multiple working hypotheses to explain them. Additionally, become comfortable with the use of technology and computational methods in processing a range of scientific data.
- Analyze, summarize, evaluate, and explain/present their own scientific data and the primary Earth and environmental sciences literature.
- Communicate results of scientific inquiries orally, visually, and in writing.

# Environmental Sciences Major: Hydrology Option (B.S.)

<https://ceps.unh.edu/earth-sciences/program/bs/environmental-sciences-major-hydrology-option>

## Description

The College of Engineering and Physical Sciences (CEPS) and the College of Life Science and Agriculture (COLSA) jointly offer a bachelor of science degree in environmental sciences. Environmental sciences, an interdisciplinary field, focuses on the interaction of biological, chemical, and physical processes that shape our natural environment. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, the ability to communicate effectively with both scientific and lay audiences, competency in field methods appropriate for entry-level environmental science positions, competency in the use and application of Geographic Information Systems (GIS), a basic understanding of environmental policy, and the ability to contribute to multidisciplinary teams. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. The full-time faculty members comprising this program have major teaching and research emphases in the areas of biogeochemical cycling, environmental chemistry, geospatial science, ecosystem science, global change, hydrology, plant ecology, soil science, and water resource management.

Employment opportunities include: environmental consulting firms, educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants; the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment. Students should consult with their adviser early if their goals include further study.

The Program has four options, and specific course requirements for the major vary by option. The geosystems and hydrology options are both managed by the Department of Earth Sciences in CEPS, and the ecosystems and soils and watersheds options are both managed by the Department of Natural Resources and the Environment in the COLSA. The hydrology option provides students with a solid grounding in fundamental hydrological principles and quantitative reasoning.

## Requirements

In addition to the Discovery Program and University writing requirements, all students will take Introduction to Environmental Science NR 403 Introduction to Environmental Science and Professional Perspectives in Natural Resources (NR 400 Professional Perspectives in Natural Resources), plus one other elective introductory environmental science course. Foundation courses include introductions to biology, physics, chemistry, geology, calculus, and statistics.

## INTRODUCTORY

Code	Title	Credits
NR 400	Professional Perspectives in Natural Resources	1
NR 403	Introduction to Environmental Science	4
Select one elective introductory course from the following:		4
NR 504	Freshwater Resources	
CEE 520	Environmental Pollution and Protection: A Global Context	
ESCI 405	Global Environmental Change	
ESCI 501	Introduction to Oceanography	
ESCI 514	Introduction to Climate	
GEOG 473	Elements of Weather	
<b>Total Credits</b>		<b>9</b>

## FOUNDATION

Code	Title	Credits
<b>Biology</b>		
BIOL 411	Introductory Biology: Molecular and Cellular	4
or BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	
<b>Chemistry</b>		
Select one of the following:		4-8
CHEM 403	General Chemistry I	
& CHEM 404	and General Chemistry II	
or CHEM 405	Chemical Principles for Engineers	
<b>Physics</b>		
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
<b>Calculus</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
<b>Statistics</b>		
MATH 644	Statistics for Engineers and Scientists	
or BIOL 528	Applied Biostatistics I	
<b>Geology</b>		
Select one of the following:		4
ESCI 401	Dynamic Earth	
ESCI 402	Earth History	
ESCI 409	Geology and the Environment	
<b>Total Credits</b>		<b>32-36</b>

## CORE COURSES

Code	Title	Credits
ESCI 534	Techniques in Environmental Sciences	3
ESCI 654	Fate and Transport in the Environment	4
ESCI 777	GIS for Earth & Environmental Sciences	4
or NR 658	Introduction to Geographic Information Systems	
NR 602	Natural Resources and Environmental Policy	4
or NR 662	Environmental Policy, Planning and Sustainability in New Zealand	
Capstone Experience <sup>1</sup>		
<b>Total Credits</b>		<b>15</b>

<sup>1</sup> NR 791 Preparation for Capstone and an independent study or capstone course taken in the senior year and approved by their adviser and the program coordinator.

## HYDROLOGY

Code	Title	Credits
<b>Geomorphology</b>		
ESCI 561	Landscape Evolution	4
<b>Soils/Mineralogy</b>		
ESCI 512	Principles of Mineralogy	4
or NR 501	Studio Soils	
<b>Surface Water Hydrology</b>		
ESCI 705	Principles of Hydrology	4
or CEE 754	Engineering Hydrology	
<b>Groundwater Hydrology</b>		

ESCI 710	Groundwater Hydrology	4
<b>Select one Quantitative Analysis course from the following:</b>		<b>4</b>
CS 410P	Introduction to Scientific Programming/Python	
ESCI 701	Quantitative Methods in Earth Sciences	
ESCI 764	Spectral Analysis of Geophysical Time Series Data	
MATH 525	Linearity I	
MATH 527	Differential Equations with Linear Algebra	
MATH 528	Multidimensional Calculus	
MATH 645	Linear Algebra for Applications	
MATH 739	Applied Regression Analysis	
MATH 740	Design of Experiments I	
<b>Select two or three approved electives from the following:</b>		<b>8-12</b>
CEE 650	Fluid Mechanics	
CEE 721	Environmental Sampling and Analysis	
CEE 723	Environmental Water Chemistry	
CEE 724	Environmental Engineering Microbiology	
CEE #750	Ecohydrology	
CEE 751	Open Channel Flow	
CEE 758	Stormwater Management Designs	
CEE 759	Stream Restoration	
ESCI 642	Biogeosciences in the Earth System	
ESCI 741	Geochemistry	
ESCI 745	Isotope Geochemistry	
ESCI 747	Aqueous Geochemistry	
ESCI 762	Glacial Geology	
ESCI 778	Remote Sensing Earth & Environmental Sciences	
NR 660	Ecology and Biogeography of New Zealand	
NR 661	Restoration Ecology and Ecosystem Management in New Zealand	
NR 703	Watershed Water Quality Management	
NR 707	Environmental Modeling	
NR 744	Biogeochemistry	
NR 751	Aquatic Ecosystems	
NR 757	Remote Sensing of the Environment	
NR 759	Digital Image Processing for Natural Resources	
NR 761	Environmental Soil Chemistry	
<b>Total Credits</b>		<b>28-32</b>

Some students enroll in the EcoQuest program (a study abroad opportunity in New Zealand), which satisfies the policy requirement, and capstone requirement if taken senior year.

Students must complete additional courses for the hydrology option to total 88 credits in the major.

For further information about the hydrology option or to discuss alternative elective courses, students may contact [earth.sciences@unh.edu](mailto:earth.sciences@unh.edu). ([earth.sciences@unh.edu](mailto:earth.sciences@unh.edu))

## Capstone Experience

A capstone experience is required of all undergraduate Earth sciences majors during their senior year. All capstone experiences at UNH must meet one or more of the following criteria:

1. The capstone synthesizes and applies disciplinary knowledge and skills.
2. The capstone fosters reflection on undergraduate learning and experience.
3. The capstone demonstrates emerging professional competencies.
4. The capstone applies, analyzes, and/or interprets research or data or artistic expression.
5. The capstone explores areas of interest based on the integration of prior learning.

Suggested ways of meeting the capstone requirement in the Department of Earth Sciences include approved INCO 790 Advanced Research

Experience, ESCI 795 Topics/ESCI 796 Topics, ESCI 799 Senior Thesis, URA/SURF/IROP projects, internships, environmental/geologic field camps, REU programs, or Earth Sciences education and outreach activities designed according to the above criteria. Capstone experiences must be equivalent to a minimum of 2 academic credits. Students should work closely with their faculty advisors to define the most appropriate capstone experience for their Earth Sciences degree program, although the capstone mentor can be someone other than their primary faculty advisor. All capstone experiences must be approved and certified by the faculty advisor and the capstone mentor. Presentation of projects or experiences developed for the capstone is encouraged at the annual UNH Undergraduate Research Conference or other appropriate venue.

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
NR 400	Professional Perspectives in Natural Resources	1
NR 403	Introduction to Environmental Science	4
MATH 425	Calculus I	4
CHEM 403	General Chemistry I (and 403L)	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
ESCI 409	Geology and the Environment	4
MATH 426	Calculus II	4
CHEM 404	General Chemistry II (and 404L)	4
Discovery Discipline Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
ESCI 534	Techniques in Environmental Sciences	3
ESCI 561	Landscape Evolution	4
MATH 644	Statistics for Engineers and Scientists	4
Discovery Discipline Course <sup>1</sup>		4
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
NR 504	Freshwater Resources	4
ESCI 512	Principles of Mineralogy	4
PHYS 407	General Physics I	4
Discovery Discipline Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
PHYS 408	General Physics II	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
ESCI 777	GIS for Earth & Environmental Sciences	4
Discovery Discipline Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ESCI 654	Fate and Transport in the Environment	4



NR 602	Natural Resources and Environmental Policy	4
NR 658	Introduction to Geographic Information Systems	4
NR 791	Preparation for Capstone	1
Quantitative analysis elective <sup>1</sup>		4
<b>Credits</b>		<b>17</b>

**Fourth Year****Fall**

ESCI 705	Principles of Hydrology	4
Senior Capstone (ESCI 799, INCO 790) or free-elective if capstone is otherwise satisfied		3-4
Approved Science Elective		4
Discovery Discipline Course <sup>1</sup>		4
<b>Credits</b>		<b>15-16</b>

**Spring**

ESCI 710	Groundwater Hydrology	4
Approved Science Elective		4
Free Elective		4
Discovery Discipline Course <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>128-129</b>

<sup>1</sup> One course must be taken in each of the remaining Disciplinary Groups of the University Discovery Program (Environment Technology & Society; Historical Perspectives; World Culture; Fine & Performing Arts; Social Science; Humanities).

<sup>2</sup> Three technical electives must be approved in consultation with departmental advisor.  
All students must take four writing intensive courses, including ENGL 401, a course in the major, and a course at the 600/700 level.

## Student Learning Outcomes

- Recognize common Earth and environmental materials and dynamic processes in the Earth System and environment.
- Understand the Earth as a system and be able to describe the broad attributes of and interactions within the Earth System and the environment through both short- and long- term perspectives, evaluate how and why it is changing today, and assess coupled human and natural system interactions. Understand the ecological and chemical systems of the environment.
- Understand Earth processes and cycles using a strong foundation of physical, biological and chemical sciences.
- Demonstrate knowledge of core concepts in the hydrologic sciences: stream flow, groundwater, water budgets, Darcy's Law, hydrologic fluxes such as evaporation, precipitation, infiltration, and transpiration, and physical factors that affect them, and a basic understanding of the uses and limitations of a hydrologic model.
- Perform field measurements and simple calculations to collect, evaluate and interpret quantitative environmental or geological data. Understand the role that spatially explicit data and time series play in understanding environmental and hydrological sciences.
- Collect, interpret, and synthesize basic field observations and measurements to develop and test multiple working hypotheses to explain them. Additionally, become comfortable with the use of

technology and computational methods in processing a range of scientific data.

- Analyze, summarize, evaluate, and explain/present their own scientific data and the primary Earth and environmental sciences literature.
- Communicate results of scientific inquiries orally, visually, and in writing.

## Oceanography Minor

<https://ceps.unh.edu/earth-sciences/program/minor/oceanography>

### Description

The minor in oceanography is available to all students in the University interested in obtaining a broad background in oceanography. The minor consists of a minimum of five courses with grades of C (2.00) or better and no pass/fail courses. No more than 8 major requirement credits may be used. All courses in the program are selected in consultation with the oceanography minor adviser, Dr. Jamie Pringle, (603) 862-5000, [jpringle@unh.edu](mailto:jpringle@unh.edu). Students must complete an Intent to Minor form no later than their junior year. Forms can be picked up in the Earth Sciences departmental office, 214 James Hall.

### Requirements

Code	Title	Credits
<b>Required Courses</b>		
ESCI 501	Introduction to Oceanography	4
Select two of the following:		6-8
ESCI 752	Chemical Oceanography	
ESCI 758	Introductory Physical Oceanography	
ESCI 759	Geological Oceanography	
MEFB 755	Biological Oceanography	
Select two of the following: <sup>1</sup>		6-8
MEFB 401	Marine Estuarine and Freshwater Biology: Freshmen Seminar	
MEFB 403	Investigative Marine Biology Laboratory	
MEFB 503	Introduction to Marine Biology	
MEFB 508	Marine Ecosystem Research and Management	
MEFB 530	Evolution and Marine Diversity	
MEFB 535	Marine Mammal Biology	
MEFB 625	Introduction to Marine Botany	
MEFB 674	Ecology and Marine Environment	
MEFB 702	Sustainable Marine Fisheries	
MEFB 725	Marine Ecology	
MEFB 754	Anatomy and Function of Marine Vertebrates	
CEE 722	Introduction to Marine Pollution and Control	
CEE #757	Coastal Engineering and Processes	
ESCI 502	Beaches and Coasts	
ESCI 514	Introduction to Climate	
ESCI 701	Quantitative Methods in Earth Sciences	
ESCI 720	Ocean Measurements Lab	
ESCI 747	Aqueous Geochemistry	
ESCI 754	Sedimentology	
ESCI 756	Geotectonics	
ESCI 765	Paleoclimatology	
ESCI/OE 771	Geodesy and Positioning for Ocean Mapping	
OE 490	Introduction to Ocean Engineering	
OE 610	Ocean Instrumentation Lab	
OE 753	Ocean Hydrodynamics	
OE 754	Ocean Waves and Tides	
OE 757	Coastal Engineering and Processes	
TECH 797	Undergraduate Ocean Research Project	
ZOOL 610	Principles of Aquaculture	

ZOOL 710	Sharks and Bony Fishes
MEFB 772	Fisheries Biology: Conservation and Management
MEFB 628	Marine Invertebrate Evolution and Ecology
MEFB 773	Physiology of Fishes
<b>Total Credits</b>	
	at least 18

<sup>1</sup> Or a suitable substitute approved by the minor advisor (at least one of these courses should be in the biological sciences).

## Electrical and Computer Engineering (ECE)

The Department of Electrical and Computer Engineering offers a B.S. in electrical engineering and a B.S. in computer engineering. Both degree programs are accredited by the:

Engineering Accreditation Commission of ABET  
415 N. Charles Street  
Baltimore, MD 21201  
Telephone (410) 347-7700

Electrical engineers design, develop, and produce the electrical and electronic systems upon which modern society has come to depend: basic infrastructure, such as the electric power grid and fiber optic communication lines; public conveniences, such as mag lev transporters and LED signs; consumer products, such as iPods and MP3 players; personal communication devices, such as smart phones; military systems, such as rail guns and laser weapons; instruments that can image the ocean floor or analyze the Earth's atmosphere from satellites; and medical diagnostic machines like CAT and MRI scanners. Almost every facet of modern life is touched by the work of electrical engineers. Students electing this major gain knowledge of advanced electronic circuit and system design through the use of computer-aided design tools, hardware circuit prototyping, and hands-on laboratory testing.

Computers have become embedded in virtually every engineering system, including everyday items ranging from watches to automobiles. Computer engineering, traditionally a subset of electrical engineering, is a rapidly growing field that emphasizes the design, interfacing, hardware/software tradeoffs, and real-time applications of embedded computers. Students who elect this major will gain a knowledge of both hardware and software concepts, and will learn to design, build, and test systems containing digital computers.

Embedded in both the electrical engineering and computer engineering programs is the biomedical engineering option. The option provides core knowledge expected of a computer and/or electrical engineer to provide engineering services in the biomedical field. Electrical and/or computer engineers with this option combine engineering principles with medical and biological sciences to design and create equipment, devices, computer systems, and software used in healthcare.

At UNH, the cornerstone of the electrical and computer engineering programs are the involvement of students in the solution of real-world problems.

## ECE Department Mission

The mission of the department is to foster and advance knowledge in electrical and computer engineering.

### *The mission involves:*

- teaching courses in electrical and computer engineering and related fields at the bachelor's, master's, and doctoral levels;
- advancing knowledge through research and scholarship;
- serving the state and nation by making the department's intellectual resources available to industry and government agencies. The undergraduate EE and CE programs shall provide a firm foundation in electrical and computer engineering theory and practice, with a mix of laboratory and design experiences. The programs also shall foster teamwork and project management skills.

The graduate ECE program shall lead to the degrees of master of science in electrical and computer engineering and the doctor of philosophy in electrical and computer engineering. Research and scholarship are core components of the department's mission and they directly impact undergraduate and graduate education. Success in obtaining funds to procure equipment and support research efforts is therefore an essential objective for the department.

The department recognizes the need to conduct periodic reviews and adjustments to meet the current and projected needs of the state and nation according to its mission objectives.

## Electrical Engineering and Computer Engineering Program Educational Objectives

The Department of Electrical and Computer Engineering has adopted a set of program educational objectives that consists of statements describing the expected accomplishments of graduates during the first several years following graduation from either program:

### Electrical Engineering Program Educational Objectives

*Depth:* To be effective in applying electrical engineering principles in engineering practice or for advanced study in electrical engineering.

*Breadth:* To have a productive career in the many diverse fields of electrical engineering such as analog engineering, bioengineering, communications, and electromagnetics and waves, or in the pursuit of graduate education in disciplines such as electrical engineering, medicine, law, or business.

*Professionalism:* To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

### Computer Engineering Program Educational Objectives

*Depth:* To be effective in applying computer engineering principles in engineering practice or for advanced study in computer engineering.

*Breadth:* To have a productive career in the many diverse fields of computer engineering such as digital engineering, bioengineering, security, communications, and embedded systems, or in the pursuit of graduate education in disciplines such as computer engineering, medicine, law, or business.

*Professionalism:* To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

The department recognizes the need to conduct periodic reviews and adjustments to our educational objectives.

## Electrical Engineering and Computer Engineering Program Educational Outcomes

The Department of Electrical and Computer Engineering has adopted a set of program educational outcomes that consists of statements describing what students are expected to know and be able to do by the time of graduation, the achievement of which indicates that the student is equipped to achieve the program objectives. The current electrical engineering program educational outcomes and computer engineering program educational outcomes are:

- An ability to apply knowledge of mathematics, science, and engineering.
- An ability to design and conduct experiments, as well as to analyze and interpret data.
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- An ability to function on multidisciplinary teams an ability to identify, formulate, and solve engineering problems.
- An understanding of professional and ethical responsibility.
- An ability to communicate effectively.
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- A recognition of the need for, and an ability to engage in life-long learning a knowledge of contemporary issues.
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

The department recognizes the need to conduct periodic reviews and adjustments to our educational outcomes.

Students contemplating a decision between the electrical engineering and computer engineering degree programs should consider both the similarities and differences of the two programs. The two curricula require the same foundational courses in mathematics, physics, analog and digital electronic circuits, and a capstone senior design project. The computer engineering degree program requires additional fluency in software development and advanced computer system and hardware design. The electrical engineering degree program requires advanced study in analog and mixed-signal electronic circuit and system analysis and design. Discovery Program requirements are identical for both degree programs.

<https://ceps.unh.edu/ece>

## Programs

- [Computer Engineering Major \(B.S.\)](#) (p. 201)
- [Computer Engineering Major: Biomedical Engineering Option \(B.S.\)](#) (p. 203)
- [Electrical Engineering Major \(B.S.\)](#) (p. 205)
- [Electrical Engineering Major: Biomedical Engineering Option \(B.S.\)](#) (p. 206)
- [Electrical and Computer Engineering Minor](#) (p. 208)

## Faculty

[Electrical and Computer Engineering Faculty](#)

## Computer Engineering Major (B.S.)

<https://ceps.unh.edu/electrical-computer-engineering/program/bs/computer-engineering-major>

## Description

In addition to the university's mandatory Discovery Program requirements, degree candidates must complete our core program (freshman through junior years). In the senior year, students select professional technical electives in the areas of their interest. They also carry out a student-designed project to acquire both breadth and depth of study and to integrate knowledge across course boundaries.

For a detailed semester by semester list of requirements for the four years of study, please refer to the Degree Plan tab.

## Requirements

In addition to Discovery Program requirements, the department has a number of grade-point average and course requirements:

1. Any computer engineering major whose cumulative grade-point average in ECE and computer science courses is less than 2.0 during any three semesters will not be allowed to continue as a computer engineering major.
2. Computer engineering majors must achieve a 2.0 grade-point average in all ECE and CS courses as a requirement for graduation.

To make an exception to any of these departmental requirements based on extenuating circumstances, students must petition the department's undergraduate committee. Mindful of these rules, students, with their adviser's assistance, should plan their programs based on the distribution of courses found in the Degree Plan tab.

## Required Courses

Code	Title	Credits
CS 410C	Introduction to Scientific Programming/C	4
CS 419	Computer Science for Engineers and Scientists	4
CS 515	Data Structures and Introduction to Algorithms	4
ECE 401	Perspectives in Electrical and Computer Engineering	4
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
ECE 548	Electronic Design I	4
ECE 562	Computer Organization	4
ECE 583	Designing with Programmable Logic	4
ECE 602	Engineering Analysis	3
ECE 603	Electromagnetic Fields and Waves I	3
ECE 633	Signals and Systems I	3
ECE 634	Signals and Systems II	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 649	Embedded Microcomputer Based Design	4
ECON 402 or EREC 411	Principles of Economics (Micro) Environmental and Resource Economics Perspectives	4
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 645	Linear Algebra for Applications	4

PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
<b>Capstone</b> <sup>2</sup>		
ECE 791	Senior Project I	3
ECE 792	Senior Project II	3
<b>Professional Electives</b>		
Choose four professional elective courses <sup>1</sup>		16
<b>Other Courses</b>		
Discovery requirements not already covered by required courses <sup>3</sup>		24
<b>Total Credits</b>		<b>129</b>

<sup>1</sup> Four professional electives must be selected as follows:

- Choose two ECE 700-level courses, one course could be ECE 652 Electronic Design II.
- Students are allowed to take only one as ECE 795 Electrical and Computer Engineering Projects or ECE 796 Special Topics.
- Remaining professional electives can include: CS 620 Operating System Fundamentals, CS 659 Introduction to the Theory of Computation, or any CS 700-level course.

<sup>2</sup> Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II will satisfy one professional elective requirement as well as requirements for ECE 791 Senior Project I and ECE 792 Senior Project II

<sup>3</sup> Fulfilling the CE Program curriculum taking ECE 401 Perspectives in Electrical and Computer Engineering, ECE 791 Senior Project I, and ECE 792 Senior Project II curriculum will automatically meet Discovery Category, "Environment, Technology and Society."

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ECE 401	Perspectives in Electrical and Computer Engineering	4
CS 410C	Introduction to Scientific Programming/C	4
MATH 425	Calculus I	4
ECON 402 or EREC 411	Principles of Economics (Micro) <sup>1</sup> or Environmental and Resource Economics Perspectives	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
PHYS 407	General Physics I	4
CS 419	Computer Science for Engineers and Scientists	4
MATH 426	Calculus II	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
MATH 527	Differential Equations with Linear Algebra	4
PHYS 408	General Physics II	4
<b>Credits</b>		<b>16</b>

### Spring

ECE 548	Electronic Design I	4
ECE 562	Computer Organization	4
MATH 645	Linear Algebra for Applications	4
Discovery Program Category		4
<b>Credits</b>		<b>16</b>

### Third Year

#### Fall

ECE 602	Engineering Analysis	3
CS 515	Data Structures and Introduction to Algorithms	4
ECE 633	Signals and Systems I	3
ECE 583	Designing with Programmable Logic	4
Discovery Program Category		4
<b>Credits</b>		<b>18</b>

#### Spring

ECE 603	Electromagnetic Fields and Waves I	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 634	Signals and Systems II	3
ECE 649	Embedded Microcomputer Based Design	4
Discovery Program Category		4
<b>Credits</b>		<b>17</b>

### Fourth Year

#### Fall

Two Professional Electives <sup>2</sup>		8
Discovery Program Category		4
ECE 791	Senior Project I	3
<b>Credits</b>		<b>15</b>

#### Spring

Two Professional Electives <sup>2</sup>		8
Discovery Program Category		4
ECE 792	Senior Project II	3
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>129</b>

<sup>1</sup> Students are required to take either ECON 402 Principles of Economics (Micro) or EREC 411 Environmental and Resource Economics Perspectives to fulfill the Social Science Category of the Discovery Program.

<sup>2</sup> Four professional electives must be selected as follows:

- Choose two ECE 7XX courses, one course could be ECE 652 Electronic Design II.
- Students are allowed to take only one as ECE 795 Electrical and Computer Engineering Projects or ECE 796 Special Topics.
- Remaining professional electives can include: CS 620 Operating System Fundamentals, CS 659 Introduction to the Theory of Computation, or any CS 7XX course.
- Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II will satisfy one professional elective requirement as well as requirements for ECE 791 Senior Project I and ECE 792 Senior Project II

ECE 791 Senior Project I and ECE 792 Senior Project II fulfill Discovery Program Capstone Experience.

Fulfilling the CE program curriculum taking ECE 401, ECE 791, and ECE 792 will automatically meet Discovery Category, "Environment, Technology and Society."

## Student Learning Outcomes

The Program Educational Objectives for the Computer Engineering Program are as follows:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## Computer Engineering Major: Biomedical Engineering Option (B.S.)

<https://ceps.unh.edu/electrical-computer-engineering/program/bsceng/computer-engineering-biomedical-engineering-option>

## Description

The Biomedical Engineering (BME) Option is intended to provide the core of knowledge expected of a computer and/or electrical engineer to provide engineering services in the biomedical field. Electrical and/or computer engineers with this option in biomedical engineering combine engineering principles with medical and biological sciences to design and create equipment, devices, computer systems, and software used in healthcare. The BME option is embedded in both the Electrical Engineering (EE) program and the Computer Engineering (CE) program.

## Requirements

In addition to Discovery Program requirements, the department has a number of grade-point average and course requirements:

1. Any computer engineering major whose cumulative grade-point average in ECE and computer science courses is less than 2.0 during any three semesters will not be allowed to continue as a computer engineering major.

2. Computer engineering majors must achieve a 2.0 grade-point average in all ECE and CS courses as a requirement for graduation.

To make an exception to any of these departmental requirements based on extenuating circumstances, students must petition the department's undergraduate committee. Mindful of these rules, students, with their adviser's assistance, should plan their programs based on the distribution of courses found in the Degree Plan tab.

## Required Courses

Code	Title	Credits
CS 410C	Introduction to Scientific Programming/C	4
CS 419	Computer Science for Engineers and Scientists	4
CS 515	Data Structures and Introduction to Algorithms	4
ECE 401	Perspectives in Electrical and Computer Engineering	4
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
ECE 548	Electronic Design I	4
ECE 562	Computer Organization	4
ECE 583	Designing with Programmable Logic	4
ECE 602	Engineering Analysis	3
ECE 603	Electromagnetic Fields and Waves I	3
ECE 633	Signals and Systems I	3
ECE 634	Signals and Systems II	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 649	Embedded Microcomputer Based Design	4
ECON 402 or EREC 411	Principles of Economics (Micro) Environmental and Resource Economics Perspectives	4
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 645	Linear Algebra for Applications	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
<b>Capstone<sup>2</sup></b>		
ECE 791	Senior Project I	3
ECE 792	Senior Project II	3
<b>Professional Electives</b>		
Choose two professional elective courses <sup>1</sup>		8
<b>Biomedical Engineering Option Required Courses</b>		
BMS 508	Human Anatomy and Physiology II	4
ECE 784	Biomedical Instrumentation	4
BENG 762	Biomedical Engineering <sup>1</sup>	4
or BENG 766	Biomaterials	
or CHE 714	Chemical Sensors	
<b>Other Courses</b>		
Discovery requirements not already covered by required courses <sup>3</sup>		20
<b>Total Credits</b>		<b>129</b>

<sup>1</sup> Professional electives must be selected as follows:

- Select one course from: BENG 762 Biomedical Engineering, BENG 766 Biomaterials, CHE 714 Chemical Sensors
- Choose any two ECE 700-level courses.
- Students are allowed to take only one as ECE 795 Electrical and Computer Engineering Projects or ECE 796 Special Topics

<sup>2</sup> • Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II will satisfy one professional elective requirement as well as requirements for ECE 791 Senior Project I and ECE 792 Senior Project II

<sup>3</sup> Fulfilling the CE Program curriculum taking ECE 401 Perspectives in Electrical and Computer Engineering, ECE 791 Senior Project I, and



ECE 792 Senior Project II curriculum will automatically meet Discovery Category, "Environment, Technology and Society."

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ECE 401	Perspectives in Electrical and Computer Engineering	4
MATH 425	Calculus I	4
CS 410C	Introduction to Scientific Programming/C	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
PHYS 407	General Physics I	4
MATH 426	Calculus II	4
CS 419	Computer Science for Engineers and Scientists	4
BMS 508	Human Anatomy and Physiology II	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
MATH 527	Differential Equations with Linear Algebra	4
PHYS 408	General Physics II	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ECE 548	Electronic Design I	4
ECE 562	Computer Organization	4
MATH 645	Linear Algebra for Applications	4
ECON 402 or EREC 411	Principles of Economics (Micro) <sup>1</sup> or Environmental and Resource Economics Perspectives	4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
CS 515	Data Structures and Introduction to Algorithms	4
ECE 583	Designing with Programmable Logic	4
ECE 602	Engineering Analysis	3
ECE 633	Signals and Systems I	3
Discovery Program Category		4
<b>Credits</b>		<b>18</b>
<b>Spring</b>		
ECE 603	Electromagnetic Fields and Waves I	3
ECE 634	Signals and Systems II	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 649	Embedded Microcomputer Based Design	4

Discovery Program Category		4
Credits		17
Fourth Year		
Fall		
ECE 791	Senior Project I	3
Two Professional Electives <sup>2</sup>		8
Discovery Program Category		4
Credits		15
Spring		
ECE 792	Senior Project II	3
ECE 784	Biomedical Instrumentation	4
Discovery Program Category		4
One Professional Elective <sup>2</sup>		4
Credits		15
Total Credits		129

<sup>1</sup> Students are required to take either ECON 402 Principles of Economics (Micro) or EREC 411 Environmental and Resource Economics Perspectives to fulfill the Social Science Category of the Discovery Program.

<sup>2</sup> Three professional electives must be selected as follows:

- Choose any two ECE 7XX courses.
- Students are allowed to take only one as ECE 795 Electrical and Computer Engineering Projects or ECE 796 Special Topics
- Select one course from: BENG 762 Biomedical Engineering, BENG 766 Biomaterials, CHE 714 Chemical Sensors
- Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II will satisfy one professional elective requirement as well as requirements for ECE 791 Senior Project I and ECE 792 Senior Project II

ECE 791 Senior Project I and ECE 792H Senior Honors Project II fulfill Discovery Program Capstone Experience.

Fulfilling the EE Program curriculum taking ECE 401 Perspectives in Electrical and Computer Engineering, ECE 791 Senior Project I, and ECE 792 Senior Project II curriculum will automatically meet Discovery Category, "Environment, Technology and Society."

## Student Learning Outcomes

The Program Educational Objectives for the Computer Engineering Program are as follows:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## Electrical Engineering Major (B.S.)

<https://ceps.unh.edu/ece/electrical-engineering-bs>

### Description

In addition to the university's mandatory Discovery Program requirements, degree candidates must complete our core program (freshman through junior years). In the senior year, students select professional technical electives in the areas of their interest. They also carry out a student-designed project to acquire both breadth and depth of study and to integrate knowledge across course boundaries.

For a detailed semester by semester list of requirements for the four years of study, please refer to the Degree Plan tab.

### Requirements

In addition to Discovery Program requirements, the department has a number of grade-point average and course requirements.

1. Any electrical engineering major whose cumulative grade-point average in ECE courses is less than 2.0 during any three semesters will not be allowed to continue as an electrical engineering major.
2. Electrical engineering majors must achieve a 2.0 grade-point average in all ECE courses as a requirement for graduation.

To make an exception to any of these departmental requirements based on extenuating circumstances, students must petition the department's undergraduate committee. Mindful of these rules, students, with their adviser's assistance, should plan their programs based on the distribution of courses found in the Degree Plan tab.

#### Required Courses

Code	Title	Credits
CS 410C	Introduction to Scientific Programming/C	4
ECE 401	Perspectives in Electrical and Computer Engineering	4
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
ECE 548	Electronic Design I	4
ECE 562	Computer Organization	4
ECE 602	Engineering Analysis	3
ECE 603	Electromagnetic Fields and Waves I	3
ECE 633	Signals and Systems I	3
ECE 634	Signals and Systems II	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 652	Electronic Design II	6
ECE 653	Electronic Design III	6
ECON 402 or EREC 411	Principles of Economics (Micro) Environmental and Resource Economics Perspectives	4
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4

MATH 645	Linear Algebra for Applications	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
<b>Capstone</b>		
ECE 791	Senior Project I	3
ECE 792	Senior Project II	3
<b>Mathematics or Science Elective</b>		
Select one from the following:		4
CHEM 405	Chemical Principles for Engineers	
MATH 644	Statistics for Engineers and Scientists	
MATH 647	Complex Analysis for Applications	
MS 762	Electronic Materials Science	
PHYS 605	Experimental Physics I	
PHYS 615	Classical Mechanics and Mathematical Physics I	
<b>Professional Electives</b>		
Choose four ECE 700-level courses <sup>1</sup>		16
<b>Other Courses</b>		
Discovery requirements not already covered by required courses <sup>2</sup>		24
<b>Total Credits</b>		<b>129</b>

<sup>1</sup> Four professional electives must be selected as follows:

- Choose any of four ECE 700-level courses
- Students are allowed to take only one ECE 795 Electrical and Computer Engineering Projects or ECE 796 Special Topics
- Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II will satisfy one professional elective requirement as well as the requirements for ECE 791 Senior Project I and ECE 792 Senior Project II.

<sup>2</sup> Fulfilling the EE Program curriculum taking ECE 401 Perspectives in Electrical and Computer Engineering, ECE 791 Senior Project I, and ECE 792 Senior Project II curriculum will automatically meet Discovery Category, "Environment, Technology and Society."

### Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ECE 401	Perspectives in Electrical and Computer Engineering	4
MATH 425	Calculus I	4
CS 410C	Introduction to Scientific Programming/C	4
ECON 402 or EREC 411	Principles of Economics (Micro) <sup>1</sup> or Environmental and Resource Economics Perspectives	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
PHYS 407	General Physics I	4
ENGL 401	First-Year Writing	4
MATH 426	Calculus II	4
Discovery Program Category		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
PHYS 408	General Physics II	4

MATH 527	Differential Equations with Linear Algebra	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ECE 548	Electronic Design I	4
ECE 562	Computer Organization	4
MATH 645	Linear Algebra for Applications	4
Discovery Program Category		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
ECE 602	Engineering Analysis	3
ECE 633	Signals and Systems I	3
ECE 652	Electronic Design II	6
Math/Science Elective <sup>4</sup>		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ECE 603	Electromagnetic Fields and Waves I	3
ECE 634	Signals and Systems II	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 653	Electronic Design III	6
Discovery Program Category		4
<b>Credits</b>		<b>19</b>
<b>Fourth Year</b>		
<b>Fall</b>		
Two Professional Electives <sup>2</sup>		8
Discovery Program Category		4
ECE 791	Senior Project I <sup>3</sup>	3
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
Two Professional Electives <sup>2</sup>		8
Discovery Program Category		4
ECE 792	Senior Project II <sup>3</sup>	3
<b>Credits</b>		<b>15</b>
<b>Total Credits</b>		<b>129</b>

<sup>1</sup> Students are required to take either ECON 402 Principles of Economics (Micro) or EREC 411 Environmental and Resource Economics Perspectives to fulfill the Social Science Category of the Discovery Program.

<sup>2</sup> Four professional electives must be selected as follows:

- Choose any of four ECE 7XX courses
- Students are allowed to take only one ECE 795 Electrical and Computer Engineering Projects or ECE 796 Special Topics
- Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II will satisfy one professional elective requirement as well as the requirements for ECE 791 Senior Project I and ECE 792 Senior Project II.

<sup>3</sup> ECE 791 Senior Project I and ECE 792 Senior Project II fulfill Discovery Program Capstone Experience.

<sup>4</sup> Math/Science Elective approved courses: MATH 644 Statistics for Engineers and Scientists, MATH 647 Complex Analysis for Applications, CHEM 405 Chemical Principles for Engineers, PHYS 605

Experimental Physics I PHYS 615 Classical Mechanics and Mathematical Physics I, MS 762 Electronic Materials Science

Fulfilling the EE Program curriculum taking ECE 401, ECE 791, and ECE 792 will automatically meet Discovery Category, "Environment, Technology and Society."

## Student Learning Outcomes

The Program Educational Objectives for the Electrical Engineering Program are as follows:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## Electrical Engineering Major: Biomedical Engineering Option (B.S.)

<https://ceps.unh.edu/electrical-computer-engineering/program/bsee/electrical-engineering-biomedical-engineering-option>

### Description

The Biomedical Engineering (BME) Option is intended to provide the core of knowledge expected of a computer and/or electrical engineer to provide engineering services in the biomedical field. Electrical and/or computer engineers with this option in biomedical engineering combine engineering principles with medical and biological sciences to design and create equipment, devices, computer systems, and software used in healthcare. The BME option is embedded in both the Electrical Engineering (EE) program and the Computer Engineering (CE) program.

### Requirements

In addition to Discovery Program requirements, the department has a number of grade-point average and course requirements.

1. Any electrical engineering major whose cumulative grade-point average in ECE courses is less than 2.0 during any three semesters will not be allowed to continue as an electrical engineering major.

2. Electrical engineering majors must achieve a 2.0 grade-point average in all ECE courses as a requirement for graduation.

To make an exception to any of these departmental requirements based on extenuating circumstances, students must petition the department's undergraduate committee. Mindful of these rules, students, with their adviser's assistance, should plan their programs based on the distribution of courses found in the Degree Plan tab.

### Required Courses

Code	Title	Credits
CS 410C	Introduction to Scientific Programming/C	4
ECE 401	Perspectives in Electrical and Computer Engineering	4
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
ECE 548	Electronic Design I	4
ECE 562	Computer Organization	4
ECE 602	Engineering Analysis	3
ECE 603	Electromagnetic Fields and Waves I	3
ECE 633	Signals and Systems I	3
ECE 634	Signals and Systems II	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 652	Electronic Design II	6
ECE 653	Electronic Design III	6
ECON 402	Principles of Economics (Micro)	4
or EREC 411	Environmental and Resource Economics Perspectives	
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 645	Linear Algebra for Applications	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
<b>Capstone</b>		
ECE 791	Senior Project I	3
ECE 792	Senior Project II	3
<b>Mathematics or Science Elective</b>		
Select one from the following:		4
CHEM 405	Chemical Principles for Engineers	
MATH 644	Statistics for Engineers and Scientists	
MATH 647	Complex Analysis for Applications	
MS 762	Electronic Materials Science	
PHYS 605	Experimental Physics I	
PHYS 615	Classical Mechanics and Mathematical Physics I	
<b>Professional Electives</b>		
Choose two professional elective courses <sup>1</sup>		8
<b>Biomedical Engineering Option Required Courses</b>		
BMS 508	Human Anatomy and Physiology II	4
ECE 784	Biomedical Instrumentation	4
BENG 762	Biomedical Engineering <sup>1</sup>	4
or BENG 766	Biomaterials	
or CHE 714	Chemical Sensors	
<b>Other Courses</b>		
Discovery requirements not already covered by required courses <sup>2</sup>		20
<b>Total Credits</b>		<b>129</b>

<sup>1</sup> Professional electives must be selected as follows:

- Select one course from: BENG 762 Biomedical Engineering, BENG 766 Biomaterials, CHE 714 Chemical Sensors
- Choose any two ECE 700-level courses
- Students are allowed to take only one ECE 795 Electrical and Computer Engineering Projects or ECE 796 Special Topics
- Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II will satisfy one

professional elective requirement as well as the requirements for ECE 791 Senior Project I and ECE 792 Senior Project II.

- <sup>2</sup> Fulfilling the EE Program curriculum taking ECE 401 Perspectives in Electrical and Computer Engineering, ECE 791 Senior Project I, and ECE 792 Senior Project II curriculum will automatically meet Discovery Category, "Environment, Technology and Society."

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ECE 401	Perspectives in Electrical and Computer Engineering	4
CS 410C	Introduction to Scientific Programming/C	4
MATH 425	Calculus I	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
PHYS 407	General Physics I	4
MATH 426	Calculus II	4
BMS 508	Human Anatomy and Physiology II	4
Discovery Program Category		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
MATH 527	Differential Equations with Linear Algebra	4
PHYS 408	General Physics II	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ECE 548	Electronic Design I	4
ECE 562	Computer Organization	4
MATH 645	Linear Algebra for Applications	4
ECON 402	Principles of Economics (Micro) <sup>1</sup>	4
or EREC 411	or Environmental and Resource Economics Perspectives	
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
ECE 602	Engineering Analysis	3
ECE 633	Signals and Systems I	3
ECE 652	Electronic Design II	6
Math/Science Elective <sup>2</sup>		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ECE 603	Electromagnetic Fields and Waves I	3
ECE 634	Signals and Systems II	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 653	Electronic Design III	6

Discovery Program Category	4
<b>Credits</b>	<b>19</b>
<b>Fourth Year</b>	
<b>Fall</b>	
ECE 791 Senior Project I	3
Two Professional Electives <sup>3</sup>	8
Discovery Program Category	4
<b>Credits</b>	<b>15</b>
<b>Spring</b>	
ECE 792 Senior Project II	3
ECE 784 Biomedical Instrumentation	4
One Professional Elective <sup>3</sup>	4
Discovery Program Category	4
<b>Credits</b>	<b>15</b>
<b>Total Credits</b>	<b>129</b>

<sup>1</sup> Students are required to take either ECON 402 Principles of Economics (Micro) or EREC 411 Environmental and Resource Economics Perspectives to fulfill the Social Science Category of the Discovery Program.

<sup>2</sup> Math/Science Elective approved courses: CHEM 405 Chemical Principles for Engineers, MATH 644 Statistics for Engineers and Scientists, MATH 647 Complex Analysis for Applications, PHYS 605 Experimental Physics I, PHYS 615 Classical Mechanics and Mathematical Physics I, MS 762 Electronic Materials Science

<sup>3</sup> Three professional electives must be selected as follows:

- Choose any two ECE 7XX courses
- Students are allowed to take only one ECE 795 Electrical and Computer Engineering Projects or ECE 796 Special Topics
- Select one course from: BENG 762 Biomedical Engineering, BENG 766 Biomaterials, CHE 714 Chemical Sensors
- Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II will satisfy one professional elective requirement as well as the requirements for ECE 791 Senior Project I and ECE 792 Senior Project II.

ECE 791 Senior Project I and ECE 792 Senior Project II fulfill Discovery Program Capstone Experience.

Fulfilling the EE Program Biomedical Option curriculum taking ECE 401 Perspectives in Electrical and Computer Engineering, ECE 791 Senior Project I, and ECE 792 Senior Project II will automatically meet Discovery Category, "Environment, Technology and Society."

## Student Learning Outcomes

The Program Educational Objectives for the Electrical Engineering Program are as follows:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental and economic factors.

- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## Electrical and Computer Engineering Minor

<https://ceps.unh.edu/electrical-computer-engineering/program/minor/electrical-computer-engineering>

### Description

The Department of Electrical and Computer Engineering encourages highly motivated students to consider a minor in Electrical and Computer Engineering. A university-wide GPA of at least 2.8 is required in all but the most compelling of cases, along with an appropriate reason for desiring the minor. Interested students should complete the [provided application](#) form and submit it to the ECE Undergraduate Curriculum Committee (Kingsbury W201) during his/her sophomore or, at the latest, junior year. After it is approved, the student will need to fill out an "Intent to Minor" form, available from the Associate Dean's office (Kingsbury W283) in order to make entry into the minor program official. It is also the student's responsibility to submit a "[Minor Certification of Completion](#)" form after all the minor courses have been taken, but before graduation. The ECE Minor Application Form can be [downloaded here](#) or obtained in the ECE office.

For additional information please contact the ECE Department. Our [ECE Minor Faculty Advisor](#) will be glad to answer any of your questions and help you select courses that best fit your career goals.

### Requirements

#### Requirements for the ECE Minor:

1. You must take a minimum of five ECE courses (at least 18 credits), each with a grade of C- or better.

Code	Title	Credits
ECE 541	Electric Circuits (or ECE 537 with grade of A/A-)	4
ECE 548	Electronic Design I	4
ECE 543	Introduction to Digital Systems	4
Two additional approved ECE courses (500 level or higher) approved by the ECE Undergraduate Curriculum Committee.		

2. You must achieve at least an overall 2.0 average in all courses taken for the minor.
3. Courses taken credit/fail may not be used for the minor.



4. No more than eight credits of courses used by the student to satisfy major requirements may be used for the ECE minor.

5. No more than two courses completed prior to acceptance into the ECE minor may be counted toward the minor.

## Environmental Sciences

The College of Engineering and Physical Sciences (CEPS) and the College of Life Sciences and Agriculture (COLSA) jointly offer a bachelor of science degree in environmental sciences. Environmental sciences, an interdisciplinary field, focuses on the interaction of biological, chemical, and physical processes that shape our natural environment. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, the ability to communicate effectively with both scientific and lay audiences, competency in field methods appropriate for entry-level environmental science positions, competency in the use and application of Geographic Information Systems (GIS), a basic understanding of environmental policy, and the ability to contribute to multidisciplinary teams. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. The full-time faculty members comprising this program have major teaching and research emphases in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, geospatial science, global change, hydrology, plant ecology, soil science, and water resource management.

Employment opportunities include environmental consulting firms, educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants; the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment. Students should consult with their adviser early if their goals include further study.

The Program has four options, and specific course requirements for the major vary by option. The geosystems and hydrology options are both managed by the Department of Earth Sciences in CEPS, and the ecosystems and soil and watershed management options are both managed by the Department of Natural Resources and the Environment in COLSA.

## Programs

- [Environmental Sciences Major: Ecosystems Option \(B.S.\)](#) (p. 307)
- [Environmental Sciences Major: Geosystems Option \(B.S.\)](#) (p. 194)
- [Environmental Sciences Major: Hydrology Option \(B.S.\)](#) (p. 197)
- [Environmental Sciences Major: Soil and Watersheds Option \(B.S.\)](#) (p. 308)

## Faculty

COLSA faculty: <https://colsa.unh.edu/directory/all>

CEPS faculty: <https://ceps.unh.edu/directory/all>

## Materials Science (MS)

### Programs

- [Materials Science Minor](#) (p. 209)

## Materials Science Minor

<https://ceps.unh.edu/materials-science/program/minor/materials-science>

### Description

Materials science is an interdisciplinary field that involves the research, development, and design of new materials. In the past century, materials scientists have enabled major technological advances in areas such as electronic materials for semiconductors, new metal alloys for aircraft and automotive applications, and new polymers for a host of medical and consumer applications. In order to prepare students for continuing growth and innovation in materials science, the materials science program offers this minor, which is open to all students at UNH.

The minor offers a broad introduction to materials science, which reflects the interdisciplinary nature of the field. Students must complete at least 18 credits and a minimum of five courses, as described below, with C- or better and a minimum 2.0 grade-point average. No more than 8 credits used to satisfy the student's major requirements may be used toward the minor. Students interested in the minor should contact the director of the materials science program (Prof. James Krzanowski, [james.krzanowski@unh.edu](mailto:james.krzanowski@unh.edu)) as early as possible and preferably before the end of their sophomore year.

### Requirements

To complete the minor in materials science, students must take the following courses.

Code	Title	Credits
<b>Required</b>		
ME 561	Introduction to Materials Science <sup>1</sup>	4
<b>Group A: Thermodynamics, Kinetics and Structure of Materials</b>		
Select one of the following:		4-5
CHEM 683 & CHEM 685	Physical Chemistry I and Physical Chemistry Laboratory <sup>2</sup>	
PHYS 508	Thermodynamics and Statistical Mechanics <sup>2,3</sup>	
ME 795	Special Topics	1-4
ME #761	Diffraction and Imaging Methods in Materials Science	
<b>Group B: Materials Applications and Properties</b>		
Select one of the following:		4-5
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	
CHEM 547 & CHEM 549	Organic Chemistry I and Organic Chemistry Laboratory	
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	
PHYS 718	Condensed Matter Physics	
ME 786	Introduction to Finite Element Analysis	
ME 735	Mechanics of Composite Materials	
ME 795	Special Topics	
Select two to three additional courses from either Group A or Group B <sup>4</sup>		4-6
<b>Total Credits</b>		<b>17-24</b>

- <sup>1</sup> It is strongly recommended that students take this course during their sophomore year.
- <sup>2</sup> Students cannot receive credit towards the minor for both PHYS 508 Thermodynamics and Statistical Mechanics and CHEM 683 Physical Chemistry I/CHEM 685 Physical Chemistry Laboratory.
- <sup>3</sup> Students cannot receive credit towards the minor for PHYS 508 Thermodynamics and Statistical Mechanics if they have taken ME 503 Thermodynamics.
- <sup>4</sup> As needed to reach the required 18 credits

## Mathematics and Statistics (MATH)

The Department of Mathematics and Statistics offers a variety of programs leading to five different degrees:

- B.A. degree: mathematics major;
- B.S. in mathematics degree;
- B.S. in applied mathematics degree;
- B.S. in mathematics education degree; and
- B.S. in statistics degree.

These programs provide flexibility through elective choices and are designed to maximize educational and employment opportunities. Each student must enroll in one specific program; however, changes between programs usually can be accommodated.

The first two years of all programs are similar. In the first year, students are expected to take MATH 425 Calculus I and MATH 426 Calculus II, as well as an introductory programming course (either MATH 445 Mathematics and Applications with MATLAB or CS 410C Introduction to Scientific Programming/C or CS 410P Introduction to Scientific Programming/Python). A sophomore typically takes follow-up calculus courses in MATH 527 Differential Equations with Linear Algebra and MATH 528 Multidimensional Calculus, MATH 539 Introduction to Statistical Analysis, and MATH 531 Mathematical Proof. The senior capstone experience is fulfilled by a variety of designated courses in each of the degree programs; specific details are given in each program's course listing below.

For more information about the department's undergraduate programs, visit <http://ceps.unh.edu/mathematics-statistics>

## Standards for Graduation

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

## Minoring in Mathematics

The Department of Mathematics and Statistics offers three minor programs: mathematics, applied mathematics, and statistics. These programs, which are open to all students enrolled at the University, require a minimum of five MATH courses as detailed below. Students whose major program requires more than two courses required by the minor program must substitute additional courses from the list of elective courses to meet the five-course minimum.

<https://ceps.unh.edu/mathematics-statistics>

## Programs

- [Applied Mathematics Major \(B.S.\)](#) (p. 210)
- [Applied Mathematics Major: Computation Option \(B.S.\)](#) (p. 212)
- [Applied Mathematics Major: Dynamics and Control Option \(B.S.\)](#) (p. 213)
- [Applied Mathematics Major: Economics Option \(B.S.\)](#) (p. 214)
- [Applied Mathematics Major: Fluid Dynamics Option \(B.S.\)](#) (p. 215)
- [Applied Mathematics Major: Solid Mechanics and Vibrations Option \(B.S.\)](#) (p. 217)
- [Mathematics Education Major: Elementary/Middle School K-8 Option \(B.S.\)](#) (p. 218)
- [Mathematics Education Major: Secondary Option \(B.S.\)](#) (p. 220)
- [Mathematics Major \(B.A.\)](#) (p. 221)
- [Mathematics Major \(B.S.\)](#) (p. 222)
- [Statistics Major \(B.S.\)](#) (p. 224)
- [Applied Mathematics Minor](#) (p. 225)
- [Mathematics Minor](#) (p. 225)
- [Statistics Minor](#) (p. 226)

## Faculty

Visit <https://ceps.unh.edu/directory/all> for faculty.

## Applied Mathematics Major (B.S.)

### Description

This degree prepares students for careers in science, engineering, and industry by giving students broad exposure to both theoretical and computational models of physical systems in the physical, natural, and social sciences.

### Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

## Requirements

Code	Title	Credits
<b>Required MATH Courses</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB Introduction to Engineering Computing	4
MATH 527	Differential Equations with Linear Algebra <sup>1</sup>	4
MATH 528	Multidimensional Calculus <sup>1</sup>	4
MATH 531	Mathematical Proof	4
MATH 545 or MATH 645	Introduction to Linear Algebra <sup>2</sup> Linear Algebra for Applications	4
MATH 644	Statistics for Engineers and Scientists	4
MATH 647 or MATH 788	Complex Analysis for Applications Complex Analysis	4
MATH 745	Foundations of Applied Mathematics I	4
MATH 753	Introduction to Numerical Methods I	4
MATH 757	Mathematical Optimization for Applications	4

Capstone: Select one of the following		
MATH 797	Senior Seminar	4
MATH 798	Senior Project	4
MATH 799	Senior Thesis	2 or 4
Select TWO of the following electives		
MATH 746	Foundations of Applied Mathematics II	4
MATH 747	Introduction to Nonlinear Dynamics and Chaos	4
MATH 767	One-Dimensional Real Analysis	4
One approved CEPS course at the 700-level, selected in consultation with the academic advisor		4
Other Required Courses		
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
CS 414 & CS 417	From Problems to Algorithms to Programs and From Programs to Computer Science	8
or CS 415 & CS 416	Introduction to Computer Science I and Introduction to Computer Science II	
Total Credits		90-92

<sup>1</sup> The full Linearity sequence, MATH 525 & MATH 526, may be used to replace the MATH 527, MATH 528, and MATH 545 / MATH 645 requirements.

<sup>2</sup> MATH 525 may be used to replace the MATH 545 or MATH 645 requirement.

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
MATH 425	Calculus I	4
CS 414 or CS 415	From Problems to Algorithms to Programs or Introduction to Computer Science I	4
Discovery Course		4
Inquiry Course		4
MATH 400	Freshman Seminar	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 426	Calculus II	4
CS 417 or CS 416	From Programs to Computer Science or Introduction to Computer Science II	4
ENGL 401	First-Year Writing	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
MATH 445 or IAM 550	Mathematics and Applications with MATLAB or Introduction to Engineering Computing	4
MATH 527	Differential Equations with Linear Algebra	4
PHYS 407	General Physics I	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 528	Multidimensional Calculus	4
MATH 531	Mathematical Proof	4
PHYS 408	General Physics II	4

Discovery Course	4
<b>Credits</b>	<b>16</b>

### Third Year

#### Fall

MATH 545 or MATH 645	Introduction to Linear Algebra or Linear Algebra for Applications	4
MATH 644	Statistics for Engineers and Scientists	4
MATH 753	Introduction to Numerical Methods I	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

#### Spring

MATH 757	Mathematical Optimization for Applications	4
CEPS 700-level elective		4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>

### Fourth Year

#### Fall

MATH 745	Foundations of Applied Mathematics I	4
Writing Intensive Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>

#### Spring

MATH 647 or MATH 788	Complex Analysis for Applications or Complex Analysis	4
MATH 797 or MATH 798 or MATH 799	Senior Seminar or Senior Project or Senior Thesis	4
Writing Intensive Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>129</b>

## Student Learning Outcomes

- Students recognize common mathematical notations and operations used in mathematics, science and engineering.
- Students can recognize and classify a variety of mathematical models including differential equations, linear and nonlinear systems of algebraic equations, and common probability distributions.
- Students have developed a working knowledge (including notation, terminology, foundational principles of the discipline, and standard mathematical models within the discipline) in at least one discipline outside of mathematics.
- Students are able to extract useful knowledge, both quantitative and qualitative, from mathematical models and can apply that knowledge to the relevant discipline.

# Applied Mathematics Major: Computation Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/applied-mathematics-computation-option>

## Description

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

## Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

## Requirements

## Major Requirements

Code	Title	Credits
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB Introduction to Engineering Computing	4
MATH 527	Differential Equations with Linear Algebra <sup>1</sup>	4
MATH 528	Multidimensional Calculus <sup>1</sup>	4
MATH 531	Mathematical Proof	4
MATH 644	Statistics for Engineers and Scientists <sup>2</sup>	4
MATH 645	Linear Algebra for Applications <sup>1</sup>	4
MATH 753	Introduction to Numerical Methods I	4
PHYS 407	General Physics I	4
<b>Capstone: Select one of the following</b>		
MATH 797	Senior Seminar	4
MATH 798	Senior Project	4
MATH 799	Senior Thesis	2 or 4
<b>Total Credits</b>		<b>50-52</b>

<sup>1</sup> The full Linearity sequence, MATH 525 and MATH 526, may be used to replace the MATH 527, MATH 528, and MATH 645 requirements.

MATH 525 may be used to replace the MATH 645 requirement.

<sup>2</sup> Applied Mathematics: Economics Option students must take MATH 539 Introduction to Statistical Analysis.

## Computation Option Requirements

Code	Title	Credits
PHYS 408	General Physics II	4
MATH 647	Complex Analysis for Applications	4
MATH 745	Foundations of Applied Mathematics I	4
CS 415 & CS 416	Introduction to Computer Science I and Introduction to Computer Science II	8
CS 420	Foundations of Programming for Digital Systems	4
CS 515	Data Structures and Introduction to Algorithms	4
CS 659	Introduction to the Theory of Computation	4
CS 758	Algorithms	4
IAM 751	Introduction to High-Performance Computing	4
<b>Total Credits</b>		<b>40</b>

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
MATH 425	Calculus I	4
CS 415	Introduction to Computer Science I	4
Discovery Course		4
Inquiry Course		4
MATH 400	Freshman Seminar	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB or Introduction to Engineering Computing	4
CS 416	Introduction to Computer Science II	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
MATH 528	Multidimensional Calculus	4
MATH 531	Mathematical Proof	4
PHYS 407	General Physics I	4
CS 420	Foundations of Programming for Digital Systems	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 527	Differential Equations with Linear Algebra	4
MATH 644	Statistics for Engineers and Scientists	4
PHYS 408	General Physics II	4
CS 515	Data Structures and Introduction to Algorithms	4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
MATH 647	Complex Analysis for Applications	4
MATH 753	Introduction to Numerical Methods I	4
CS 659	Introduction to the Theory of Computation	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 645	Linear Algebra for Applications	4
IAM 751	Introduction to High-Performance Computing	4
CS 758	Algorithms	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
MATH 745	Foundations of Applied Mathematics I	4

Discovery Course	4
Discovery Course	4
Writing Intensive Course	4
<b>Credits</b>	<b>16</b>

**Spring**

MATH 797	Senior Seminar	4
or MATH 798	or Senior Project	
or MATH 799	or Senior Thesis	
Discovery Course		4
Writing Intensive Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>129</b>

## Student Learning Outcomes

- Students recognize common mathematical notations and operations used in mathematics, science and engineering.
- Students can recognize and classify a variety of mathematical models including differential equations, linear and nonlinear systems of algebraic equations, and common probability distributions.
- Students have developed a working knowledge (including notation, terminology, foundational principles of the discipline, and standard mathematical models within the discipline) in at least one discipline outside of mathematics.
- Students are able to extract useful knowledge, both quantitative and qualitative, from mathematical models and can apply that knowledge to the relevant discipline.

## Applied Mathematics Major: Dynamics and Control Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/applied-mathematics-dynamics-control-option>

### Description

*Beginning in the 2022/23 academic year, the Applied Mathematics Major: Dynamics and Control option will no longer be accepting new students. Current students will continue to have access to the same high-quality education and resources until they graduate.*

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

### Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

## Requirements

### Major Requirements

Code	Title	Credits
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or IAM 550	Introduction to Engineering Computing	
MATH 527	Differential Equations with Linear Algebra <sup>1</sup>	4
MATH 528	Multidimensional Calculus <sup>1</sup>	4
MATH 531	Mathematical Proof	4
MATH 644	Statistics for Engineers and Scientists <sup>2</sup>	4
MATH 645	Linear Algebra for Applications <sup>1</sup>	4
MATH 753	Introduction to Numerical Methods I	4
PHYS 407	General Physics I	4
<b>Capstone: Select one of the following</b>		
MATH 797	Senior Seminar	4
MATH 798	Senior Project	4
MATH 799	Senior Thesis	2 or 4
<b>Total Credits</b>		<b>50-52</b>

<sup>1</sup> The full Linearity sequence, MATH 525 and MATH 526, may be used to replace the MATH 527, MATH 528, and MATH 645 requirements. MATH 525 may be used to replace the MATH 645 requirement.

<sup>2</sup> Applied Mathematics: Economics Option students must take MATH 539 Introduction to Statistical Analysis.

### Dynamics and Control Option Requirements

Code	Title	Credits
PHYS 408	General Physics II	4
MATH 647	Complex Analysis for Applications	4
MATH 747	Introduction to Nonlinear Dynamics and Chaos	4
ME 525	Statics	3
or CEE 500	Statics for Civil Engineers	
ME 627	Dynamics	3
ECE 633	Signals and Systems I	3
ECE 634	Signals and Systems II	3
ECE 772	Control Systems	4
One approved elective at the 600-700 level, selected in consultation with the academic advisor		4
<b>Total Credits</b>		<b>32</b>

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
MATH 425	Calculus I	4
PHYS 407	General Physics I	4
Discovery Course		4
Inquiry Course		4
MATH 400	Freshman Seminar	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 426	Calculus II	4



MATH 445 or IAM 550	Mathematics and Applications with MATLAB or Introduction to Engineering Computing	4
PHYS 408	General Physics II	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
MATH 528	Multidimensional Calculus	4
MATH 644	Statistics for Engineers and Scientists	4
ME 525	Statics	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 527	Differential Equations with Linear Algebra	4
MATH 531	Mathematical Proof	4
MATH 645	Linear Algebra for Applications	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
MATH 647	Complex Analysis for Applications	4
ME 627	Dynamics	3
ECE 633	Signals and Systems I	3
Discovery Course		4
Elective Course		4
<b>Credits</b>		<b>18</b>
<b>Spring</b>		
MATH 747	Introduction to Nonlinear Dynamics and Chaos	4
ECE 634	Signals and Systems II	3
600/700-level Elective Course		4
Discovery Course		4
<b>Credits</b>		<b>15</b>
<b>Fourth Year</b>		
<b>Fall</b>		
MATH 753	Introduction to Numerical Methods I	4
Discovery Course		4
Writing Intensive Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 797 or MATH 798 or MATH 799	Senior Seminar or Senior Project or Senior Thesis	4
ECE 772	Control Systems	4
Writing Intensive Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>130</b>

## Student Learning Outcomes

- Students recognize common mathematical notations and operations used in mathematics, science and engineering.
- Students can recognize and classify a variety of mathematical models including differential equations, linear and nonlinear systems of algebraic equations, and common probability distributions.
- Students have developed a working knowledge (including notation, terminology, foundational principles of the discipline, and standard mathematical models within the discipline) in at least one discipline outside of mathematics.
- Students are able to extract useful knowledge, both quantitative and qualitative, from mathematical models and can apply that knowledge to the relevant discipline.

## Applied Mathematics Major: Economics Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/applied-mathematics-economics-option>

## Description

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

### Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

## Requirements

## Major Requirements

Code	Title	Credits
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB Introduction to Engineering Computing	4
MATH 527	Differential Equations with Linear Algebra <sup>1</sup>	4
MATH 528	Multidimensional Calculus <sup>1</sup>	4
MATH 531	Mathematical Proof	4
MATH 644	Statistics for Engineers and Scientists <sup>2</sup>	4
MATH 645	Linear Algebra for Applications <sup>1</sup>	4
MATH 753	Introduction to Numerical Methods I	4
PHYS 407	General Physics I	4
<b>Capstone: Select one of the following</b>		
MATH 797	Senior Seminar	4
MATH 798	Senior Project	4
MATH 799	Senior Thesis	2 or 4
<b>Total Credits</b>		<b>50-52</b>

<sup>1</sup> The full Linearity sequence, MATH 525 and MATH 526, may be used to replace the MATH 527, MATH 528, and MATH 645 requirements. MATH 525 may be used to replace the MATH 645 requirement.

<sup>2</sup> Applied Mathematics: Economics Option students must take MATH 539 Introduction to Statistical Analysis.

## Economics Option Requirements

Code	Title	Credits
MATH 739	Applied Regression Analysis	4
MATH 755	Probability with Applications	4
ONE approved MATH elective at the 700-level, selected in consultation with the academic advisor		4
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
ECON 605	Intermediate Microeconomic Analysis	4
ECON 611	Intermediate Macroeconomic Analysis	4
ECON 726	Introduction to Econometrics	4
ONE approved ECON or DS elective at the 700-level, selected in consultation with the academic advisor		4
<b>Total Credits</b>		<b>36</b>

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
MATH 425	Calculus I	4
ECON 401	Principles of Economics (Macro)	4
Discovery Course		4
Inquiry Course		4
MATH 400	Freshman Seminar	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB or Introduction to Engineering Computing	4
ECON 402	Principles of Economics (Micro)	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
MATH 528	Multidimensional Calculus	4
MATH 531	Mathematical Proof	4
PHYS 407	General Physics I	4
ECON 605	Intermediate Microeconomic Analysis	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 527	Differential Equations with Linear Algebra	4
MATH 539	Introduction to Statistical Analysis	4
ECON 611	Intermediate Macroeconomic Analysis	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
MATH 645	Linear Algebra for Applications	4
MATH 739	Applied Regression Analysis	4
ECON or DS Elective Course		4

Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ECON 726	Introduction to Econometrics	4
700-level MATH Elective Course		4
Discovery Course		4
Writing Intensive Course		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
MATH 753	Introduction to Numerical Methods I	4
MATH 755	Probability with Applications	4
Discovery Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 797	Senior Seminar	4
or MATH 798	or Senior Project	
or MATH 799	or Senior Thesis	
Writing Intensive Course		4
Elective Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>129</b>

## Student Learning Outcomes

- Students recognize common mathematical notations and operations used in mathematics, science and engineering.
- Students can recognize and classify a variety of mathematical models including differential equations, linear and nonlinear systems of algebraic equations, and common probability distributions.
- Students have developed a working knowledge (including notation, terminology, foundational principles of the discipline, and standard mathematical models within the discipline) in at least one discipline outside of mathematics.
- Students are able to extract useful knowledge, both quantitative and qualitative, from mathematical models and can apply that knowledge to the relevant discipline.

## Applied Mathematics Major: Fluid Dynamics Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/applied-mathematics-fluid-dynamics-option>

## Description

*Beginning in the 2022/23 academic year, the Applied Mathematics Major: Fluid Dynamics option will no longer be accepting new students. Current students will continue to have access to the same high-quality education and resources until they graduate.*

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which

mathematics plays a critical role in the solution of important scientific and technological problems.

Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Requirements

Major Requirements

Code	Title	Credits
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB Introduction to Engineering Computing	4
MATH 527	Differential Equations with Linear Algebra <sup>1</sup>	4
MATH 528	Multidimensional Calculus <sup>1</sup>	4
MATH 531	Mathematical Proof	4
MATH 644	Statistics for Engineers and Scientists <sup>2</sup>	4
MATH 645	Linear Algebra for Applications <sup>1</sup>	4
MATH 753	Introduction to Numerical Methods I	4
PHYS 407	General Physics I	4
Capstone: Select one of the following		
MATH 797	Senior Seminar	4
MATH 798	Senior Project	4
MATH 799	Senior Thesis	2 or 4
Total Credits		50-52

<sup>1</sup> The full Linearity sequence, MATH 525 and MATH 526, may be used to replace the MATH 527, MATH 528, and MATH 645 requirements. MATH 525 may be used to replace the MATH 645 requirement.

<sup>2</sup> Applied Mathematics: Economics Option students must take MATH 539 Introduction to Statistical Analysis.

Fluid Dynamics Option Requirements

Code	Title	Credits
PHYS 408	General Physics II	4
MATH 647	Complex Analysis for Applications	4
MATH 745	Foundations of Applied Mathematics I	4
ME 503	Thermodynamics	3
ME 525	Statics	3
or CEE 500	Statics for Civil Engineers	
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
Select TWO of the following courses		6-8
ME 707	Analytical Fluid Dynamics	
ME 709	Computational Fluid Dynamics	
ME 712	Waves in Fluids	
One approved 700-level elective, selected in consultation with the academic advisor		
Total Credits		30-32

Degree Plan

Course	Title	Credits
First Year		
Fall		
MATH 425	Calculus I	4
PHYS 407	General Physics I	4

Discovery Course		4
Inquiry Course		4
MATH 400	Freshman Seminar	1
Credits		17
Spring		
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB or Introduction to Engineering Computing	4
PHYS 408	General Physics II	4
ENGL 401	First-Year Writing	4
Credits		16

Second Year		
Fall		
MATH 528	Multidimensional Calculus	4
MATH 644	Statistics for Engineers and Scientists	4
ME 525	Statics	4
Discovery Course		4
Credits		16
Spring		
MATH 527	Differential Equations with Linear Algebra	4
MATH 531	Mathematical Proof	4
MATH 645	Linear Algebra for Applications	4
ME 503	Thermodynamics	3
Credits		15

Third Year		
Fall		
MATH 647	Complex Analysis for Applications	4
MATH 745	Foundations of Applied Mathematics I	4
Discovery Course		4
Discovery Course		4
Credits		16
Spring		
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
Discovery Course		4
Discovery Course		4
Writing Intensive Course		4
Credits		18

Fourth Year		
Fall		
MATH 753	Introduction to Numerical Methods I	4
ME 707	Analytical Fluid Dynamics	4
Writing Intensive Course		4
Elective Course		4
Credits		16

Spring		
MATH 797 or MATH 798 or MATH 799	Senior Seminar or Senior Project or Senior Thesis	4
700-level ME Elective Course		4
Elective Course		4

Elective Course	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>130</b>

## Student Learning Outcomes

- Students recognize common mathematical notations and operations used in mathematics, science and engineering.
- Students can recognize and classify a variety of mathematical models including differential equations, linear and nonlinear systems of algebraic equations, and common probability distributions.
- Students have developed a working knowledge (including notation, terminology, foundational principles of the discipline, and standard mathematical models within the discipline) in at least one discipline outside of mathematics.
- Students are able to extract useful knowledge, both quantitative and qualitative, from mathematical models and can apply that knowledge to the relevant discipline.

## Applied Mathematics Major: Solid Mechanics and Vibrations Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/applied-mathematics-solid-mechanics-vibrations-option>

## Description

*Beginning in the 2022/23 academic year, the Applied Mathematics Major: Solid Mechanics and Vibrations option will no longer be accepting new students. Current students will continue to have access to the same high-quality education and resources until they graduate.*

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

### Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

## Requirements

### Major Requirements

Code	Title	Credits
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or IAM 550	Introduction to Engineering Computing	
MATH 527	Differential Equations with Linear Algebra <sup>1</sup>	4
MATH 528	Multidimensional Calculus <sup>1</sup>	4
MATH 531	Mathematical Proof	4
MATH 644	Statistics for Engineers and Scientists <sup>2</sup>	4
MATH 645	Linear Algebra for Applications <sup>1</sup>	4
MATH 753	Introduction to Numerical Methods I	4

PHYS 407	General Physics I	4
<b>Capstone: Select one of the following</b>		
MATH 797	Senior Seminar	4
MATH 798	Senior Project	4
MATH 799	Senior Thesis	2 or 4
<b>Total Credits</b>		<b>50-52</b>

- <sup>1</sup> The full Linearity sequence, MATH 525 and MATH 526, may be used to replace the MATH 527, MATH 528, and MATH 645 requirements. MATH 525 may be used to replace the MATH 645 requirement.
- <sup>2</sup> Applied Mathematics: Economics Option students must take MATH 539 Introduction to Statistical Analysis.

## Solid Mechanics and Vibrations Option Requirements

Code	Title	Credits
PHYS 408	General Physics II	4
MATH 647	Complex Analysis for Applications	4
MATH 745	Foundations of Applied Mathematics I	4
ME 525	Statics	3
or CEE 500	Statics for Civil Engineers	
ME 526	Mechanics of Materials	3
or CEE 501	Strength of Materials	
ME 561	Introduction to Materials Science	4
ME 627	Dynamics	3
<b>Select TWO from the following:</b>		<b>8</b>
ME 727	Advanced Mechanics of Solids	
ME 730	Mechanical Behavior of Materials	
700-Level Elective <sup>3</sup>		
<b>Total Credits</b>		<b>33</b>

- <sup>3</sup> Selected in consultation with the academic advisor.

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
MATH 425	Calculus I	4
PHYS 407	General Physics I	4
Discovery Course		4
Inquiry Course		4
MATH 400	Freshman Seminar	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or IAM 550	Introduction to Engineering Computing	
PHYS 408	General Physics II	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
MATH 528	Multidimensional Calculus	4

MATH 644	Statistics for Engineers and Scientists	4
ME 525	Statics	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 527	Differential Equations with Linear Algebra	4
MATH 531	Mathematical Proof	4
MATH 645	Linear Algebra for Applications	4
ME 526	Mechanics of Materials	3
<b>Credits</b>		<b>15</b>
<b>Third Year</b>		
<b>Fall</b>		
MATH 647	Complex Analysis for Applications	4
MATH 745	Foundations of Applied Mathematics I	4
ME 627	Dynamics	3
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>19</b>
<b>Spring</b>		
ME 561	Introduction to Materials Science	4
Elective Course		4
Discovery Course		4
Writing Intensive Course		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
MATH 753	Introduction to Numerical Methods I	4
Elective Course		4
Discovery Course		4
Writing Intensive Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 797	Senior Seminar	4
or MATH 798	or Senior Project	
or MATH 799	or Senior Thesis	
Elective Course		4
Elective Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>131</b>

- Students are able to extract useful knowledge, both quantitative and qualitative, from mathematical models and can apply that knowledge to the relevant discipline.

## Math Education Major: Elementary/Middle School Education K-8 Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/mathematics-education-elementarymiddle-school-option>

### Description

*Beginning in the 2022/23 academic year, the Math Education Major: Elementary/Middle School Education K-8 option will no longer be accepting new students. Current students will continue to have access to the same high-quality education and resources until they graduate.*

This professional degree program prepares students for teaching mathematics at the elementary and/or middle school level. The program is coordinated with the education department's teacher certification programs. For the elementary option, full certification requires the five-year program. Students may complete the degree requirements for middle school option with full teacher certification in either four or five years.

Students electing the four-year option leading to middle school certification must plan for one semester of student teaching (EDUC 694C Supervised Teaching/Mathematics) in their senior year; this requires careful planning with your program adviser to accommodate the scheduling of required MATH courses. Requirements for admission to student teaching include receiving credit for EDUC 500 and a minimum cumulative 2.8 GPA.

The five-year program for either option includes a year-long teaching internship in the fifth year. The internship requires admission into a UNH Department of Education graduate program that leads to certification. See Education, College of Liberal Arts.

### Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

For **teacher licensure** a grade of B- or better is required in all Education courses.

## Student Learning Outcomes

- Students recognize common mathematical notations and operations used in mathematics, science and engineering.
- Students can recognize and classify a variety of mathematical models including differential equations, linear and nonlinear systems of algebraic equations, and common probability distributions.
- Students have developed a working knowledge (including notation, terminology, foundational principles of the discipline, and standard mathematical models within the discipline) in at least one discipline outside of mathematics.

## Requirements

Code	Title	Credits
<b>Required MATH Courses</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or CS 410P	Introduction to Scientific Programming/Python	
or CS 410C	Introduction to Scientific Programming/C	
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 545	Introduction to Linear Algebra	4
or MATH 645	Linear Algebra for Applications	



MATH 621	Number Systems for Teachers	4
MATH 622	Geometry for Teachers	4
MATH 623	Probability and Statistics for Teachers	4
MATH 625	Functions and Algebra for Teachers	4
MATH 700	Introduction to Mathematics Education	4
MATH 703	Teaching of Mathematics in Grades K-5	4
or MATH 709	Teaching of Mathematics in Grades 6-12	
MATH 760	Geometry	4
MATH 790	Historical Foundations of Mathematics	4
<b>Capstone: Select one of the following</b>		
MATH 797	Senior Seminar	4
MATH 799	Senior Thesis	2 or 4
<b>Other Required Courses</b>		
PHYS 406	Introduction to Modern Astronomy	4
EDUC 500	Exploring Teaching	4
EDUC 605	Educational Perspectives in Critical Times	4
EDUC 701	Human Development & Learning: Cultural Perspectives	4
<b>Total Credits</b>		<b>78-80</b>

**Note:** EDUC 703F Teaching Elementary School Science, EDUC 703M Teaching Elementary Social Studies, EDUC 706 Teaching & Learning Literacy in the Elementary Classroom, and EDUC 751A Inclusive Elementary Education: Literacies and Learning for Diverse Learners are requirements for K-6 or K-8 certification.

EDUC 706 Teaching & Learning Literacy in the Elementary Classroom must be completed prior to the Internship (EDUC 900A Internship and Seminar in Teaching and EDUC 901A Internship and Seminar in Teaching).

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
MATH 425	Calculus I	4
PHYS 406	Introduction to Modern Astronomy	4
Discovery Course		4
Inquiry Course		4
MATH 400	Freshman Seminar	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with	4
or CS 410P	MATLAB	
or CS 410C	or Introduction to Scientific Programming/Python	
	or Introduction to Scientific Programming/C	
ENGL 401	First-Year Writing	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
MATH 539	Introduction to Statistical Analysis	4
MATH 621	Number Systems for Teachers	4
EDUC 500	Exploring Teaching	4

Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 531	Mathematical Proof	4
MATH 545	Introduction to Linear Algebra	4
or MATH 645	or Linear Algebra for Applications	
MATH 622	Geometry for Teachers	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

### Third Year

#### Fall

MATH 623	Probability and Statistics for Teachers	4
MATH 700	Introduction to Mathematics Education	4
MATH 760	Geometry	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 625	Functions and Algebra for Teachers	4
MATH 703	Teaching of Mathematics in Grades K-5	4
or MATH 709	or Teaching of Mathematics in Grades 6-12	
MATH 790	Historical Foundations of Mathematics	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

### Fourth Year

#### Fall

MATH 797	Senior Seminar	4
or MATH 799	or Senior Thesis	
EDUC 605	Educational Perspectives in Critical Times	4
Writing Intensive Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
EDUC 701	Human Development & Learning: Cultural Perspectives	4
Writing Intensive Course		4
Elective Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>129</b>

## Student Learning Outcomes

Mathematics Concepts, Practices, and Curriculum. Well-prepared beginning teachers of mathematics:

- Demonstrate robust knowledge of mathematical and statistical concepts that underlie what they encounter in teaching of K-8 or secondary mathematics.
- Engage in appropriate mathematical and statistical practices, and use technological tools to solve mathematical problems, and incorporate educational technology in their teaching.

- Analyze and interpret mathematical curricula, assessments, and standards documents.
- Analyze and interpret students' mathematical work.

Pedagogical Knowledge and Practices for Teaching Mathematics. Well-prepared beginning teachers of mathematics:

- Demonstrate strong foundations of pedagogical knowledge, and effective and equitable mathematics teaching practices.
- Construct instructional explanations, develop tasks, lesson plans and unit plans, that advance students' mathematical understanding.
- Recognize common patterns of student thinking related to particular mathematical topics, and articulate ways of supporting students' mathematical thinking.

Productive dispositions. Well-prepared beginning teachers:

- Demonstrate positive and productive dispositions toward mathematics as a discipline, towards students as learners of mathematics and towards teaching mathematics in ways that support students' sense making, understanding, and reasoning.

## Mathematics Education Major: Secondary Education Option (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/mathematics-education-secondary-education-option>

### Description

This professional degree program prepares students for teaching mathematics at the secondary level. The program is coordinated with the education department's teacher certification programs. Students may complete the degree requirements for the secondary option with full teacher certification in either four or five years.

Students electing the four-year option leading to secondary school certification must plan for one semester of student teaching (EDUC 694C Supervised Teaching/Mathematics) in their senior year; this requires careful planning with your program adviser to accommodate the scheduling of required MATH courses. Requirements for admission to student teaching include receiving credit for EDUC 500 and a minimum cumulative 2.8 GPA.

The five-year program includes a year-long teaching internship in the fifth year. The internship requires admission into a UNH Department of Education graduate program that leads to certification. See Education, College of Liberal Arts.

### Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

For **teacher licensure** a grade of B- or better is required in all Education courses.

## Requirements

Code	Title	Credits
<b>Required MATH Courses</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or CS 410P	Introduction to Scientific Programming/Python	
or CS 410C	Introduction to Scientific Programming/C	
MATH 527	Differential Equations with Linear Algebra	4
MATH 528	Multidimensional Calculus	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 545	Introduction to Linear Algebra	4
or MATH 645	Linear Algebra for Applications	
MATH 624	Analysis of Secondary School Mathematics	4
MATH 700	Introduction to Mathematics Education	4
MATH 709	Teaching of Mathematics in Grades 6-12	4
MATH 760	Geometry	4
MATH 761	Abstract Algebra	4
MATH 790	Historical Foundations of Mathematics	4
<b>Capstone: Select one of the following</b>		
MATH 797	Senior Seminar	4
MATH 799	Senior Thesis	2 or 4
<b>Other Required Courses</b>		
EDUC 500	Exploring Teaching	4
EDUC 605	Educational Perspectives in Critical Times	4
EDUC 701	Human Development & Learning: Cultural Perspectives	4
<b>Total Credits</b>		<b>74-76</b>

**Note:** EDUC 751B Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions is a requirement for certification and may be taken as an undergraduate.

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
MATH 425	Calculus I	4
ENGL 401	First-Year Writing	4
Discovery Course		4
Inquiry Course		4
MATH 400	Freshman Seminar	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or CS 410P	or Introduction to Scientific Programming/Python	
or CS 410C	or Introduction to Scientific Programming/C	
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
MATH 528	Multidimensional Calculus	4

MATH 531	Mathematical Proof	4
EDUC 500	Exploring Teaching	4
Discovery Course		4

**Credits** **16**

### Spring

MATH 527	Differential Equations with Linear Algebra	4
MATH 545 or MATH 645	Introduction to Linear Algebra or Linear Algebra for Applications	4
MATH 790	Historical Foundations of Mathematics	4
Discovery Course		4

**Credits** **16**

### Third Year

#### Fall

MATH 539	Introduction to Statistical Analysis	4
MATH 700	Introduction to Mathematics Education	4
MATH 760	Geometry	4
Discovery Course		4

**Credits** **16**

#### Spring

MATH 709	Teaching of Mathematics in Grades 6-12	4
MATH 761	Abstract Algebra	4
Discovery Course		4
Writing Intensive Course		4

**Credits** **16**

### Fourth Year

#### Fall

MATH 797 or MATH 799	Senior Seminar or Senior Thesis	4
EDUC 605	Educational Perspectives in Critical Times	4
Writing Intensive Course		4
Elective Course		3

**Credits** **15**

#### Spring

MATH 624	Analysis of Secondary School Mathematics	4
EDUC 701	Human Development & Learning: Cultural Perspectives	4
Elective Course		4
Elective Course		4

**Credits** **16**

**Total Credits** **128**

- Analyze and interpret mathematical curricula, assessments, and standards documents.
- Analyze and interpret students' mathematical work.

Pedagogical Knowledge and Practices for Teaching Mathematics. Well-prepared beginning teachers of mathematics:

- Demonstrate strong foundations of pedagogical knowledge, and effective and equitable mathematics teaching practices.
- Construct instructional explanations, develop tasks, lesson plans and unit plans, that advance students' mathematical understanding.
- Recognize common patterns of student thinking related to particular mathematical topics, and articulate ways of supporting students' mathematical thinking.

Productive dispositions. Well-prepared beginning teachers:

- Demonstrate positive and productive dispositions toward mathematics as a discipline, towards students as learners of mathematics and towards teaching mathematics in ways that support students' sense making, understanding, and reasoning.

## Mathematics Major (B.A.)

<https://ceps.unh.edu/mathematics-statistics/program/ba/mathematics>

### Description

The bachelor of arts degree with the mathematics major may offer a broader liberal arts program than the bachelor of science degree programs. By a careful selection of electives, students can shape this major into a preparation for graduate school, business, or industry.

### Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

### Requirements

Code	Title	Credits
<b>Required MATH Courses</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or CS 410P	Introduction to Scientific Programming/Python	
or CS 410C	Introduction to Scientific Programming/C	
MATH 527	Differential Equations with Linear Algebra <sup>1</sup>	4
MATH 528	Multidimensional Calculus <sup>1</sup>	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 545	Introduction to Linear Algebra <sup>1</sup>	4
or MATH 645	Linear Algebra for Applications	
MATH 761	Abstract Algebra	4
MATH 767	One-Dimensional Real Analysis	4
THREE approved MATH courses, selected in consultation with the academic advisor		12
<b>Capstone: Select one of the following</b>		
MATH 797	Senior Seminar	4
MATH 799	Senior Thesis	2 or 4
<b>Other Required Courses</b>		

## Student Learning Outcomes

Mathematics Concepts, Practices, and Curriculum. Well-prepared beginning teachers of mathematics:

- Demonstrate robust knowledge of mathematical and statistical concepts that underlie what they encounter in teaching of K-8 or secondary mathematics.
- Engage in appropriate mathematical and statistical practices, and use technological tools to solve mathematical problems, and incorporate educational technology in their teaching.

Foreign language requirement as defined by the University for all B.A. degrees.

Total Credits 58-60

<sup>1</sup> The full Linearity sequence, MATH 525 and MATH 526, may be used to replace the MATH 527, MATH 528, and MATH 545 / MATH 645 requirements.  
MATH 525 may be used to replace the MATH 545 or MATH 645 requirement.

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
MATH 425	Calculus I	4
Language Course		4
Discovery Course		4
Inquiry Course		4
MATH 400	Freshman Seminar	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 426	Calculus II	4
MATH 445 or CS 410C or CS 410P	Mathematics and Applications with MATLAB or Introduction to Scientific Programming/C or Introduction to Scientific Programming/Python	4
ENGL 401	First-Year Writing	4
Language Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
MATH 528	Multidimensional Calculus	4
MATH 539	Introduction to Statistical Analysis	4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 527	Differential Equations with Linear Algebra	4
MATH 531	Mathematical Proof	4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
MATH 545 or MATH 645	Introduction to Linear Algebra or Linear Algebra for Applications	4
MATH 761	Abstract Algebra	4
Discovery Course		4
Writing Intensive Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 767	One-Dimensional Real Analysis	4

MATH Elective Course	4
Discovery Course	4
Writing Intensive Course	4
<b>Credits</b>	<b>16</b>

### Fourth Year

#### Fall

MATH 797 or MATH 799	Senior Seminar or Senior Thesis	4
MATH Elective Course		4
Elective Course		4
Elective Course		4

**Credits 16**

#### Spring

MATH Elective Course	4
Elective Course	4
Elective Course	4
Elective Course	4

**Credits 16**

**Total Credits 129**

## Student Learning Outcomes

- Students can explain core concepts from a range of different branches of mathematics, including analysis, algebra, calculus and statistics.
- Students can correctly interpret mathematical definitions and construct simple proofs which use definitions and logical arguments to establish properties of mathematical objects.
- Students are aware that mathematical objects may have multiple representations and are able to select representations which clarify problems and simplify calculations.
- Students can recognize valid and invalid mathematical arguments.

## Mathematics Major (B.S.)

<https://ceps.unh.edu/mathematics-statistics/mathematics-bs>

### Description

This program offers the strongest concentration in mathematics, requiring courses that are intended to prepare the student for graduate work in mathematics. Through a judicious choice of electives, students may design stronger pre-graduate programs, a program in applied mathematics, or slant the program toward a career in business or industry.

### Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

## Requirements

Code	Title	Credits
<b>Required MATH Courses</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or CS 410P	Introduction to Scientific Programming/Python	
or CS 410C	Introduction to Scientific Programming/C	
MATH 527	Differential Equations with Linear Algebra <sup>1</sup>	4
MATH 528	Multidimensional Calculus <sup>1</sup>	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 545	Introduction to Linear Algebra <sup>1</sup>	4
or MATH 645	Linear Algebra for Applications	
MATH 761	Abstract Algebra	4
MATH 763	Abstract Algebra II	4
MATH 767	One-Dimensional Real Analysis	4
MATH 784	Topology	4
MATH 788	Complex Analysis	4
MATH elective, selected in consultation with the academic advisor		4
<b>Select TWO of the following electives</b>		<b>8</b>
MATH 760	Geometry	
MATH 765	Introduction to Commutative Algebra and Algebraic Geometry	
MATH 768	Real Analysis II	
MATH 769	Introduction to Differential Geometry	
MATH 770	Foundations of Number Theory	
MATH 772	Combinatorics	
<b>Capstone: Select one of the following</b>		
MATH 797	Senior Seminar	4
MATH 799	Senior Thesis	2 or 4
<b>Other Required Courses</b>		
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
<b>Total Credits</b>		<b>78-80</b>

<sup>1</sup> The full Linearity sequence, MATH 525 and MATH 526, may be used to replace the MATH 527, MATH 528, and MATH 545 / MATH 645 requirements.  
MATH 525 may be used to replace the MATH 545 or MATH 645 requirement.

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
MATH 425	Calculus I	4
Discovery Course		4
Discovery Course		4
Inquiry Course		4
MATH 400	Freshman Seminar	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 426	Calculus II	4

MATH 445	Mathematics and Applications with MATLAB	4
or CS 410P	or Introduction to Scientific Programming/Python	
or CS 410C	or Introduction to Scientific Programming/C	
ENGL 401	First-Year Writing	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

### Second Year

#### Fall

MATH 528	Multidimensional Calculus	4
MATH 539	Introduction to Statistical Analysis	4
PHYS 407	General Physics I	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

#### Spring

MATH 527	Differential Equations with Linear Algebra	4
MATH 531	Mathematical Proof	4
PHYS 408	General Physics II	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

### Third Year

#### Fall

MATH 545	Introduction to Linear Algebra	4
or MATH 645	or Linear Algebra for Applications	
MATH 761	Abstract Algebra	4
Discovery Course		4
Writing Intensive Course		4
<b>Credits</b>		<b>16</b>

#### Spring

MATH 763	Abstract Algebra II	4
MATH 767	One-Dimensional Real Analysis	4
Writing Intensive Course		4
MATH Elective Course		4
<b>Credits</b>		<b>16</b>

### Fourth Year

#### Fall

MATH 784	Topology	4
MATH 797	Senior Seminar	4
or MATH 799	or Senior Thesis	
MATH Elective Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>

#### Spring

MATH 788	Complex Analysis	4
MATH Elective Course		4
Elective Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>129</b>



## Student Learning Outcomes

- Students can explain core concepts from a range of different branches of mathematics, including analysis, algebra, calculus and statistics.
- Students can correctly interpret mathematical definitions and construct simple proofs which use definitions and logical arguments to establish properties of mathematical objects.
- Students are aware that mathematical objects may have multiple representations and are able to select representations which clarify problems and simplify calculations.
- Students can recognize valid and invalid mathematical arguments.

## Statistics Major (B.S.)

<https://ceps.unh.edu/mathematics-statistics/program/bs/statistics>

### Description

This program prepares students for employment and/or graduate study in a variety of fields and research specializations in which statistical analysis and its applications play a critical role. In addition to its degree programs, the department has an active interest in the actuarial profession. Those interested in actuarial science should seek the advice of departmental coordinator of the actuarial program, Professor Linyuan Li.

### Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

### Requirements

Code	Title	Credits
<b>Required MATH Courses</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or CS 410P or CS 410C	Mathematics and Applications with MATLAB Introduction to Scientific Programming/Python Introduction to Scientific Programming/C	4
MATH 527	Differential Equations with Linear Algebra <sup>1</sup>	4
MATH 528	Multidimensional Calculus <sup>1</sup>	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 645	Linear Algebra for Applications <sup>1</sup>	4
MATH 739	Applied Regression Analysis	4
MATH 755	Probability with Applications	4
MATH 756	Principles of Statistical Inference	4
TWO approved MATH electives, selected in consultation with the major advisor (at least one at the 700-level)		8
<b>Select THREE courses from the following:</b>		12
MATH 734	Statistical Computing	
MATH 736	Advanced Statistical Modeling	
MATH 737	Statistical Methods for Quality Improvement and Design	
MATH 740	Design of Experiments I	
MATH 741	Survival Analysis	
MATH 743	Time Series Analysis	
MATH 744	Design of Experiments II	
<b>Capstone - Select one course from the following:</b>		4
MATH 797	Senior Seminar	
MATH 798	Senior Project	

MATH 799	Senior Thesis
<b>Total Credits</b>	<b>68</b>

<sup>1</sup> The full Linearity sequence, MATH 525 and MATH 526, may be used to replace the MATH 527, MATH 528, and MATH 645 requirements. MATH 525 may be used to replace the MATH 645 requirement.

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
MATH 425	Calculus I	4
Discovery Course		4
Discovery Course		4
Inquiry Course		4
MATH 400	Freshman Seminar	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 426	Calculus II	4
MATH 445 or CS 410C or CS 410P	Mathematics and Applications with MATLAB or Introduction to Scientific Programming/C or Introduction to Scientific Programming/Python	4
ENGL 401	First-Year Writing	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
MATH 528	Multidimensional Calculus	4
MATH 531	Mathematical Proof	4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 527	Differential Equations with Linear Algebra	4
MATH 539	Introduction to Statistical Analysis	4
Discovery Course		4
Writing Intensive Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
MATH 645	Linear Algebra for Applications	4
MATH 739	Applied Regression Analysis	4
700-level MATH Elective Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
700-level MATH Elective Course		4
700-level MATH Elective Course		4
Elective Course		4

Writing Intensive Course	4
<b>Credits</b>	<b>16</b>
<b>Fourth Year</b>	
<b>Fall</b>	
MATH 755 Probability with Applications	4
MATH 797 Senior Seminar	4
or MATH 798 or Senior Project	
or MATH 799 or Senior Thesis	
700-level MATH Elective Course	4
Elective Course	4
<b>Credits</b>	<b>16</b>
<b>Spring</b>	
MATH 756 Principles of Statistical Inference	4
MATH Elective Course	4
Elective Course	4
Elective Course	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>129</b>

## Student Learning Outcomes

- Communicate theoretical foundations and principles of intermediate-level statistics to diverse audiences.
- Design an appropriate method of data collection for a variety of practical applications.
- Perform analyses using the established tools of applied statistics, including production of appropriate software output and its interpretation.

## Applied Mathematics Minor

<https://ceps.unh.edu/mathematics-statistics/program/minor/applied-mathematics>

### Description

This minor program introduces students to variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

Credit toward the minor will be given only for courses passed with C- or better, and a 2.0 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean of the student's major college to have the minor shown on the academic record. Students must consult with their major adviser and also the minor supervisor.

It requires a minimum of five MATH courses as detailed in the minor requirements. No more than 8.0 credits (or two courses) used by the student to satisfy major requirements may be used for the minor. Additional courses from the list of course electives may be utilized to meet the five-course minimum.

For further information please contact Professor John McClain.

## Requirements

Code	Title	Credits
<b>Required</b>		
MATH 528	Multidimensional Calculus <sup>1</sup>	4
MATH 645	Linear Algebra for Applications <sup>1</sup>	4
MATH 745	Foundations of Applied Mathematics I	4
MATH 753	Introduction to Numerical Methods I	4
<b>Select ONE of the following electives</b>		<b>4</b>
MATH 647	Complex Analysis for Applications	
MATH 746	Foundations of Applied Mathematics II	
MATH 747	Introduction to Nonlinear Dynamics and Chaos	
MATH 755	Probability with Applications	
MATH 757	Mathematical Optimization for Applications	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> This requirement may be satisfied by MATH 525 Linearity I & MATH 526 Linearity II.

## Mathematics Minor

<https://ceps.unh.edu/mathematics-statistics/program/minor/mathematics>

### Description

The minor in mathematics is open to all students enrolled at the University of New Hampshire.

Credit toward the minor will be given only for courses passed with C- or better, and a 2.0 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean of the student's major college to have the minor shown on the academic record. Students must consult with their major adviser and also the minor supervisor.

It requires a minimum of five MATH courses as detailed in the minor requirements. No more than 8.0 credits (or two courses) used by the student to satisfy major requirements may be used for the minor. Additional courses from the list of course electives may be utilized to meet the five-course minimum.

For further details please contact Professor Junhao Shen.

## Requirements

Code	Title	Credits
<b>Required</b>		
MATH 528	Multidimensional Calculus <sup>1</sup>	4
MATH 531	Mathematical Proof	4
MATH 761	Abstract Algebra	4
or MATH 767	One-Dimensional Real Analysis	
<b>Select TWO of the following electives</b>		<b>8</b>
MATH 760	Geometry	
MATH 761	Abstract Algebra	
MATH 763	Abstract Algebra II	
MATH 765	Introduction to Commutative Algebra and Algebraic Geometry	
MATH 767	One-Dimensional Real Analysis	
MATH 768	Real Analysis II	
MATH 769	Introduction to Differential Geometry	

MATH 770	Foundations of Number Theory	
MATH 772	Combinatorics	
MATH 776	Logic	
MATH 783	Set Theory	
MATH 784	Topology	
MATH 788	Complex Analysis	
Total Credits		20

<sup>1</sup> This requirement may be satisfied by MATH 525 Linearity I and MATH 526 Linearity II.

## Statistics Minor

<https://ceps.unh.edu/mathematics-statistics/program/minor/statistics>

### Description

The minor in statistics is designed for students in other majors who want to learn the fundamentals of statistical analysis and its applications.

Credit toward the minor will be given only for courses passed with C- or better, and a 2.0 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean of the student's major college to have the minor shown on the academic record. Students must consult with their major adviser and also the minor supervisor.

It requires a minimum of five MATH courses as detailed in the minor requirements. No more than 8.0 credits (or two courses) used by the student to satisfy major requirements may be used for the minor. Additional courses from the list of course electives may be utilized to meet the five-course minimum.

For further information please contact Professor Ernst Linder.

### Requirements

Code	Title	Credits
<b>Required</b>		
MATH 539	Introduction to Statistical Analysis	4
or MATH 644	Statistics for Engineers and Scientists	
MATH 645	Linear Algebra for Applications <sup>1</sup>	4
<b>Select THREE of the following electives</b>		<b>12</b>
MATH 736	Advanced Statistical Modeling	
MATH 737	Statistical Methods for Quality Improvement and Design	
MATH 739	Applied Regression Analysis	
MATH 740	Design of Experiments I	
MATH 741	Survival Analysis	
MATH 743	Time Series Analysis	
MATH 744	Design of Experiments II	
MATH 755	Probability with Applications	
MATH 756	Principles of Statistical Inference	
<b>Total Credits</b>		20

<sup>1</sup> This requirement may be satisfied by MATH 525 Linearity I.

## Mechanical Engineering (ME)

The Mechanical Engineering Program at UNH is accredited by the:

Engineering Accreditation Commission of ABET, <http://www.abet.org>

### Mission

In support of the University and college missions, the Department of Mechanical Engineering is dedicated to educating the highest quality engineering professionals and leaders. Graduates will be prepared to creatively solve engineering problems through the use of analysis, computation, and experimentation. Students completing the program should be well-informed citizens who have the ability to grow intellectually and are able to solve new, challenging problems with self-confidence. It is the department's intent to maintain a general and flexible curriculum that prepares students for both industrial practice and graduate education.

### Educational Objectives

The objective of the UNH Mechanical Engineering Program is to produce graduates who are ethical professionals and good citizens. As they progress in the first several years following graduation, they are expected to:

1. Use their engineering education and communication skills for success in:
  - a. Technical careers in industry, academia, government, or other organizations;
  - b. Graduate school in engineering or physical sciences;
  - c. Nontechnical careers or education in areas such as law, medicine, business, public policy, secondary education, service industries, etc.;
  - d. Careers involving management or entrepreneurship.
2. Exercise lifelong learning to:
  - a. Pursue professional development opportunities in their disciplines;
  - b. Develop new knowledge and skills;
  - c. Pursue new areas of expertise or careers.
3. Use their engineering background to:
  - a. Solve technical problems for societal benefit;
  - b. Develop new knowledge and products that will promote sustainable economic and environmental developments to improve the quality of life;
  - c. Promote the practice of engineering.

Mechanical engineering is a challenging profession and has two major emphases. The first is the general area of mechanical design, which involves all types of mechanical motion and the forces and energy that drive it. The other emphasis deals with energy generation and conversion and is grounded in the principles of the thermal and fluid sciences. Other subject areas, which support both emphases and are frequently part of designs and products, are the materials sciences, manufacturing, and control systems. All of these areas are included in the education and training of mechanical engineers. Ocean engineering is another focus area in our department which emphasizes solving engineering problems associated with the sustainable utilization of ocean resources and the scientific exploration and study of the ocean environment. Mechanical engineering requires significant study in mathematics, engineering computing, and basic sciences such as chemistry and physics, as well as basic engineering courses, before reaching the more specialized courses. Additional information can be found at the mechanical engineering website.

<https://ceps.unh.edu/mechanical-engineering>

## Programs

- [Mechanical Engineering Major \(B.S.\)](#) (p. 227)
- [Mechanical Engineering Minor](#) (p. 229)

## Faculty

<https://ceps.unh.edu/directory/all>

## Mechanical Engineering Major (B.S.)

<https://ceps.unh.edu/mechanical-engineering/program/bs/mechanical-engineering-major>

## Description

The B.S.M.E. curriculum provides students with a solid engineering core and prepares students for professional engineering careers or for graduate study. The department has a four-course mechanics sequence, a four-course thermal/fluid sciences sequence, and a two-course systems and controls sequence. Modern experimental methods are taught in a two-course sequence starting in the junior year. The two-semester senior design project requires students to utilize the skills they have learned in their courses and function in an engineering team. The five technical electives required in the program give the students the opportunity to focus on advanced technical areas of their choice.

With their advisers' assistance, students should plan a program based on the following distribution of courses that totals not less than 128 credits. Note: mechanical engineering graduates typically exceed this requirement depending on what elective courses they select in the curriculum. The degree plan outlined below is typical only in format. Within the constraints of satisfying all the requirements and having all the necessary prerequisites, schedules may vary because of scheduling needs or student preference. Curriculum flexibility allows students to pursue a co-op experience or a minor, if interested which will potentially delay graduation. Some mechanical engineering elective courses may not be offered every year.

## Requirements

### Technical Elective Requirements:

Of the five technical elective courses, at least three of these courses must be taken in mechanical or ocean engineering, and these must be at least three credits and at the 600 or 700 level. At most, two may be selected from other 600- or 700-level courses in the College of Engineering and Physical Sciences (CEPS), which can include CS 410C Introduction to Scientific Programming/C, CS 410P Introduction to Scientific Programming/Python (equivalent to a 600 level technical elective), ESCI 501 Introduction to Oceanography, ECE 543 Introduction to Digital Systems, or a course approved by the department. Only one technical elective is allowed at the 400 or 500 level. Courses that cover nearly identical material to core mechanical and ocean engineering courses, but in another CEPS department, will not be accepted as technical electives, e.g.,

Code	Title	Credits
CHE 601	Fluid Mechanics and Unit Operations	3
CHE 602	Heat Transfer and Unit Operations	3
CHE 604	Chemical Engineering Thermodynamics	3
CEE 635	Engineering Materials	4
CEE 650	Fluid Mechanics	4
ECE 633	Signals and Systems I	3

Students should consult with their academic advisor before selecting technical electives outside of mechanical/ocean engineering. With departmental approval, the two technical electives outside of mechanical/ocean engineering can be used for studying a focused area/minor, with the restrictions that only one course can be at the 400 or 500 level and the focused area/minor must be in a bachelor's degree program.

### Discovery Program Requirements:

Students must satisfy the University's Discovery Program requirements. The following features are unique to students in the Mechanical Engineering Program:

As is the case across the University, all students are required to take an Inquiry course or an Inquiry Attributes course during their first two years. This can be satisfied with ME 441 Introduction to Engineering Design and Solid Modeling. Students who are exempt from ME 441 Introduction to Engineering Design and Solid Modeling due to prior engineering design and computer-aided design (CAD) experience must select an Inquiry 444 course or a course with an Inquiry Attribute and enroll in ME 477 Introduction to Solid Modeling. The Discovery Environment, Technology, and Society category requirement is met upon receiving a B.S. degree in mechanical engineering. The Discovery Social Science category must be satisfied with either ECON 402 Principles of Economics (Micro) or EREC 411 Environmental and Resource Economics Perspectives. The Discovery senior capstone experience is satisfied with either ME 755 Senior Design Project I and ME 756 Senior Design Project II or TECH 797 Undergraduate Ocean Research Project.

### Grade-Point Average Requirements:

In order to graduate with a mechanical engineering B.S. degree, students must have at least a 2.0 grade-point average in all engineering and science courses, including required technical electives, normally taken as department requirements after the start of the junior year as defined in the degree plan below.

**Predictor courses:** To enter the sophomore year, students must achieve a greater than (but not equal to) 2.00 GPA in PHYS 407 General Physics I and MATH 426 Calculus II with no grade below a C.

To enter the junior year, students must achieve a minimum GPA of 2.00 in ME 525 Statics, ME 526 Mechanics of Materials, and ME 503 Thermodynamics with only one C- grade allowed and no grades below C-.

Students are allowed two repeats of these predictor courses to achieve the predictor rule requirements before being removed from the Program. This can be a single class repeated twice or two classes repeated once. Students are also removed from the program if they obtain a semester GPA below 1.5 three times. Students may petition to be reinstated after one year out of the program.

### Transfer Policy for UNH Students into the Department of Mechanical Engineering:

CEPS Students: To transfer into the freshman or sophomore year, students must earn a combined GPA greater than (but not equal to) 2.00

in PHYS 407 General Physics I and MATH 426 Calculus II with no grade below a C in these two courses.

If students are enrolled in ME 525 Statics (or CEE 500 Statics for Civil Engineers), ME 526 Mechanics of Materials (or CEE 501 Strength of Materials), or ME 503 Thermodynamics, they must earn a combined GPA of 2.00 with no grade below a C- in two of these courses with only one C-grade allowed to transfer into Mechanical Engineering. Note: A combined GPA greater than (but not equal to) 2.00 in PHYS 407 General Physics I and MATH 426 Calculus II with no grade below a C is also required.

**Non-CEPS Students:** To transfer into the Department of Mechanical Engineering from another college at UNH, students have to satisfy the CEPS college transfer policy as well as the Department of Mechanical Engineering transfer policies listed above according to their status.

#### List of Required Courses:

Code	Title	Credits
CHEM 405	Chemical Principles for Engineers	0-8
or CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	
ECON 402	Principles of Economics (Micro)	4
or EREC 411	Environmental and Resource Economics Perspectives	
ECE 537	Introduction to Electrical Engineering	4
ENGL 401	First-Year Writing	4
IAM 550	Introduction to Engineering Computing	4
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
or MATH 525	Linearity I	
MATH 528	Multidimensional Calculus	4
or MATH 526	Linearity II	
ME 441	Introduction to Engineering Design and Solid Modeling	4
or ME 477	Introduction to Solid Modeling	
ME 503	Thermodynamics	3
ME 525	Statics	4
ME 526	Mechanics of Materials	3
ME 561	Introduction to Materials Science	4
ME 603	Heat Transfer	3
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
ME 643	Machine Design	3
ME 646	Experimental Measurement and Data Analysis	4
ME 670	Systems Modeling, Simulation, and Control	4
ME 705	Thermal System Analysis and Design	4
ME 747	Experimental Measurement and Modeling of Complex Systems	4
ME 755	Senior Design Project I	2
or TECH 797	Undergraduate Ocean Research Project	
ME 756	Senior Design Project II	2
or TECH 797	Undergraduate Ocean Research Project	
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ME 441 or ME 477	Introduction to Engineering Design and Solid Modeling <sup>1</sup> or Introduction to Solid Modeling	4
CHEM 405	Chemical Principles for Engineers <sup>2</sup>	4
OR		

CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II <sup>2</sup>	
MATH 425	Calculus I <sup>3</sup>	4
Discovery Program Elective		4

**Credits 16**

#### Spring

ENGL 401	First-Year Writing <sup>4</sup>	4
MATH 426	Calculus II	4
PHYS 407	General Physics I <sup>2</sup>	4
Discovery Program Elective		4

**Credits 16**

#### Second Year

##### Fall

ME 525	Statics	4
IAM 550	Introduction to Engineering Computing	4
MATH 528 or MATH 525	Multidimensional Calculus <sup>5</sup> or Linearity I	4
PHYS 408	General Physics II	4
Discovery Program Elective		4

**Credits 20**

##### Spring

ME 503	Thermodynamics	3
ME 526	Mechanics of Materials	3
ME 561	Introduction to Materials Science	4
MATH 527 or MATH 526	Differential Equations with Linear Algebra <sup>5</sup> or Linearity II	4

**Credits 14**

#### Third Year

##### Fall

ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
ME 705	Thermal System Analysis and Design	4
ECE 537	Introduction to Electrical Engineering	4
Discovery Program Elective		4

**Credits 18**

##### Spring

ME 603	Heat Transfer	3
ME 643	Machine Design	3
ME 646	Experimental Measurement and Data Analysis	4
ME 670	Systems Modeling, Simulation, and Control	4

**Credits 14**

#### Fourth Year

##### Fall

ME 755 or TECH 797	Senior Design Project I <sup>6</sup> or Undergraduate Ocean Research Project	2
ME 747	Experimental Measurement and Modeling of Complex Systems	4

Technical Elective 3-4

Technical Elective 3-4

Discovery Program Elective 4

**Credits 16-18**



**Spring**

ME 756 or TECH 797	Senior Design Project II <sup>6</sup> or Undergraduate Ocean Research Project	2
Technical Elective		3-4
Technical Elective		3-4
Technical Elective		3-4
Discovery Program Elective		4
<b>Credits</b>		<b>15-18</b>
<b>Total Credits</b>		<b>129-134</b>

<sup>1</sup> ME 441 Introduction to Engineering Design and Solid Modeling satisfies the Discovery Inquiry requirement. Note: ME 477 does not satisfy the Discovery Inquiry requirement. An alternative Discovery Program Inquiry course or Inquiry Attributes course is required. Permission is required to take ME 477 in place of ME 441.

<sup>2</sup> CHEM 405 Chemical Principles for Engineers or CHEM 403 General Chemistry I and CHEM 404 General Chemistry II, or PHYS 407 General Physics I satisfies the Discovery Physical Science (with lab) category.

<sup>3</sup> MATH 425 Calculus I satisfies the Discovery Foundation Quantitative Reasoning category.

<sup>4</sup> ENGL 401 First-Year Writing satisfies the Discovery Foundation Writing Skills category.

<sup>5</sup> MATH 525 Linearity I and MATH 526 Linearity II also counts as a 600 level technical elective course typically completed in the senior year of the program. Permission is required to take Linearity I and II.

<sup>6</sup> ME 755, ME 756 and TECH 797 satisfy the Discovery Senior Capstone Experience category.

- J. knowledge of contemporary issues; (objective 4)
- K. the ability to use the techniques, skills and modern engineering tools necessary for engineering practice; (objective 2)

## Mechanical Engineering Minor

<https://ceps.unh.edu/mechanical-engineering/program/minor/mechanical-engineering>

### Description

The minor, administered by the Department of Mechanical Engineering, is open to all students of the University and offers a broad introduction to mechanical engineering.

### Requirements

Students must complete a minimum of six courses as follows:

Code	Title	Credits
ME 441	Introduction to Engineering Design and Solid Modeling	4
ME 503	Thermodynamics	3
ME 525	Statics	4
ME 526	Mechanics of Materials	3
ME 627	Dynamics	3
ME 608	Fluid Dynamics	3
<b>Total Credits</b>		<b>20</b>

**Electrical and Computer Engineering majors should take the following courses:**

Code	Title	Credits
ME 477	Introduction to Solid Modeling	1
ECE 633	Signals and Systems I <sup>1</sup>	3
ECE 634	Signals and Systems II <sup>1</sup>	3
ME 503	Thermodynamics	3
ME 525	Statics	4
ME 561	Introduction to Materials Science	4
<b>Select one of the following:</b> <sup>2</sup>		
ME 526	Mechanics of Materials	3
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3

<sup>1</sup> ECE Major Required Courses.

<sup>2</sup> The total number of credits required is 21.

**Physics majors should take the following courses:**

Code	Title	Credits
PHYS 508	Thermodynamics and Statistical Mechanics <sup>1</sup>	4
PHYS 615	Classical Mechanics and Mathematical Physics I <sup>1</sup>	4
ME 477	Introduction to Solid Modeling	1
ME 526	Mechanics of Materials	3
ME 608	Fluid Dynamics	3
<b>Select one of the following:</b> <sup>2</sup>		
ME 643	Machine Design	3
ME 670	Systems Modeling, Simulation, and Control	4
ME 705	Thermal System Analysis and Design	4

<sup>1</sup> Physics Major Required Courses.

<sup>2</sup> The total number of credits to complete the Physics Minor will be either 18 or 19 depending on what course is selected.

## Student Learning Outcomes

- A. the ability to apply knowledge of mathematics, science and engineering; (objective 1)
- A.1 knowledge of chemistry and calculus-based physics with depth in at least one; (objective 1)
- A.2 the ability to apply advanced mathematics through multivariate calculus and differential equations; (objective 1)
- A.3 a familiarity with statistics and linear algebra; (objective 1)
- B. the ability to design and conduct experiments, as well as to analyze and interpret data; (objective 2)
- C. the ability to design a system, component, or process to meet desired needs; (objective 2)
- C.1 the ability to work professionally in mechanical systems areas including the design and realization of such systems; (objective 2)
- C.2 the ability to work professionally in thermal systems areas including the design and realization of such systems; (objective 2)
- D. the ability to function in multidisciplinary teams; (objective 2 & 3)
- E. the ability to identify, formulate and solve engineering problems; (objective 2)
- F. the understanding of professional and ethical responsibility; (objectives 4 & 6)
- G. the ability to communicate effectively; (objective 2)
- H. the broad education necessary to understand the impact of engineering solutions in a global and societal context; (objective 5)
- I. recognition of the need for and an ability to engage in life-long learning; (objective 4)

Interested students should contact the Mechanical Engineering Chair at (603) 862-1353 and file an intent to minor form. During the last semester, students must complete a completion of minor form for it to appear on their transcript.

## Ocean Engineering (OE)

### Mission

The undergraduate program in ocean engineering emphasizes ocean engineering fundamentals while offering interdisciplinary opportunities for focused study in civil, electrical, environmental, or mechanical engineering, as well as marine sciences.

### Program Educational Objectives

The ocean engineering program seeks to provide an environment that enables students to pursue their goals in an innovative, rigorous, and challenging program with a diversity of offerings. The program has the following major educational objectives, with the expectation that alumni will have successful careers in the many diverse areas of the ocean engineering profession. Within a few years of obtaining a bachelor's degree in ocean engineering, we expect our graduates to have the following attributes:

*Depth.* To be effective in applying ocean engineering principles in engineering practice or for advanced study in ocean engineering.

*Breadth.* To have a productive career in the many diverse fields of ocean engineering such as coastal engineering, ocean acoustics, offshore structures, and marine renewable energy, or in the pursuit of graduate education in disciplines that include marine science, engineering, medicine, law, or business.

*Professionalism.* To function effectively in the complex modern work environment with the ability to assume professional leadership roles.

<https://ceps.unh.edu/ocean-engineering/academics>

### Programs

- [Ocean Engineering Major \(B.S.\)](#) (p. 230)
- [Ocean Engineering Minor](#) (p. 232)

### Faculty

<https://ceps.unh.edu/ocean-engineering/faculty-staff-directory>

## Ocean Engineering Major (B.S.)

<https://ceps.unh.edu/ocean-engineering/program/bs/ocean-engineering-major>

### Description

Ocean engineering is a field of study that seeks to solve engineering problems associated with the ocean, including those problems associated with the sustainable utilization of ocean resources and the scientific exploration and study of the ocean environment. Ocean engineering is an interdisciplinary field with roots in mechanical, electrical, civil, and environmental engineering, with strong ties to

physical, chemical, biological, and geological oceanography. Students of ocean engineering are best served when they are formally trained inside a framework that fuses the expertise of these often-disparate fields.

The BSOE curriculum provides students with a solid engineering core and prepares students for professional engineering careers or for graduate study. The BSOE starts with foundational classes in math, physics, chemistry, and engineering computing, along with introductions to ocean engineering through seminars and oceanography coursework. Students develop their engineering acumen through coursework and laboratory studies that are focused on analysis, experimentation, and design. Students proceed to increasingly advanced coursework in ocean instrumentation, waves and tides, the design of ocean structures, coastal engineering, ocean measurements, and ocean acoustics. Opportunities exist for at least four technical electives, which help students gain further competence in an area of their choice. Students finish their curriculum with a two-semester senior capstone design project. Elective courses in the arts, humanities, and the social sciences are included to provide a well-rounded education.

Students work with an advisor to plan a program that is based on the courses shown in the ocean engineering degree plan below that totals not less than 128 credits. The degree plan is considered a guideline and may be modified to suit student needs and desires within the constraints of meeting minimum credit hours, course prerequisites, and non-major elective course requirements. Some ocean engineering elective courses may not be offered every year.

### Requirements

#### Technical Elective Requirements:

The ocean engineering program curriculum requires four technical electives that are CEPS 600-level or higher courses that have been approved by the OE undergraduate curriculum committee. Sequences have been identified that will provide students more in-depth opportunities in one of the ocean engineering sub-areas. One of the technical electives needs to be a program-approved statistics course (OE 764 Spectral Analysis of Geophysical Time Series Data, MATH 644 Statistics for Engineers and Scientists, or ESCI 701 Quantitative Methods in Earth Sciences).

#### Discovery Program Requirements:

Students must satisfy the University's Discovery Program requirements. The following features are unique to students in the Ocean Engineering program:

As is the case across the University, all students are required to take an Inquiry course or an Inquiry Attribute course during their first two years. This is satisfied with ESCI 501 Introduction to Oceanography. The Discovery Environment, Technology, and Society category requirement is met upon receiving a B.S. degree in ocean engineering. The Discovery Social Science category must be satisfied with either ECON 402 Principles of Economics (Micro) or EREC 411 Environmental and Resource Economics Perspectives. The Discovery senior capstone experience is satisfied with TECH 797 Undergraduate Ocean Research Project.

#### Grade-Point Average Requirements:

In order to graduate with an ocean engineering B.S. degree, students must have at least a 2.0 grade-point average in all engineering and

science courses, including required technical electives, normally taken as department requirements after the start of the junior year as defined in the degree plan below.

**Predictor courses:** To enter the sophomore year, students must achieve a greater than (but not equal to) 2.00 GPA in PHYS 407 General Physics I and MATH 426 Calculus II with no grade below a C.

To enter the junior year, students must achieve a minimum GPA of 2.00 in ME 525 Statics, ME 526 Mechanics of Materials, and ME 503 Thermodynamics with only one C- grade allowed and no grades below C-.

Students are allowed two repeats of these predictor courses to achieve the predictor rule requirements before being removed from the program. This can be a single class repeated twice or two classes repeated once. Students are also removed from the program if they obtain a semester GPA <1.5 three times. Students may petition to be reinstated after one year out of the program.

#### Transfer Policy for UNH Students into the Department of Mechanical Engineering:

**CEPS Students:** To transfer into the freshman or sophomore year, students must earn a combined GPA greater than (but not equal to) 2.00 in PHYS 407 General Physics I and MATH 426 Calculus II with no grade below a C in these two courses.

If students are enrolled in ME 525 Statics (or CEE 500 Statics for Civil Engineers), ME 526 Mechanics of Materials (or CEE 501 Strength of Materials), or ME 503 Thermodynamics, they must earn a combined GPA of 2.00 with no grade below a C- in two of these courses with only one C- grade allowed to transfer in and advance to the junior year.

**Non-CEPS Students:** To transfer into the Department of Mechanical Engineering from another college at UNH, students have to satisfy the CEPS college transfer policy as well as the Department of Mechanical Engineering transfer policies listed above according to status.

#### List of Required Courses:

Code	Title	Credits
CHEM 405	Chemical Principles for Engineers	4
or CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	
ECON 402	Principles of Economics (Micro)	4
or EREC 411	Environmental and Resource Economics Perspectives	
ECE 537	Introduction to Electrical Engineering	4
ESCI 501	Introduction to Oceanography	4
ESCI 720	Ocean Measurements Lab	4
IAM 550	Introduction to Engineering Computing	4
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 525 & MATH 526	Linearity I and Linearity II	12
or MATH 527 & MATH 528	Differential Equations with Linear Algebra and Multidimensional Calculus	
ME 503	Thermodynamics	3
ME 525	Statics	4
ME 526	Mechanics of Materials	3
or CEE 501	Strength of Materials	
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
OE 400	Ocean Engineering Seminar	1
OE 401	Ocean Engineering Seminar	1
OE 490	Introduction to Ocean Engineering	4
OE 610	Ocean Instrumentation Lab	4
OE 754	Ocean Waves and Tides	4

OE 757	Coastal Engineering and Processes	3
OE 758	Design of Ocean Structures	3
OE 765	Underwater Acoustics	3
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
TECH 797	Undergraduate Ocean Research Project	2
Technical Electives: 600-level or higher, choose four electives; at least one of the four courses must be 4 credits.		

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Spring</b>		
ENGL 401	First-Year Writing <sup>3</sup>	4
MATH 426	Calculus II	4
OE 490	Introduction to Ocean Engineering	4
PHYS 408	General Physics II	4
Discovery Program Elective		4
<b>Credits</b>		<b>20</b>
<b>Fall</b>		
MATH 425	Calculus I <sup>1</sup>	4
PHYS 407	General Physics I <sup>2</sup>	4
OE 400	Ocean Engineering Seminar	1
Discovery Program Elective		4
Discovery Program Elective		4
<b>Credits</b>		<b>17</b>
<b>Second Year</b>		
<b>Spring</b>		
IAM 550	Introduction to Engineering Computing	4
MATH 527 or MATH 526	Differential Equations with Linear Algebra <sup>5</sup> or Linearity II	4
ME 503	Thermodynamics	3
ME 526 or CEE 501	Mechanics of Materials or Strength of Materials	3
OE 401	Ocean Engineering Seminar	1
<b>Credits</b>		<b>15</b>
<b>Fall</b>		
CHEM 405 or CHEM 403 <b>and</b> CHEM 404	Chemical Principles for Engineers <sup>2</sup> or General Chemistry I <b>and</b> General Chemistry II	4
ESCI 501	Introduction to Oceanography (satisfies the Discovery Inquiry requirement) <sup>4</sup>	4
MATH 528 or MATH 525	Multidimensional Calculus <sup>5</sup> or Linearity I	4
ME 525	Statics	4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Spring</b>		
OE 610	Ocean Instrumentation Lab	4
OE 757	Coastal Engineering and Processes	3
OE 758	Design of Ocean Structures	3
Technical Elective <sup>6</sup>		4
<b>Credits</b>		<b>14</b>

**Fall**

ECE 537	Introduction to Electrical Engineering	4
ME 608	Fluid Dynamics	3
ME 627	Dynamics	3
OE 754	Ocean Waves and Tides	4
<b>Credits</b>		<b>14</b>

**Fourth Year****Spring**

TECH 797	Undergraduate Ocean Research Project	2
Technical Elective <sup>6</sup>		3-4
Technical Elective <sup>6</sup>		3-4
Discovery Program Elective		4
Discovery Program Elective		4
<b>Credits</b>		<b>16-18</b>

**Fall**

ESCI 720	Ocean Measurements Lab	4
OE 765	Underwater Acoustics	3
TECH 797	Undergraduate Ocean Research Project	2
Discovery Program Elective		4
Technical Elective <sup>6</sup>		4
<b>Credits</b>		<b>17</b>
<b>Total Credits</b>		<b>129-131</b>

<sup>1</sup> MATH 425 Calculus I satisfies the Discovery Foundation Quantitative Reasoning category.

<sup>2</sup> PHYS 407 General Physics I or CHEM 405 Chemical Principles for Engineers or CHEM 403 General Chemistry I and CHEM 404 General Chemistry II satisfies the Discovery Physical Science (with lab) category.

<sup>3</sup> ENGL 401 First-Year Writing satisfies the Discovery Foundation Writing Skills category.

<sup>4</sup> ESCI 501 Introduction to Oceanography satisfies the Discovery Inquiry requirement.

<sup>5</sup> MATH 525 Linearity I and MATH 526 Linearity II may be substituted for MATH 527 Differential Equations with Linear Algebra and MATH 528 Multidimensional Calculus. The MATH 525 and MATH 526 sequence will also count as one Technical Elective.

<sup>6</sup> Total technical elective credits must be at 14 credits or higher to meet the UNH required total of 128 credits for graduation

## Student Learning Outcomes

The Student Outcomes consist of the ABET 1-7 general requirements for all engineering programs with four additional outcomes specific to the Ocean Engineering program which are subsets of (1).

- (1) ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science and math. Knowledge of fluid mechanics and hydrostatics with depth in at least one. An ability to apply solid mechanics and dynamics through multivariate calculus and differential equations. Knowledge of oceanography, water waves, and underwater acoustics. Ability to apply probability and applied statistics.
- (2) ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors.

- (3) ability to communicate effectively with a range of audiences.
- (4) ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments which must consider the impact of engineering solutions in global, economic, environmental and societal contexts.
- (5) ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- (6) ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- (7) ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## Ocean Engineering Minor

<https://ceps.unh.edu/ocean-engineering/program/minor/ocean-engineering>

### Description

The ocean engineering minor allows undergraduate engineering students to acquire a nucleus of knowledge about engineering pertaining to the ocean and the coastal zone.

### Requirements

To meet the University minor requirement, students must satisfactorily complete a minimum of five courses from the following list:

Code	Title	Credits
Select five of the following:		
ESCI 501	Introduction to Oceanography	
ESCI 720	Ocean Measurements Lab	
ESCI 752	Chemical Oceanography	
ESCI 758	Introductory Physical Oceanography	
ESCI 759	Geological Oceanography	
OE 490	Introduction to Ocean Engineering	
OE 754	Ocean Waves and Tides	
OE 757	Coastal Engineering and Processes	
OE 765	Underwater Acoustics	
OE 771	Geodesy and Positioning for Ocean Mapping	
OE 795	Special Topics	
CEE 722	Introduction to Marine Pollution and Control	
TECH 797	Undergraduate Ocean Research Project	

Students typically take ESCI 501 Introduction to Oceanography, TECH 797 Undergraduate Ocean Research Project, and OE 490 Introduction to Ocean Engineering plus two additional engineering courses from the above list to complete the minor.

Students wishing to take the ocean engineering minor should indicate their interest to the ocean engineering minor advisor, Tom Lippmann, (603) 862-4450 or [t.lippmann@unh.edu](mailto:t.lippmann@unh.edu) no later than the beginning of the junior year and file an intent to minor form. During the final semester, students must complete a completion of minor form for it to appear on their transcript.

## Physics and Astronomy

Physics is concerned with the properties of matter and the laws that describe its behavior. As a fundamental science, its discoveries and laws

are basic to understanding in nearly all areas of science and technology. Advances in such diverse fields as medical instrumentation, solid state electronics, and space research have relied heavily on the application of basic physical laws and principles.

Students interested in the study of physics at the University of New Hampshire will find a strong interaction between research and academic programs. Undergraduates frequently participate in research studies ranging from nuclear scattering experiments at major particle accelerators to astrophysical studies of the solar system using space probes. These experiences have proven beneficial to engineering and physics students alike. The department is located in DeMeritt Hall (completed in 2008) and Morse Hall. Both buildings are equipped with state-of-the-art research facilities and laboratories. DeMeritt Hall also houses the physics library, classrooms, and a number of open and comfortable meeting areas, which provide an inviting atmosphere for study, interaction, and collaboration.

The suggested programs that follow are indicative of the flexibility available to students, whether they are preparing for graduate work in physics or astronomy, industrial opportunities, governmental research, secondary-level teaching, or a general education that might utilize the fundamental knowledge of physics.

Several undergraduate degree programs are offered through the department of physics. The B.S. degree is designed for students who wish to work as professional physicists or engineers. The B.A. degree is designed for students who want a strong background in physics but also want a broad liberal arts education. The department also offers a B.S. in engineering physics, which offers a deeper understanding of the physical principles needed to support careers in engineering. The BSEP program offers two tracks for students; aerospace and engineering research. Minors for astronomy and physics are also offered by the department.

Interested students are encouraged to contact the department for further information. More detailed information is also on the physics department website.

<https://ceps.unh.edu/physics>

## Programs

- [Engineering Physics Major \(B.S.\)](#) (p. 233)
- [Physics Major \(B.A.\)](#) (p. 235)
- [Physics Major \(B.S.\)](#) (p. 236)
- [Astronomy Minor](#) (p. 238)
- [Physics Minor](#) (p. 239)

## Faculty

<https://physics.unh.edu/people/faculty>

## Engineering Physics Major (B.S.)

<https://ceps.unh.edu/physics/program/bs/engineering-physics-major>

## Description

The goal of the UNH BSEP program is to produce broadly-trained engineers who can provide solutions to today's challenging problems in

support of a technologically evolving society. The core of the program is based on interdisciplinary training, complemented with a deeper understanding of the physical principles needed to support careers in engineering, engineering research or, perhaps, further training in systems engineering. The program balances depth and breadth in skill development; flexibility and functionality are what drive the program in the sense that 1) the particular focus is based on the student's interests, and 2) the breadth of the course selection is guided by the post-graduation goals of the student (e.g., employment versus graduate school).

## Requirements

Code	Title	Credits
Discovery Program requirements		
Writing requirements		
Bachelor of Science requirements		
<b>Core Requirements for all tracks:</b>		
CHEM 403	General Chemistry I	4
or CHEM 405	Chemical Principles for Engineers	
CS 410P	Introduction to Scientific Programming/Python	4
or IAM 550	Introduction to Engineering Computing	
MATH 425	Calculus I	4
MATH 426	Calculus II	4
Choose one:		8-12
MATH 527 & MATH 528	Differential Equations with Linear Algebra and Multidimensional Calculus	
or MATH 525 & MATH 526	Linearity I and Linearity II	
PHYS 400	Physics Seminar I	1
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
PHYS 505	General Physics III	3
PHYS 506	General Physics III Laboratory	1
PHYS 508	Thermodynamics and Statistical Mechanics	4
PHYS 615	Classical Mechanics and Mathematical Physics I	4
PHYS 616	Classical Mechanics and Mathematical Physics II	4
PHYS 703	Electricity and Magnetism I	4
Capstone:		4
PHYS 797	Senior Design Project	
<b>Additional courses for Aerospace Track</b>		
ECE 541	Electric Circuits	4
ECE 548	Electronic Design I	4
ECE 651	Electronic Design II	4
ME 608	Fluid Dynamics	3
ME 743	Satellite Systems, Dynamics, and Control	3
<b>Electives in major: choose three from the following</b>		
ME 603	Heat Transfer	
ME 646	Experimental Measurement and Data Analysis	
ME 670	Systems Modeling, Simulation, and Control	
ME 705	Thermal System Analysis and Design	
ME 707	Analytical Fluid Dynamics	
ME 747	Experimental Measurement and Modeling of Complex Systems	
ME 786	Introduction to Finite Element Analysis	
PHYS 708	Optics	
PHYS 712	Space Plasma Physics	
<b>Additional Courses for the Engineering Research track</b>		
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
ECE 548	Electronic Design I	4
ECE 633	Signals and Systems I	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 651	Electronic Design II	4
ME 608	Fluid Dynamics	3
PHYS 704	Electricity and Magnetism II	4
PHYS 708	Optics	4



Electives in major: choose three from the following		12
ECE 634	Signals and Systems II	
ME 561	Introduction to Materials Science	
ME 670	Systems Modeling, Simulation, and Control	
ME 706	Renewable Energy: Physical and Engineering Principles	
ME 712	Waves in Fluids	
ME 743	Satellite Systems, Dynamics, and Control	

A student must have a minimum grade of C in each 400- or 500-level courses that are part of the core requirements and an overall grade-point average of 2.33 in these courses in order to continue in the program.

## Degree Plan

[Aerospace Track \(p. 234\)](#)

[Engineering Research Track \(p. 234\)](#)

### Aerospace Track

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
PHYS 407H	Honors/General Physics I	4
MATH 425H	Honors/Calculus I	4
PHYS 400	Physics Seminar I	1
ENGL 401	First-Year Writing	4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
PHYS 408H	Honors/General Physics II	4
MATH 426H	Honors/Calculus II	4
CHEM 405	Chemical Principles for Engineers	4
IAM 550	Introduction to Engineering Computing	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
PHYS 505	General Physics III	3
PHYS 506	General Physics III Laboratory	1
PHYS 508	Thermodynamics and Statistical Mechanics	4
MATH 528	Multidimensional Calculus	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
PHYS 615	Classical Mechanics and Mathematical Physics I	4
MATH 527	Differential Equations with Linear Algebra	4
Discovery Courses		8
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
PHYS 616	Classical Mechanics and Mathematical Physics II	4
ME 608	Fluid Dynamics	3
ECE 541	Electric Circuits	4
Discovery Course		4
<b>Credits</b>		<b>15</b>

### Spring

PHYS 703	Electricity and Magnetism I	4
ECE 548	Electronic Design I	4
Elective in Major		3-4
Discovery Course		4
<b>Credits</b>		<b>15-16</b>

### Fourth Year

#### Fall

PHYS 797	Senior Design Project	2
ECE 651	Electronic Design II	4
Elective in Major		3-4
Discovery Course		4
Free Elective		4
<b>Credits</b>		<b>17-18</b>

#### Spring

PHYS 797	Senior Design Project	2
ME 743	Satellite Systems, Dynamics, and Control	3
Elective in Major		4
Discovery Course		4
Free Elective		4
<b>Credits</b>		<b>17</b>
<b>Total Credits</b>		<b>129-131</b>

## Engineering Research Track

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
PHYS 407H	Honors/General Physics I	4
MATH 425H	Honors/Calculus I	4
CHEM 405	Chemical Principles for Engineers	4
PHYS 400	Physics Seminar I	1
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
PHYS 408H	Honors/General Physics II	4
MATH 426H	Honors/Calculus II	4
IAM 550	Introduction to Engineering Computing	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>16</b>

### Second Year

#### Fall

PHYS 505	General Physics III	3
PHYS 506	General Physics III Laboratory	1
MATH 528	Multidimensional Calculus	4
ECE 541	Electric Circuits	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

#### Spring

PHYS 615	Classical Mechanics and Mathematical Physics I	4
MATH 527	Differential Equations with Linear Algebra	4
ECE 548	Electronic Design I	4

Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
PHYS 508	Thermodynamics and Statistical Mechanics	4
ECE 651	Electronic Design II	4
PHYS 616	Classical Mechanics and Mathematical Physics II	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
PHYS 703	Electricity and Magnetism I	4
ECE 543	Introduction to Digital Systems	4
Elective in Major		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
PHYS 797	Senior Design Project	2
PHYS 704	Electricity and Magnetism II	4
PHYS 708	Optics	4
ECE 633	Signals and Systems I	3
Elective in Major		4
Discovery Course		4
<b>Credits</b>		<b>21</b>
<b>Spring</b>		
PHYS 797	Senior Design Project	2
ECE 647	Random Processes and Signals in Engineering	3
ME 608	Fluid Dynamics	3
Elective in Major		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>134</b>

- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## Physics Major (B.A.)

<https://ceps.unh.edu/physics/program/ba/physics-major>

### Description

This program provides an opportunity for a broad and liberal education, which in some cases may be sufficient for graduate work. This program can also be excellent preparation for middle and high school physics teachers, pre-med and pre-law students, and those wishing to pursue a technical career in industry. Because there are fewer required courses than for a B.S., you have time to pursue other academic interests. A judicious choice of electives may also prepare students for interdisciplinary programs that require proficiency in a specialized area of physics.

### Requirements

Code	Title	Credits
University Discovery Program requirements <sup>1</sup>		
Bachelor of Arts Degree requirements		
PHYS 400	Physics Seminar I	1
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
CS 410P	Introduction to Scientific Programming/Python	4
or IAM 550	Introduction to Engineering Computing	
PHYS 505 & PHYS 506	General Physics III and General Physics III Laboratory	4
PHYS 508	Thermodynamics and Statistical Mechanics	4
PHYS 601	Computational Physics Recitation I	1
PHYS 602	Computational Physics Recitation II	1
PHYS 605	Experimental Physics I	5
PHYS 615	Classical Mechanics and Mathematical Physics I	4
PHYS 616	Classical Mechanics and Mathematical Physics II	4
PHYS 701	Quantum Mechanics I	4
PHYS 703	Electricity and Magnetism I	4
PHYS 705	Experimental Physics II	4
Capstone: <sup>2</sup>		2-8
PHYS 795 & PHYS 799	Independent Study and Thesis	
or INCO 790 & PHYS 799	Advanced Research Experience and Thesis	
or PHYS 798	Senior Project	
Mathematics:		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
Select one of the following Options		8-12
Option A:		
MATH 527 & MATH 528	Differential Equations with Linear Algebra and Multidimensional Calculus	
Option B:		
MATH 525 & MATH 526	Linearity I and Linearity II	
<b>Total Credits</b>		<b>66-76</b>

## Student Learning Outcomes

The Student Outcomes consist of the ABET general requirements for all engineering programs. Students are expected to achieve the outcomes below upon graduation.

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

<sup>1</sup> Note that no physics course can satisfy these requirement for a physics major. The rationale behind this is that a course in physics does not broaden the education of a physics major.

<sup>2</sup> A capstone experience is required of all physics majors during their senior year. The Physics Department encourages students to write a senior thesis (PHYS 799 Thesis) for their capstone experience. Other options include independent study research projects (PHYS 795 Independent Study or INCO 590 Student Research Experience) or a special project as part of senior lab (PHYS 705 Experimental Physics II). All capstone experiences must be approved by the undergraduate committee during the student's penultimate semester.

## Degree Plan

### Suggested Curriculum for B.A. in Physics

In the following table, "other required courses" include Discovery courses, writing-intensive courses, language courses required for the B.A., and free-choice electives.

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
PHYS 400	Physics Seminar I	1
PHYS 407	General Physics I	4
MATH 425	Calculus I	4
Other Required Courses		8
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
PHYS 408	General Physics II	4
MATH 426	Calculus II	4
ENGL 401	First-Year Writing	4
CS 410P or IAM 550	Introduction to Scientific Programming/ Python or Introduction to Engineering Computing	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
PHYS 505 & PHYS 506	General Physics III and General Physics III Laboratory	4
MATH 525 or MATH 527	Linearity I or Differential Equations with Linear Algebra	4-6
PHYS 601	Computational Physics Recitation I	1
Other Required Courses		8
<b>Credits</b>		<b>17-19</b>
<b>Spring</b>		
PHYS 615	Classical Mechanics and Mathematical Physics I	4
MATH 526 or MATH 528	Linearity II or Multidimensional Calculus	4-6
PHYS 602	Computational Physics Recitation II	1
Other Required Courses		8
<b>Credits</b>		<b>17-19</b>

### Third Year

#### Fall

PHYS 616	Classical Mechanics and Mathematical Physics II	4
PHYS 701	Quantum Mechanics I	4
Other Required Courses		8
<b>Credits</b>		<b>16</b>

#### Spring

PHYS 703	Electricity and Magnetism I	4
PHYS 605	Experimental Physics I	5
Other Required Courses		8
<b>Credits</b>		<b>17</b>

### Fourth Year

#### Fall

PHYS 705	Experimental Physics II	4
PHYS 508	Thermodynamics and Statistical Mechanics	4
Other Required Courses		4
Capstone		4
<b>Credits</b>		<b>16</b>

#### Spring

Other Required Courses		12
Capstone		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>132-136</b>

## Student Learning Outcomes

- Students will master the fundamentals of mechanics, electricity and magnetism, quantum mechanics, and thermodynamics.
- Students will have a solid understanding of calculus and differential equations and be able to use mathematics to solve physics problems.
- Students will be proficient at taking measurements in a physics lab and analyzing measurements to draw valid conclusions.
- Students will be able to integrate competently the knowledge and skills acquired in the major and have adequate preparation to succeed in post-undergraduate studies or a professional career.
- Students develop and execute plans for post-graduation to establish their careers. Student will understand the variety of career paths and opportunities that are open to students who have majored in physics.
- Students will be able to present scientific ideas effectively in both written and oral form.

## Physics Major (B.S.)

<https://ceps.unh.edu/physics/program/bs/physics-major>

## Description

The bachelor of science degree in physics prepares students for professional work as physicists, and is the first step toward graduate work in physics. It is also excellent preparation for graduate programs in medicine, law, or engineering, as well as for technical jobs in industry. The

required courses are those typically necessary for admission to graduate study in physics or astronomy.

## Requirements

Code	Title	Credits
<b>University Discovery requirements</b> <sup>1</sup>		
<b>Bachelor of Science requirements</b>		
<b>Minimum physics requirements:</b>		
PHYS 400	Physics Seminar I	1
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
PHYS 505 & PHYS 506	General Physics III and General Physics III Laboratory	4
PHYS 508	Thermodynamics and Statistical Mechanics	4
PHYS 601	Computational Physics Recitation I	1
PHYS 602	Computational Physics Recitation II	1
PHYS 605	Experimental Physics I	5
PHYS 615	Classical Mechanics and Mathematical Physics I	4
PHYS 616	Classical Mechanics and Mathematical Physics II	4
PHYS 701	Quantum Mechanics I	4
PHYS 702	Quantum Mechanics II	4
PHYS 703	Electricity and Magnetism I	4
PHYS 704	Electricity and Magnetism II	4
PHYS 705	Experimental Physics II	4
Select two electives from the following:		8
PHYS 708	Optics	
PHYS 710	Astrophysics I	
PHYS 712	Space Plasma Physics	
PHYS 718	Condensed Matter Physics	
PHYS 720	Nuclear Physics	
PHYS 764	General Relativity and Cosmology	
MATH 747	Introduction to Nonlinear Dynamics and Chaos	
MATH 753	Introduction to Numerical Methods I	
<b>Chemistry:</b>		
CHEM 403 or CHEM 405	General Chemistry I Chemical Principles for Engineers	4
<b>Mathematics:</b>		
MATH 425 & MATH 426	Calculus I and Calculus II	8
Select one of the following options: <sup>2</sup>		12
Option A:		
MATH 525 & MATH 526	Linearity I and Linearity II <sup>2</sup>	
Option B:		
MATH 528	Multidimensional Calculus	
MATH 527	Differential Equations with Linear Algebra	
MATH 545 or MATH 645	Introduction to Linear Algebra Linear Algebra for Applications	
<b>Computer Programming:</b>		
CS 410P or IAM 550	Introduction to Scientific Programming/Python Introduction to Engineering Computing	4
<b>Capstone:</b> <sup>3</sup>		2-8
PHYS 795 & PHYS 799 or INCO 790 & PHYS 799 or PHYS 798	Independent Study and Thesis Advanced Research Experience and Thesis Senior Project	
<b>Total Credits</b>		<b>90-96</b>

<sup>1</sup> Note that no physics course can satisfy these requirement for a physics major. The rationale behind this is that a course in physics does not broaden the education of a physics major.

<sup>2</sup> The Department generally recommends MATH 645 Linear Algebra for Applications over MATH 545 Introduction to Linear Algebra for physics majors.

<sup>3</sup> A capstone experience is required of all physics majors during their senior year. The Physics Department encourages students to write a senior thesis (PHYS 799 Thesis) for their capstone experience. Other options include independent study research projects (PHYS 795 Independent Study or INCO 590 Student Research Experience) or a special project as part of senior lab (PHYS 705 Experimental Physics II). All capstone experiences must be approved by the undergraduate committee during the student's penultimate semester.

By the end of the spring semester of the sophomore year, a student must have a minimum grade of C in each 400- or 500-level course specifically required for the B.S. degree and an overall grade-point average of at least 2.33 in these courses in order to continue in the B.S. program.

## Physics Electives

In the following table, "electives" include Discovery courses, writing-intensive courses, physics electives, and free-choice electives. Note that physics electives can only be taken in the junior or senior year because of prerequisites, and are in general offered every other year.

Code	Title	Credits
PHYS 708	Optics	4
PHYS 710	Astrophysics I	4
PHYS 712	Space Plasma Physics	4
PHYS 718	Condensed Matter Physics	4
PHYS 720	Nuclear Physics	4
PHYS 764	General Relativity and Cosmology	4

## Degree Plan

### Suggested Curriculum for B.S. in Physics

In this degree plan, "electives" include Discovery courses, Writing Intensive Courses, Physics electives, or electives required to meet 128 credit graduation requirement.

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
PHYS 400	Physics Seminar I	1
PHYS 407	General Physics I	4
MATH 425	Calculus I	4
ENGL 401	First-Year Writing	4
CHEM 403 or CHEM 405	General Chemistry I or Chemical Principles for Engineers	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
PHYS 408	General Physics II	4
MATH 426	Calculus II	4
CS 410P or IAM 550	Introduction to Scientific Programming/ Python or Introduction to Engineering Computing	4
Discovery Elective		4
<b>Credits</b>		<b>16</b>

**Second Year****Fall**

PHYS 505 & PHYS 506	General Physics III and General Physics III Laboratory	4
PHYS 508	Thermodynamics and Statistical Mechanics	4
MATH 528 or MATH 525	Multidimensional Calculus or Linearity I	0-6
PHYS 601	Computational Physics Recitation I	1
Discovery Elective		4
<b>Credits</b>		<b>13-19</b>

**Spring**

PHYS 615	Classical Mechanics and Mathematical Physics I	4
PHYS 605	Experimental Physics I	5
PHYS 602	Computational Physics Recitation II	1
Select one of the following two options:		8 or 6
(1) For students who took MATH 528:		
MATH 527 & MATH 645	Differential Equations with Linear Algebra and Linear Algebra for Applications	
(2) For students who took MATH 525:		
MATH 526	Linearity II	
<b>Credits</b>		<b>18-16</b>

**Third Year****Fall**

PHYS 616	Classical Mechanics and Mathematical Physics II	4
PHYS 701	Quantum Mechanics I	4
Discovery or Major Electives		8
<b>Credits</b>		<b>16</b>

**Spring**

PHYS 702	Quantum Mechanics II	4
PHYS 703	Electricity and Magnetism I	4
Discovery or Major Electives		8
<b>Credits</b>		<b>16</b>

**Fourth Year****Fall**

PHYS 704	Electricity and Magnetism II	4
PHYS 705	Experimental Physics II	4
Discovery or Major Elective		4
Capstone		4
<b>Credits</b>		<b>16</b>

**Spring**

Electives		12
Capstone		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>128-132</b>

**Student Learning Outcomes**

- Students will master the fundamentals of mechanics, electricity and magnetism, quantum mechanics, and thermodynamics.

- Students will have a solid understanding of calculus, differential equations, and linear algebra and be able to use mathematics to solve physics problems.
- Students will be able to solve physics problems using computational methods.
- Students will be proficient at taking measurements in a physics lab and analyzing measurements to draw valid conclusions.
- Students will be well prepared for graduate study in physics and related disciplines.
- Students will be well prepared for technical careers.
- Students will be able to present scientific ideas effectively in both written and oral form.

**Astronomy Minor**

<https://ceps.unh.edu/physics/program/minor/astronomy>

**Description**

This minor program introduces students to the fundamentals of astronomy and astrophysics and also allows students some flexibility in their choice of more focused coursework. The required courses cover the following topics: planets, stars, galaxies, cosmology, and modern astronomical tools. We have two flavors of the minor, one for those also getting a physics degree, and another for students outside of the physics major.

Credit toward the minor will be given only for courses passed with C- or better, and a 2.0 grade-point average must be maintained in courses for the minor. Courses taken on the pass/fail basis may not be used for the minor. Students should declare their intent to earn a minor as early as possible and no later than the end of the junior year. During their final term, students must fill out an intent to minor and have it signed by the appropriate faculty.

The minor requires a minimum of five courses as detailed in the minor requirements. No more than 8.0 credits (or two courses) used by the student to satisfy major requirements may be used for the minor. Additional courses from the list of course electives may be utilized to meet the five-course minimum.

For further information please contact Professor Mark McConnell.

**Requirements**

Code	Title	Credits
<b>Required Courses</b>		
PHYS 406	Introduction to Modern Astronomy	4
PHYS 710	Astrophysics I	4
PHYS 711	Astrophysics II	4
PHYS 505	General Physics III (for non-physics majors only)	3
PHYS 506	General Physics III Laboratory (for non-physics majors only)	1
Select two courses (physics majors) or one course (non-physics majors) from the following:		8
ESCI 420	Our Solar System	
ESCI 741	Geochemistry	
ESCI 745	Isotope Geochemistry	
The following courses have significant physics pre-requisites and so may not be practical for non-physics majors		
PHYS 708	Optics	
PHYS 712	Space Plasma Physics	



PHYS 764

General Relativity and Cosmology

Total Credits

24

# Physics Minor

<https://ceps.unh.edu/physics/program/minor/physics>

## Description

This program allows students to become more deeply involved in physics without the commitment of a major.

- The minor consists of 5 four-credit courses in physics.
- At most only two minor courses can also fulfill a major requirement.
- The following courses may NOT be used to fulfill minor requirements: PHYS 400, PHYS 401, PHYS 402, PHYS 409, PHYS 501.
- Physics minors must take PHYS 407 General Physics I and PHYS 408 General Physics II or the equivalent. These two courses are prerequisites for all other physics courses.

To minor in physics, request a minor advisor at the physics office as soon as possible. Advisors assist in course selection to fit your interests, schedule, and help ensure you have met mathematical and physics prerequisites.

## Requirements

Code	Title	Credits
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
PHYS 505	General Physics III	3
Elective <sup>1</sup>		4
Elective <sup>1</sup>		4
<b>Total Credits</b>		<b>19</b>

<sup>1</sup> Select a four-credit physics course, chosen in consultation with the student's physics minor advisor.

Examples of course combinations used to fulfill minor requirements:

1. PHYS 407 General Physics I, PHYS 408 General Physics II, PHYS 505 General Physics III & PHYS 506 General Physics III Laboratory, PHYS 508 Thermodynamics and Statistical Mechanics, PHYS 615 Classical Mechanics and Mathematical Physics I
2. PHYS 407 General Physics I, PHYS 408 General Physics II, PHYS 406 Introduction to Modern Astronomy, PHYS 615 Classical Mechanics and Mathematical Physics I, PHYS 616 Classical Mechanics and Mathematical Physics II
3. PHYS 407 General Physics I, PHYS 408 General Physics II, PHYS 615 Classical Mechanics and Mathematical Physics I, PHYS 616 Classical Mechanics and Mathematical Physics II, PHYS 703 Electricity and Magnetism I

Note: many physics courses have mathematics prerequisites. Prerequisites are listed in the course descriptions.

## College of Health and Human Services

Kirsten N. Corazzini, Dean  
Erin Hiley Sharp, Associate Dean

The College of Health and Human Services (CHHS) prepares students for professional health-related careers, through hands-on, experiential learning. Taught by profession and field experts, CHHS provides undergraduate instruction that leads to the bachelor of science degree in communication sciences and disorders, health management and policy, human development and family studies, kinesiology (with majors in exercise science, health and physical education, health sciences and sport management and leadership), nursing, occupational therapy, recreation management and policy (with options in outdoor leadership and management, program and event management and therapeutic recreation), and social work. Each program enables students to acquire the knowledge and skills needed to practice in their chosen professions and to obtain a broad cultural background in the humanities and social sciences.

### Undeclared Major

A limited number of well-qualified first-year students who have expressed an interest in a health-related career but who are undecided about a specific major may enter the College of Health and Human Services as undeclared students.

### ACE First Year Experience Program

All CHHS students participate in our ACE (Academic and Career Engagement) First-Year Experience Program.

The ACE Program in the College of Health and Human Services provides our first year students with an environment that encourages academic success in the transition from high school to college. Through personalized academic and career coaching, this first-year experience program assists students with navigating academic and co-curricular resources, developing skills in active learning, reflection, and decision making, and exploring vast career options and alumni connections - all the while fostering a community of belonging and involvement within CHHS and UNH.

Members of the ACE Program participate in two ACE seminars during the first year. These seminars help students learn about CHHS majors and explore career choices, goals, and the resources and opportunities available to students at UNH, such as academic guidance and support for your personal well-being. Each CHHS student in the ACE Program has an ACE peer mentor and an ACE academic coach, who are available to meet on a regular basis. Each student is also assigned a faculty mentor within the major department.

### Degrees Offered

Bachelor of Science (B.S.)

### Degree Requirements

Candidates for the Bachelor of Science (B.S.) degree must satisfy all University requirements for graduation, earn at least 128 credits, successfully complete the courses required in one of the majors described in this section, and achieve the required minimum grade-point average in the chosen curriculum. Generally, courses are to be completed in the sequence in which they are arranged. Degree candidates must

satisfy all of the University and Discovery Program requirements in addition to satisfying the requirements of an individual major program, which includes a senior capstone course/experience.

<https://chhs.unh.edu/>

## Departments

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- [Health Management and Policy](#) (p. 246)
- [Human Development and Family Studies](#) (p. 251)
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## Programs of Study

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## Applied Human Anatomy and Physiology

- [Applied Human Anatomy and Physiology Minor](#) (p. 240)

## Applied Human Anatomy and Physiology Minor

<https://chhs.unh.edu/kinesiology/program/minor/applied-human-anatomy-physiology>

### Description

The minor is designed to provide students with an opportunity to develop knowledge and skills necessary for pursuing degrees in medicine and allied health.

Admission to the applied Human Anatomy & Physiology minor is based on successful completion of BMS 507 Human Anatomy and Physiology I & BMS 508 Human Anatomy and Physiology II or ANSC 511 Anatomy and Physiology and ANSC 512 Anatomy and Physiology (or equivalent

accepted by minor adviser) with a grade of C or better and a minimum GPA of 2.75.

## Requirements

### Minor Requirements

Code	Title	Credits
EXSC 620	Physiology of Exercise	4
KIN 652	Clinical Kinesiology	4
KIN 653A	Musculoskeletal Assessment	2
KIN 706 & KIN 707	Neurology and Neurology Lab	6
Select one of the following:		4
EXSC 527	Scientific Foundations of Health and Fitness	
EXSC 607	Biology of Aging	
KIN 505	Activity, Injuries and Disease	
<b>Total Credits</b>		<b>20</b>

## Coaching

- [Coaching Minor](#) (p. 241)

## Coaching Minor

<https://chhs.unh.edu/kinesiology/program/minor/coaching>

## Description

The Coaching Minor is an interdisciplinary curriculum designed to provide students interested in coaching at the youth, high school or college levels with basic knowledge and skills necessary for competence in coaching. The minor consists of courses offered by several options within the Department of Kinesiology and Recreation Management and Policy. The proposed coursework lays a theoretical and practical framework for students interested in coaching.

Admission into the minor is based on successful completion of SML 565 Principles of Coaching (grade of C- or better), and a minimum GPA of 2.0.

## Requirements

### Coaching Minor Requirements

Code	Title	Credits
SML 565	Principles of Coaching	4
SML 765	Advanced Topics in Coaching	4
SML 650D	Internship in Coaching	2-4
Select a minimum of two of the following courses:		4
SML 565A	Clinical Practice in Coaching	2
SML 521	Theory of Coaching Basketball	2
SML 522	Theory of Coaching Football	2
SML 523	Theory of Coaching Ice Hockey	2
SML 525	Theory of Coaching Soccer	2
SML 528	Theory of Coaching Track and Field	2
Select at least one of the following:		4
KIN 505	Activity, Injuries and Disease	4
EXSC 527	Scientific Foundations of Health and Fitness	4
SML 560	Sport Psychology	4
RMP 560	Recreational Sport Management	4
SML 562	Sport Media Relations	4
HPE 675	Motor Development and Learning	4
SML 740	Athletic Administration	4
SML 780	Psychological Factors in Sport	4

Students will not be permitted to enroll in SML 650D Internship in Coaching, until they have completed 10 Credits toward the minor to include: SML 565 Principles of Coaching; and one of the applicable courses/electives and at least one theory/practical coaching class.

To graduate with a coaching minor, individuals must earn a grade of C- or better in all courses associated with the minor.

Sport Management Leadership/Sport Studies majors are not permitted to minor in coaching.

## Communication Sciences and Disorders (COMM)

### WHAT IS COMMUNICATION SCIENCES AND DISORDERS?

Communication Sciences and Disorders is the profession devoted to assessing and treating disorders, delays, or differences in speech, language, and hearing. In this program, students learn how the ability to communicate develops—including how the brain and speech and hearing mechanisms function to support the acquisition of speech, language, social communication, and cognition. You'll review an array of communication disorders that can affect individuals across the lifespan, learning about assessment and treatment. This pre-professional degree will prepare you to successfully enter clinical or research graduate programs in areas such as audiology, speech-language pathology, cognitive science, and education.

### WHY STUDY COMMUNICATION SCIENCES AND DISORDERS AT UNH?

As a student in the communication sciences and disorders (CSD) program at UNH, you will learn about speech, language, and hearing through a unique educational model that includes classroom instruction, clinical observation, and research. Students observe at the on-campus Speech-Language-Hearing Center and Clinic for Neurogenic Communication Disorders, premier diagnostic and intervention centers in New Hampshire. In addition, you have the opportunity to participate in research activities in our state-of-the-art research laboratories. For students interested, a limited number of internships are available each semester.

Communication Sciences and Disorders (CSD) is devoted to helping people overcome disabilities of speech, language, and hearing. The study of Communication Sciences and Disorders may begin in the freshman or sophomore year. Students learn about speech, language, and hearing disorders in the classroom and are involved in clinical observation in the on-campus Speech-Language-Hearing Center and can participate in research projects. Students are encouraged to take elective courses in linguistics, human development, learning theory, early childhood, health administration, special education, and various aspects of rehabilitation.

As this is a pre-professional degree, students generally pursue graduate studies in speech-language pathology or audiology at colleges or universities offering graduate programs leading to a master's or doctoral degree and to subsequent certification by the American Speech-Language-Hearing Association (ASHA). Certified clinicians find employment opportunities in hospitals, schools, community speech and hearing clinics, and private practice. Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of the Communication Sciences and Disorders major.

\* Effective April 2022, the Accelerated Master's Program (AM) is under review and on hold.

<https://chhs.unh.edu/csd>

## Programs

- [Communication Sciences and Disorders Major \(B.S.\)](#) (p. 242)

## Faculty

<https://chhs.unh.edu/directory/all>

# Communication Sciences and Disorders Major (B.S.)

<https://chhs.unh.edu/communication-sciences-disorders/program/bs/communication-sciences-disorders-major>

## Description

The Department of Communication Sciences and Disorders offers a Bachelor of Science degree in communication sciences and disorders. Communication Sciences and Disorders is the profession devoted to assessing and treating disorders, delays, or differences in speech, language, and hearing. In this program, students study how the ability to communicate develops as well as review an array of communication disorders that can affect individuals across the lifespan. Students learn about speech, language, and hearing through a unique model of education, observation, and research. This pre-professional degree will prepare you to successfully enter clinical or research graduate programs in areas such as audiology, speech-language pathology, cognitive science, or education.

Candidates for a bachelor's degree in Communication Sciences and Disorders must satisfy all departmental as well as UNH Discovery and Writing Intensive requirements.

## Requirements

Students must earn a grade of C or better in all COMM courses.

Code	Title	Credits
<b>Required Courses</b>		
COMM 401	American Sign Language I	4
PSYC 401	Introduction to Psychology	4
PSYC 402	Statistics in Psychology	4
LING 405	Introduction to Linguistics	4
PHYS 409	Investigating Physics	4
COMM 420	Survey of Communication Disorders	4
MATH 420	Finite Mathematics	4
COMM 504	Basic Audiology	4
BMS 507	Human Anatomy and Physiology I	4
COMM 521	Anatomy and Physiology of the Speech and Hearing Mechanisms	4
COMM 522	Language Acquisition	4
COMM 524	Clinical Phonetics	4
PSYC 581	Child Development	4
COMM 610	Fact, Fiction, Fraud: Evaluating Motivations, Claims, and Evidence	4
COMM 636	Speech and Hearing Science	4
COMM 705	Introduction to Aural Rehabilitation	4

KIN 706 & KIN 707	Neurology and Neurology Lab	6
COMM 723	Observation Skills in Speech-Language Pathology (satisfies 25 Observation Hours)	2
COMM 724	Senior Capstone	4
COMM 741	Speech-Language Pathology I	4
COMM 742	Speech-Language Pathology II	4
<b>Total Credits</b>		<b>84</b>

CSD welcomes transfer students. We are committed to helping you keep to your intended graduation timeline; however, this is dependent upon what courses you have completed before transfer. UNH undergraduates who have not declared a major and/or are interested in transferring into communication sciences and disorders (CSD) should apply directly to the department by completing an internal transfer application. Transfer applications are accepted throughout the academic year. Acceptance into CSD is dependent upon space and the applicant's academic credentials.

Before applying, it is recommended that you review the CSD [suggested course schedule](#).

Internal Transfer students - [Apply Now](#)

For any questions regarding CSD curriculum please email the department at [csd.department@unh.edu](mailto:csd.department@unh.edu).

## Degree Plan

### Suggested Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
COMM 420	Survey of Communication Disorders	4
PSYC 401	Introduction to Psychology	4
BMS 507	Human Anatomy and Physiology I	0-4
LING 405	Introduction to Linguistics	4
<b>Credits</b>		<b>12-16</b>
<b>Spring</b>		
MATH 420	Finite Mathematics	0-4
PHYS 409	Investigating Physics	4
<b>Credits</b>		<b>4-8</b>

### Second Year

<b>Fall</b>		
COMM 521	Anatomy and Physiology of the Speech and Hearing Mechanisms	4
COMM 524	Clinical Phonetics	4
COMM 401	American Sign Language I	4
PSYC 402	Statistics in Psychology	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
COMM 636	Speech and Hearing Science	4
COMM 522	Language Acquisition	4
PSYC 581	Child Development	4
<b>Credits</b>		<b>12</b>

### Third Year

<b>Fall</b>		
COMM 504	Basic Audiology	4

KIN 706 & KIN 707	Neurology and Neurology Lab	6
<b>Credits</b>		<b>10</b>
<b>Spring</b>		
COMM 610	Fact, Fiction, Fraud: Evaluating Motivations, Claims, and Evidence	4
<b>Credits</b>		<b>4</b>
<b>Fourth Year</b>		
<b>Fall</b>		
COMM 741	Speech-Language Pathology I	4
COMM 723	Observation Skills in Speech-Language Pathology	2
COMM 724	Senior Capstone	4
<b>Credits</b>		<b>10</b>
<b>Spring</b>		
COMM 742	Speech-Language Pathology II	4
COMM 705	Introduction to Aural Rehabilitation	4
<b>Credits</b>		<b>8</b>
<b>Total Credits</b>		<b>76-84</b>

## Student Learning Outcomes

- The Communication Sciences and Disorders (CSD) undergraduate curriculum aligns with the American Speech Language Hearing Association (ASHA) standards.
- Students completing required COMM courses will have the foundational knowledge to meet ASHA standards.
- Students completing required COMM courses will have the academic preparation to apply to either SLP or Audiology graduate programs.
- All CSD students will have a capstone experience which will allow them to integrate academic experiences.
- Students will be introduced to evidence-based practice (EBP) as it relates to the professions of speech language pathology and audiology.

## Exercise Science

### Programs

- [Exercise Science Major \(B.S.\)](#) (p. 243)

## Exercise Science Major (B.S.)

<https://chhs.unh.edu/kinesiology/program/bs/exercise-science-major>

### Description

This curriculum prepares students for careers in health and fitness promotion and education programs in hospitals, sports medicine centers, wellness clinics, universities, and rehabilitation facilities. Students are also prepared for advanced degree programs in the health professions, basic biology fields, medicine, or other health-related fields. Students must earn a grade of C (2.0) or better in every required course. Successful completion of early and prerequisite courses is required before advancing to sequenced and higher-level coursework. All required courses must

be completed before enrolling in EXSC 650A Internship in Exercise Science. Interested students should consult with the undergraduate major coordinator, Summer Cook, Summer.Cook@unh.edu.

## Requirements

### Major Requirements

Code	Title	Credits
BMS 507 & BMS 508	Human Anatomy and Physiology I and Human Anatomy and Physiology II	8
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	8
EXSC 520	Contemporary Perspectives in Exercise Science	4
EXSC 620	Physiology of Exercise	4
KIN 652	Clinical Kinesiology	4
EXSC 621	Exercise Laboratory Techniques	4
EXSC 650A	Internship in Exercise Science	4-8
EXSC 704	Electrocardiography	4
EXSC 705	Topics in Applied Physiology	4
EXSC 720	Science and Practice of Strength Training	4
EXSC 722	Applied Biomechanics	4
EXSC 724	Exercise Metabolism: Acute and Chronic Adaptations	4
EXSC 736	Fitness and Graded Exercise Testing	4
EXSC 737	Exercise Prescription and Leadership in Healthy and Special Populations	4
EXSC 794	Cardiopulmonary Pathologies	4
EXSC 795	Practicum in Cardiac Rehabilitation	2
KIN 585	Emergency Medical Responder	4
NUTR 400	Nutrition in Health and Well Being	4
PSYC 401	Introduction to Psychology	4
Select one of the following:		4
PSYC 402	Statistics in Psychology	
SOC 402	Statistics	
<b>Total Credits</b>		<b>86-90</b>

Code	Title	Credits
<b>Students in exercise science complete the series of Capstone courses <sup>1</sup></b>		
EXSC 736	Fitness and Graded Exercise Testing	4
EXSC 737	Exercise Prescription and Leadership in Healthy and Special Populations	4
EXSC 650A	Internship in Exercise Science	4-8
<b>Total Credits</b>		<b>12-16</b>

<sup>1</sup> These courses give students practical experience in evaluating health and fitness and prescribing exercise to a wide range of clients. Specifically, students assess a number of disease risk factors, including blood pressure, blood chemistry, and body composition measures, and perform maximal graded exercise tests complete with electrocardiogram monitoring, as well as measure strength and flexibility. Students ultimately develop individualized exercise prescriptions for their clients and work with them one-on-one to improve their health and fitness. The internship experience is an off-campus, 10-week, 40-hours per week, full-time experience and can only be taken after all University and departmental courses are completed. Typically, this is taken during the summer after the student's senior spring academic term.

## Degree Plan

### Suggested Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
BMS 507	Human Anatomy and Physiology I	4



ENGL 401	First-Year Writing	4
EXSC 520	Contemporary Perspectives in Exercise Science	4
PSYC 401	Introduction to Psychology	4
<b>Credits</b>		<b>16</b>

**Spring**

BMS 508	Human Anatomy and Physiology II	4
KIN 585	Emergency Medical Responder	4
Discovery Course (INQ/HP)		4
Discovery Course: Statistics (QR)		4
<b>Credits</b>		<b>16</b>

**Second Year****Fall**

CHEM 403	General Chemistry I	4
EXSC 620	Physiology of Exercise	4
NUTR 400	Nutrition in Health and Well Being	4
Discovery Course ETS		
<b>Credits</b>		<b>12</b>

**Spring**

CHEM 404	General Chemistry II	4
EXSC 621	Exercise Laboratory Techniques	4
KIN 652	Clinical Kinesiology	4
Discovery Course (FPA)		4
<b>Credits</b>		<b>16</b>

**Third Year****Fall**

EXSC 704	Electrocardiography	4
EXSC 720	Science and Practice of Strength Training	4
EXSC 724	Exercise Metabolism: Acute and Chronic Adaptations	4
Elective Course (e.g. BIOL 411)		4
<b>Credits</b>		<b>16</b>

**Spring**

EXSC 722	Applied Biomechanics	4
Discovery Course (HUMA)		4
Discovery Course - WI (WC)		4
Elective Course (e.g. BIOL 412)		4
<b>Credits</b>		<b>16</b>

**Fourth Year****Fall**

EXSC 736	Fitness and Graded Exercise Testing	4
EXSC 794	Cardiopulmonary Pathologies	4
EXSC 795	Practicum in Cardiac Rehabilitation	2
Elective Course (e.g. PHYS 401)		4
<b>Credits</b>		<b>14</b>

**Spring**

EXSC 705	Topics in Applied Physiology	4
EXSC 737	Exercise Prescription and Leadership in Healthy and Special Populations	4
Elective Course		4
Elective Course (e.g. PHYS 402)		4
<b>Credits</b>		<b>16</b>

**Summer**

EXSC 650A	Internship in Exercise Science	4-8
<b>Credits</b>		<b>4-8</b>
<b>Total Credits</b>		<b>126-130</b>

## Student Learning Outcomes

- Apply fundamental principles of anatomy & physiology, chemistry, nutrition, exercise physiology, psychology, math and physics to anticipate and understand physiologic responses to acute and chronic exercise.
- Evaluate empirical literature in terms of accuracy, authority, bias and relevance, and synthesize information from a variety of sources for presentation in written and oral forms.
- Demonstrate competency in health and fitness assessments and use them to prescribe evidence-based exercise interventions to improve health, athletic performance, physical function and quality of life in diverse populations.
- Display professionally appropriate behaviors, ethical standards, sensitivity, compassion, and tolerance of individual differences, and demonstrate the ability to work in an interprofessional healthcare team.

## Health and Physical Education

### Programs

- [Health and Physical Education Major \(B.S.\)](#) (p. 244)
- [Lifetime Activity Programming and Leadership Minor](#) (p. 246)
- [Physical Education Teaching Minor](#) (p. 246)

## Health and Physical Education Major (B.S.)

<https://chhs.unh.edu/kinesiology/program/bs/health-physical-education-major>

### Description

The health and physical education (HPE) major provides a foundation for teaching through a four-year program (BS), or the UNH Department of Education fifth-year program leading to a masters of arts in teaching (MAT). Graduates become certified to teach kindergarten through grade 12 (K-12) health and physical education in the state of New Hampshire. This licensure is transferable to all other states in the U.S. Extensive supervised practicum experiences that provide teaching skills, including adaptive physical education programming, offers an excellent foundation for preparing high-quality teachers. The combination of health with physical education and adaptive physical education makes graduates highly marketable.

Internal UNH undergraduate transfer candidates must have a minimum GPA of 2.67 before admission to the major. External UNH undergraduate transfers must have a minimum GPA of 2.75. The coursework for students choosing the four-year or five-year path to teaching certification is exactly the same until the final semester of the undergraduate program. The culminating experience for students in the four-year

teaching program is student teaching (EDUC 694D/HPE 694 Supervised Teaching in Health and Physical Education). Students choosing to do the fifth-year program complete a year-long internship, in lieu of student teaching. Students also have the option of completing a concentration in adapted physical education through additional coursework designed to enhance teaching strategies and the programmatic needs of students with disabilities.

Admission to the fifth year program requires a minimum GPA of 3.0. Students admitted early to the masters program (required GPA of 3.2 or greater) are eligible for dual credit at the undergraduate/graduate levels for up to 12 credit hours. This enables undergraduates to begin the masters program in their junior or senior year. For questions about the program, contact the undergraduate program coordinator, Holly Alperin at (603) 862-1211, or Holly.Alperin@unh.edu.

## Requirements

### Major Requirements

Code	Title	Credits
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
EDUC 605	Educational Perspectives in Critical Times	4
EXSC 620	Physiology of Exercise	4
HDFS 746	Human Sexuality	4
HPE 500	Introduction to Health and Physical Education	2
HPE 570	Elementary Physical Education Practicum	4
HPE 600	Movement and Gymnastics Exploration	4
HPE 601	Lifetime Sports	3
HPE 603	Team Sports	3
HPE 610	Elementary Physical Education Pedagogy	4
HPE 648	Current Issues in Teaching Health	4
HPE 655	Middle School and Secondary Physical Education Pedagogy	4
HPE 653B	Biomechanics of Human Movement	2
HPE 671	Health Education Pedagogy	4
HPE 675	Motor Development and Learning	4
HPE 676	Adventure Activities	3
HPE 702	Health Content and Youth Risk Behavior	4
HPE 712	Health Education Practicum	4
HPE 781	Inclusion in Physical Education	4
KIN 501	First Aid: Responding to Emergencies	1
NUTR 400	Nutrition in Health and Well Being	4
PSYC 402	Statistics in Psychology	4
or SOC 402	Statistics	
or HHS 540	Statistics for Health and Human Service Professionals	
<b>Senior Capstone Experience</b>		
HPE 766	Middle School and Secondary Physical Education Practicum	4
<b>Total Credits</b>		<b>86</b>

## Degree Plan

### Recommended Major Sequencing of Courses

This list only includes major classes. Students should be registered for, and taking an average of 16 credits per semester to be 'on track' to graduate in 4 years. In most semesters, this means a student will be taking Discovery or elective courses to meet this 16 credit 'load'.

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
HPE 500	Introduction to Health and Physical Education	2
HPE 600	Movement and Gymnastics Exploration	4

NUTR 400	Nutrition in Health and Well Being	4
<b>1 or 2 Discovery Course</b>		
<b>Credits</b>		<b>10</b>

<b>Spring</b>		
HPE 603	Team Sports	3
ENGL 401	First-Year Writing	4
HHS 540	Statistics for Health and Human Service Professionals	4
or PSYC 402	Statistics in Psychology	
or SOC 402	Statistics	
<b>1 or 2 Discovery Course</b>		
<b>Credits</b>		<b>11</b>

### Second Year

<b>Fall</b>		
BMS 507	Human Anatomy and Physiology I	4
HPE 610	Elementary Physical Education Pedagogy	4
HPE 648	Current Issues in Teaching Health	4
HPE 675	Motor Development and Learning	4
KIN 501	First Aid: Responding to Emergencies	1
<b>Credits</b>		<b>17</b>

<b>Spring</b>		
BMS 508	Human Anatomy and Physiology II	4
HPE 570	Elementary Physical Education Practicum	4
HPE 601	Lifetime Sports	3
HPE 671	Health Education Pedagogy	4
<b>1 Discovery course</b>		
<b>Credits</b>		<b>15</b>

### Third Year

<b>Fall</b>		
EXSC 620	Physiology of Exercise	4
HPE 653B	Biomechanics of Human Movement	2
HPE 655	Middle School and Secondary Physical Education Pedagogy	4
HPE 702	Health Content and Youth Risk Behavior	4
<b>1 Discovery course</b>		
<b>Credits</b>		<b>14</b>

<b>Spring</b>		
HDFS 746	Human Sexuality	4
HPE 676	Adventure Activities	3
HPE 712	Health Education Practicum	4
HPE 781	Inclusion in Physical Education	4
<b>Credits</b>		<b>15</b>

### Fourth Year

<b>Fall</b>		
EDUC 605	Educational Perspectives in Critical Times	4
HPE 766	Middle School and Secondary Physical Education Practicum	4
<b>2 Discovery course</b>		
<b>Credits</b>		<b>8</b>

<b>Spring</b>		
EDUC 694D	Supervised Teaching/Kinesiology	4
HPE 694	Supervised Teaching in Health and Physical Education	6

1 or 2 Discovery Course	
<b>Credits</b>	<b>10</b>
<b>Total Credits</b>	<b>100</b>

## Student Learning Outcomes

- Apply sound pedagogical practices that enable effective teaching of health education, physical education, and adapted physical education at all levels.
- Create a learning environment that allows each student to feel safe, challenged and valued by embracing the unique strengths each student brings into the classroom and gymnasium.
- Integrate foundational skills and knowledge from health and physical education disciplines that enhance teaching practices in the classroom and gymnasium.
- Design unit and lesson plans within an overall curriculum for health and physical education that supports the development of students' intellectual, physical, social and emotional well-being.
- Design and implement authentic assessments for health and physical education that will enhance and inform student learning.

## Lifetime Activity Programming and Leadership Minor

### Description

The minor in Lifetime Activity Programming and Leadership is for students with an interest in working with youth in out-of-school activity settings such as before or after school programs, summer camps, outdoor/adventure settings, etc. The majority of courses will engage students in purposeful movement and will be physically engaging. Each course will have a teaching component that prepares students to facilitate the various activities with young people in a wide-range of environments.

### Requirements

Code	Title	Credits
<b>Required Courses</b>		
HPE 655	Middle School and Secondary Physical Education Pedagogy	4
HPE 781	Inclusion in Physical Education	4
HPE 601	Lifetime Sports	3
HPE 603	Team Sports	3
HPE 676	Adventure Activities	3
<b>Elective Courses: choose two</b>		<b>4-6</b>
LAP 501	Lifetime Activity Program	
OUT 539	Artificial Climbing Wall Management	
OUT #542	Sea Kayaking	
OUT 551	Adventure Programming: Backcountry Based Experience	
OUT 552	Adventure Programming: Water Based Experiences	
<b>Total Credits</b>		<b>21-23</b>

## Physical Education Teaching Minor

### Description

The minor in Physical Education Teaching is for students with an interest in pursuing a graduate degree to teach physical education after completing their undergraduate degree at UNH. The coursework and practicum experiences lay the foundation for understanding teaching via best practices in the physical education field. The two "Pedagogy" courses address the methods and effective teaching strategies to be incorporated when instructing elementary and secondary school-aged pupils, while the inclusion course focuses on teaching pupils with disabilities. The Team Sports course addresses seven sports with the goal of students being able to develop personal competency as players and also confident teachers of the sports, via a "tactical games approach". The culminating course/field-based experience will involve observing and teaching in a local school (Elementary or Middle/Secondary PE Practicum), to give students a true sense for what teaching physical education is all about. Upon completion of this minor, students will have the knowledge and experience to feel comfortable teaching physical education if they choose to pursue teaching certification at the graduate school level.

### Requirements

Code	Title	Credits
HPE 610	Elementary Physical Education Pedagogy	4
HPE 655	Middle School and Secondary Physical Education Pedagogy	4
HPE 781	Inclusion in Physical Education	4
HPE 603	Team Sports	3
KIN 501	First Aid: Responding to Emergencies	1
HPE 570	Elementary Physical Education Practicum	4
or HPE 666	Middle School and Secondary Physical Education Practicum	
<b>Total Credits</b>		<b>20</b>

## Health Management and Policy (HMP)

Health management and policy is an interdisciplinary program providing students with a broad view of health care organizational structure and health care policy, while developing analytical skills that are integrated within classes and computer laboratories throughout the curriculum. Students are prepared to pursue careers in a wide range of healthcare organizations focusing on the business aspects and public health aspects within healthcare. Graduates work in private practice, long-term care, rehabilitation facilities, hospitals, private practices, and other managed care organizations in such areas as finance, information systems, management, marketing, operations, project management, as well as public health departments, community health, community-based and home-health agencies, mental health facilities, regulatory bodies, consulting companies, and insurance companies.

The department's undergraduate program maintains full certification by the Association of University Programs in Health Administration (AUPHA). Students have the opportunity to become student members in the Medical Group Management Association (MGMA), American College of Healthcare Executives (ACHE), the Health Care Financial Management Association (HFMA), and the American Public Health Association (APHA), and the New Hampshire Public Health Association (NHPHA) to establish

a professional network and be informed on current issues within the field. The Health Management and Policy curriculum is approved under the New England Commission of Higher Education (NECHE).

<https://chhs.unh.edu/hmp>

## Programs

- [Health Management and Policy Major \(B.S.\)](#) (p. 247)
- [Health Management Minor](#) (p. 249)
- [Public Health Minor](#) (p. 249)

## Faculty

<https://chhs.unh.edu/directory/all>

# Health Management and Policy Major (B.S.)

<https://chhs.unh.edu/health-management-policy/program/bs/health-management-policy>

## Description

## Academic Program

The Health Management and Policy (HMP) curriculum includes a variety of healthcare courses, including finance, management, data, and policy courses. Students complete a core of introductory courses prior to their junior year in the HMP major. Upper-division (junior and senior) HMP courses are planned in a two-year sequence, (see course sequence) and includes a 400-hour three-credit internship. Along with completing major courses, students will be guided to complete the University requirements for writing intensive courses and Discovery courses to obtain the minimally required 128 credits to graduate. An academic advisor and faculty are available to assist with academic and career plans. This degree prepares students to be healthcare leaders in areas, including, but not limited to: analyst, consultant, epidemiologist, healthcare administrator, healthcare analyst, human resources, healthcare sales, lawyer, marketer, practice manager, and researcher.

It is important to note that internal or external transfer students may require an extra year due to the prescribed course sequence.

## Requirements

Code	Title	Credits
<b>Required Courses</b>		
HMP 401	United States Health Care Systems	4
HMP 403	Introduction to Public Health	4
HMP 501	Epidemiology and Community Medicine	4
ENGL 502	Professional and Technical Writing	4
MATH 420	Finite Mathematics	4
Statistics: choose one from the following <sup>1</sup>		
HHS 540	Statistics for Health and Human Service Professionals	
or MATH 439	Statistical Discovery for Everyone	
or PSYC 402	Statistics in Psychology	
or SOC 402	Statistics	
or ADMN 510	Business Statistics	
or EREC 525	Statistical Methods and Applications	

HMP 610	Survey of Health Information Systems	2
HMP 621	Pre-practicum Seminar	2
HMP 622	Field Practicum in Organizational and Project Analysis, and Management Skills Development	3
HMP 624	Post Practicum Seminar	2
HMP 631	Health Issues Seminar	2
HMP 635	Social Marketing Fundamentals	2
HMP 642	Health Economics	4
HMP 703	Translation of Health Data	4
HMP 711	Health Systems Research I	4
HMP 712	Health Analytics	4
HMP 721	Managing Health Care Organizations	4
HMP 723	Health Planning	4
HMP 740	Health Care Financial Management	4
HMP 742	Strategic Management for Health Care Organizations (HMP Track Course)	4
HMP 744	Health Ethics and Law	4
HMP 746	Health Policy	4
<b>Select Track</b>		<b>8</b>
<b>Public Health Track</b>		
HMP 669	Human Behavior and the Public Health	
HMP 715	Environmental Health	
or		
<b>Health Services Management Track</b>		
HMP 722	Health Care Management II	
HMP 741	Health Care Financial Management II	
<b>Honors in Major</b>		
HMP 798H	Honors Project/Research Design <sup>2</sup>	
HMP 799H	Honors Project/Research <sup>3</sup>	
<b>Total Credits</b>		<b>85</b>

<sup>1</sup> AP Statistics does not meet the statistics requirement.

<sup>2</sup> HMP 798H is taken for two credits Fall of senior year, if selected for Honors in Major.

<sup>3</sup> HMP 799H is taken for four credits Spring of senior year, if completing the Honors in Major thesis.

## Field Practicum

HMP 622 Field Practicum in Organizational and Project Analysis, and Management Skills Development is the required 400 hour 10-week field practicum, (or administrative internship), which constitutes an essential part of the HMP academic program. The field practicum occurs during the summer between junior and senior year, typically beginning in late May and ending in late August, requiring a full-time commitment of the student. Students must be an HMP major, in good academic standing in the major, and must retain a cumulative GPA of 3.00 or higher to be granted permission to enroll in the course.

This experience allows students to explore an area of special interest in depth that integrates class work with a supervised field experience. Given sufficient timing of student requests, efforts will be made to arrange practica at distant sites based on special needs. Field practicum sites are selected with student involvement. Typical sites are often concentrated in central and Northern New England, but the experience could also be elsewhere, including abroad.

## Academic Requirements

HMP majors must obtain a minimum of a B- in all HMP required courses and prerequisite courses. Majors must have an overall grade-point average of 3.00 to remain in the major. Students not continuing to make progress in the major, as evidenced by a low grades (below B-), incomplete courses, and/or administrative failures resulting in a cumulative GPA lower than 3.0 may, upon determination by the Health Management and Policy faculty, be excluded from the major and participation in the Field Practicum. An exclusion from the major may

also be necessary to resolve questions concerning major departmental requirements or University academic standards.

The academic action of *exclusion* could be a temporary action. Consideration for a temporary action requires that a petition is completed by the student detailing the *extenuating* circumstances and providing supportive documentation to the Health Management and Policy Department for review by faculty with a determination of approval. Should a petition be granted *approval to remain in the major* due to extenuating circumstances, the student must demonstrate academic progress (B- in HMP courses and 3.0 GPA) the following semester or they will be excluded from the major without the option to return. If the petition is not determined approved by the faculty, students will be required to change their major.

## Internal Applications for HMP Major

Students interested in additional information or in applying for admission to the health management and policy major should attend an HMP information session, and/or contact the academic department coordinator. Efforts should be made to complete this process during the freshman year or early in the sophomore year to ensure sufficient time to complete the required courses, HMP 401, HMP 403, HMP 501, MATH 420, ENGL 502, and Statistics. Admitted UNH students can apply to the major once the student meets the application requirements, a minimum cumulative GPA of 3.00 and at least two of the required courses completed with a B- or higher; however all HMP required courses must be completed with a B- or better to progress in the major.

## Honors in Major

The department offers an honors-in-major program. Students must meet the department's requirement of having an overall 3.7 grade-point average at UNH and a 3.7 grade-point average for required HMP courses taken by the end of the spring semester sophomore year to be invited to Honors-in-Major. Honors-in-major students take a total of three honors designated major courses during the junior year and senior year, as well as completing an honors thesis project during the senior year, HMP 798H and HMP 799H. Students work on the honors thesis with a faculty member within the HMP department who has knowledge in the specific topic. Students should contact the academic department coordinator for further information.

## Degree Plan

Suggested course sequence for major courses.

Course	Title	Credits
<b>First Year</b>		
Fall or Spring		
HMP 401	United States Health Care Systems	4
HMP 403	Introduction to Public Health	4
MATH 420	Finite Mathematics	4
<b>Credits</b>		<b>12</b>
<b>Second Year</b>		
Fall or Spring		
HMP 501	Epidemiology and Community Medicine	4
Statistics Course		4
ENGL 502	Professional and Technical Writing	4
<b>Credits</b>		<b>12</b>

### Third Year

#### Fall

HMP 621	Pre-practicum Seminar	1
HMP 642	Health Economics	4
HMP 721	Managing Health Care Organizations	4
HMP 740	Health Care Financial Management	4
HMP 744	Health Ethics and Law	4
<b>Credits</b>		<b>17</b>

#### Spring

HMP 621	Pre-practicum Seminar	1
HMP 610	Survey of Health Information Systems	2
HMP 635	Social Marketing Fundamentals	2
HMP 711	Health Systems Research I	4
HMP 746	Health Policy	4
HMP 741 or HMP 669	Health Care Financial Management II or Human Behavior and the Public Health	4
<b>Credits</b>		<b>17</b>

#### Summer

HMP 622	Field Practicum in Organizational and Project Analysis, and Management Skills Development	3
<b>Credits</b>		<b>3</b>

### Fourth Year

#### Fall

HMP 624	Post Practicum Seminar	2
HMP 703	Translation of Health Data	4
HMP 712	Health Analytics	4
HMP 723	Health Planning	4
<b>Credits</b>		<b>14</b>

#### Spring

HMP 631	Health Issues Seminar	2
HMP 742	Strategic Management for Health Care Organizations	4
HMP 722 or HMP 715	Health Care Management II or Environmental Health	4
<b>Credits</b>		<b>10</b>
<b>Total Credits</b>		<b>85</b>

## Student Learning Outcomes

- The complexity of the health care delivery system, quality of care, and it relates to population health as well as the complexity of financing of the US healthcare delivery model.
- Analyze complex management situations, data and apply (appropriate) health management concepts, theories and models to develop recommendations, working within a team environment.
- Ability to describe and discuss the role of Human resource functions and the laws governing, the difference between management and leadership, organizational structures, mergers, acquisitions and affiliations and the role of governmental laws and regulations.
- Identify and prioritize organizational needs and market imperatives in design and development of business plans for health Programs and services in a variety of management settings to compile, present



and discuss data and its limitations related to specific managerial problems and ethics for organizational decision making based on regulations and principles that govern the domains and the role of management and leadership.

- Use of computer analysis tools for calculating, aggregating, presenting and discussing data and its analysis.
- Understand the importance of a Mission and Vision statements and Identification and involvement of stakeholders, recognizing political and legal implications of actions and decisions.
- Describe and generally assess key concepts and elements of health information systems selection and implementation of health care systems and regulatory requirements related to clinical and financial systems, and the role in HIT/HIM as it relates to cost, quality and access.
- Application of economic theory and current mechanisms for advanced financial knowledge to decision making and strategic thinking skills, ability to identify and target market segment and defined appropriate intervals to measure the time value of money, long-term debt, stocks and equity, and evaluation of capital projects.
- Communicate information, ideas and information effectively in a written and oral format using appropriate professional conventions.

## Health Management Minor

<https://chhs.unh.edu/health-management-policy/program/minor/health-management>

### Description

The department of Health Management and Policy (HMP) offers an integrated minor in health management designed for students in majors outside of HMP. All courses must be completed with a C- or higher to be counted toward the minor. Students seeking to minor in health management should meet with the academic department coordinator to discuss the requirements.

### Requirements

The health management minor includes the following courses:

Code	Title	Credits
<b>Required Courses</b>		
HMP 401	United States Health Care Systems	4
HMP 501	Epidemiology and Community Medicine	4
HMP 721	Managing Health Care Organizations	4
Must be taken before completing 600 and 700 level courses.		
<b>Select Two of the Following:</b> <sup>1</sup>		
HMP 642	Health Economics	4
HMP 669	Human Behavior and the Public Health	4
HMP 703	Translation of Health Data	4
HMP 711	Health Systems Research I	4
HMP 712	Health Analytics	4
HMP 722	Health Care Management II <sup>1</sup>	4
HMP 724	Long-Term Care Management	4
HMP 740	Health Care Financial Management	4
HMP 741	Health Care Financial Management II <sup>1</sup>	4
HMP 744	Health Ethics and Law	4

<sup>1</sup> Prerequisite courses must be completed for all HMP courses.

## Public Health Minor

<https://chhs.unh.edu/health-management-policy/program/minor/public-health>

### Description

The department of Health Management and Policy offers a minor in public health. Public health deals with the health of populations and focuses on health promotion and disease prevention, as well as access to the medical system. The minor introduces students to many of the foundation areas of public health and provides basic exposure to key concepts and skills in the five core disciplines of public health, as articulated by the Council on Education for Public Health. The minor is open to any baccalaureate student outside of the Health Management and Policy major at UNH. Students interested in this field may decide to continue their education with the Master of Public Health (MPH), which is also offered through HMP.

### Requirements

The public health minor includes the following courses:

Code	Title	Credits
<b>Required Courses</b>		
HMP 403	Introduction to Public Health	4
HMP 501	Epidemiology and Community Medicine	4
HMP 669	Human Behavior and the Public Health	4
HMP 715	Environmental Health	4
<b>Select one of the following:</b> <sup>1</sup>		
HMP 703	Translation of Health Data	4
HMP 746	Health Policy	4
HDFS 586	Families at Risk	4
HPE 702	Health Content and Youth Risk Behavior	4
OT 513	Stressed Out: The Science and Nature of Human Stress	4
RMP 490	Recreation & Tourism in Society	4
SW 525	Social Welfare Policy: History of Social and Economic Justice	4

<sup>1</sup> All prerequisite courses must be met for any listed courses.

<sup>2</sup> Other courses could be considered by submission of an academic petition.

## Health Sciences

- [Health Sciences Major B.S.](#) (p. 249)

## Health Sciences Major B.S.

<https://chhs.unh.edu/kinesiology/program/bs/health-sciences-major>

### Description

The Health Sciences program is for those students who are concerned with the health and well-being of others, possess a strong science aptitude, and plan to pursue a career in healthcare. As healthcare has evolved in the U.S., degree programs in the allied health professions (physical therapy, physician assistant, etc.) have moved to post-baccalaureate education. Individuals with career interests in allied health professions must first attain prerequisite knowledge to be prepared to study in these advanced degree programs. This rigorous academic program provides the foundational life science coursework and advanced

elective course offerings to prepare students for graduate programs in the allied health sciences.

Admission to graduate study in medical or allied health professions is very competitive and requires applicants to demonstrate exemplary academic performance for admission. Students are required to have earned a minimum, cumulative, GPA of 2.85 by the end of their Sophomore/2nd Year in the Health Sciences Major. Students are also required to achieve a C- or better in all required courses in the major. Students with a GPA below 2.85 will be excluded (removed) from the Health Sciences Major.

## Requirements

### Major Requirements

Core courses required of all Health Sciences concentrations are:

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
HS 406	Introduction to Health Sciences	1
HS 501	Medical Terminology	2
HS 605	Exploration of Allied Health Professions	2
HS 656	Musculoskeletal Pathologies for Health Professions	4
HS 657	Musculoskeletal Pathologies for Health Professions Lab	1
HS 717	Cultural Considerations in Health Care	4
HS 767	Pharmacology for Health Professions	4
EXSC 620	Physiology of Exercise	4
KIN 585	Emergency Medical Responder	4
KIN 652	Clinical Kinesiology	4
NUTR 400	Nutrition in Health and Well Being	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4
PSYC 401	Introduction to Psychology	4
PSYC 402	Statistics in Psychology <sup>1</sup>	4
or SOC 402	Statistics	
or HHS 540	Statistics for Health and Human Service Professionals	

<sup>1</sup> Any UNH statistics course satisfies the requirement with adviser approval.

### Required University Courses

Candidates for a degree must satisfy all of the University Discovery requirements in addition to satisfying the requirements of the Health Sciences curriculum and any pre-requisite coursework needed to apply to the graduate programs they plan to pursue.

### Recommended Electives

A student's plan of elective courses should align with post-baccalaureate pursuits, and be approved by a Health Sciences advisor.

Recommended electives for future health professionals that are external to the Health Sciences courses may include course work in Communication Sciences & Disorders, Human Development & Family Studies, Health & Human Services, Health Management & Policy, Kinesiology, Nursing, Occupational Therapy, Recreation Management & Policy, Social Work, and other coursework in the life sciences and health and human services.

Code	Title	Credits
BMCB 658/659W	General Biochemistry	3
BMS 503/504	General Microbiology	3
CHEM 545/546	Organic Chemistry	3
GEN 604	Principles of Genetics	4
KIN 684/685	Emergency Medical Care: Emergency Medical Technician (EMT)	3
HS 696W	Independent Study	2-4
HS 770	General Medical Conditions for Health Professions	4
KIN 706	Neurology	4
PSYC 561	Abnormal Behavior	4
PSYC 581	Child Development	4

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
BMS 507	Human Anatomy and Physiology I	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
ENGL 401	First-Year Writing	4
HS 406	Introduction to Health Sciences	1
Discovery/Elective (HU)		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
BMS 508	Human Anatomy and Physiology II	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
HS 501	Medical Terminology	2
PSYC 401	Introduction to Psychology	4
Discovery/Elective (FPA)		4
<b>Credits</b>		<b>18</b>
<b>Second Year</b>		
<b>Fall</b>		
HS 605	Exploration of Allied Health Professions (fall or spring)	2
CHEM 403	General Chemistry I	4
EXSC 620	Physiology of Exercise	4
KIN 585	Emergency Medical Responder	4
Discovery/Elective (ETS)		4
<b>Credits</b>		<b>18</b>
<b>Spring</b>		
CHEM 404	General Chemistry II	4
NUTR 400	Nutrition in Health and Well Being	4
PSYC 402	Statistics in Psychology <sup>1</sup>	4
Discovery Elective (WC)		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
PHYS 401	Introduction to Physics I	4
HS 767	Pharmacology for Health Professions	4
Discovery Elective (HP)		4
Discovery Elective (see recommended electives under requirements)		4
<b>Credits</b>		<b>16</b>

**Spring**

PHYS 402	Introduction to Physics II	4
HS 656	Musculoskeletal Pathologies for Health Professions	4
HS 657	Musculoskeletal Pathologies for Health Professions Lab	1
KIN 652	Clinical Kinesiology	4
Discovery Elective (see recommended electives under requirements)		4

**Credits** 17

**Fourth Year****Fall**

Discovery Elective (see recommended electives under requirements)		4
Discovery Elective (see recommended electives under requirements)		4
Discovery Elective (see recommended electives under requirements)		4
Discovery Elective (see recommended electives under requirements)		

**Credits** 12

**Spring**

HS 717	Cultural Considerations in Health Care	4
Discovery Elective (see recommended electives under requirements)		4
Discovery Elective (see recommended electives under requirements)		
Discovery Elective (see recommended electives under requirements)		4

**Credits** 12

**Total Credits** 126

## Human Development and Family Studies (HDFS)

### HUMAN DEVELOPMENT AND FAMILY STUDIES MAJOR (B.S.)

As a human development and family studies major at UNH, you'll learn to promote the health and well-being of children, adults, and families through research, teaching and service. The program curriculum embraces diversity and emphasizes service excellence and innovation, preparing you for a variety of in-demand careers in education, social services, and healthcare. Three separate concentrations allow students to focus on early childhood development and education, family support or lifespan development.

As a major public research university, UNH emphasizes hands-on experience and research opportunities. Students in the human development and family studies program have multiple opportunities to put theory into practice through the Child Study and Development Center, Family Connections Center and Marriage and Family Therapy Center. Students in the Child Development Concentration may apply to the Early Childhood Education Teaching Preparation Program, while students in the Family Support Concentration are encouraged to pursue provisional status as a Certified Family Life Educator, preparing them to work in areas such as social services, health services, family support, and youth program.

#### Human Development and Family Studies offer three areas of concentration

- **Family Support** - for students interested in working with children, adolescents, adults, and families
- **Lifespan Development** - for students with a broad interest in working with families
- **Child Development** - for students who have a broad interest in working with children ranging in age from birth to age eight.

#### Two optional full-year internship opportunities

Students can apply for either internship during their junior year

- **Early Childhood Education** teacher preparation (ECE) internship
- **Family Support** concentration offers an internship working in fields involving family, gender and cultural differences. This internships can also be taken by Lifespan Development students

#### Three Minors

The Human Development and Family Studies department offers three complementary undergraduate minors: Human Development and Family Studies, Adolescent and Youth Development, and Child Life. An undergraduate minor allows students to demonstrate a special area of interest, focus, or expertise and supports their academic major and future educational and career goals. Each HDFS minor highlights key aspects of individual and family development.

The Human Development and Family Studies minor is only available to non-HDFS majors; however, HDFS majors may choose to minor in Adolescent and Youth Development or Child Life. A completed minor at UNH typically consists of 20 credits, or 5 classes, completed with a C or better.

## Student Learning Outcomes

- Demonstrate understanding of core principles of biology, chemistry, physics, anatomy and physiology, psychology, and kinesiology.
- Demonstrate comprehension of musculoskeletal evaluation and assessment techniques.
- Demonstrate responsiveness to cultural considerations in healthcare.
  - Understand influence of age, race, ethnicity, gender, sexual orientation, spirituality, socioeconomic status, and other aspects of diversity on individual healthcare needs and health-related quality of life.
- Demonstrate an understanding of scientific research and writing.
  - Ability to identify and analyze scholarly literature.
  - Ability to synthesize and articulate research findings through writing.
- Demonstrate knowledge of behaviors, scopes of practice, and legal and ethical standards for health professions.
- Understand concepts of evidence-based practice and patient-centered care for health professions.

- **Child Life**
- **Adolescent and Youth Development**
- **Human Development and Family Studies**

Human Development and Family Studies The Child Life minor may also be taken by HDFS students interested in working with families and children in a hospital setting

<https://chhs.unh.edu/hdfs/>

## Programs

- [Human Development and Family Studies Major \(B.S.\)](#) (p. 252)
- [Adolescent and Youth Development Minor](#) (p. 255)
- [Child Life Minor](#) (p. 256)
- [Human Development and Family Studies Minor](#) (p. 256)

## Faculty

<https://chhs.unh.edu/directory/all>

# Human Development and Family Studies Major (B.S.)

<https://chhs.unh.edu/human-development-family-studies/program/bs/human-development-family-studies-major>

## Description

## HUMAN DEVELOPMENT AND FAMILY STUDIES MAJOR (B.S.)

Human Development and Family Studies (HDFS) is an academic discipline focused on understanding the development of individuals and families over time and across the ecological contexts in which they live. HDFS is an applied field of study and a versatile undergraduate major for students interested in working to enhance the lives of individuals and families through in-demand careers in settings that include early childhood education, schools, hospitals, and social service agencies. The HDFS curriculum offers students the opportunity to take courses from child and adolescent development to adult development and aging; family, parenting, and interpersonal relationships; classroom curriculum, observation, and assessment; and family programming, policy, and law. Courses in the HDFS major emphasize diverse experiences across age, gender, race and ethnicity, nationality, and socioeconomic status and prepare students for inclusive programming and practice.

HDFS majors choose between three concentrations: [Child Development](#) (p. 252), [Family Support](#) (p. 253), and [Lifespan Development](#) (p. 253). There is some overlap in coursework and career opportunities across the three concentrations, but each offers unique areas of emphasis.

As a major public research university, UNH emphasizes hands-on experience and research opportunities for undergraduate students. Students in the Human Development and Family Studies program are provided with opportunities to put theory and research into practice through practicum and internship courses in the Child Study and Development Center, Family Connections Center, and many schools

and community-based organizations across the Seacoast region of New Hampshire. Students in the Child Development concentration who complete the Early Childhood Education Teacher Preparation Program will be prepared for certification to teach children from Preschool through 3rd Grade. Family Support students who complete the Family Internship Program will be eligible to pursue provisional status as a Certified Family Life Educator (CFLE) at graduation.

### HDFS Undergraduate Concentrations:

- [Child Development](#) (p. 252) focuses on infancy through childhood with an emphasis on learning, education, and developmentally-appropriate practices and activities.
- [Family Support](#) (p. 253) focuses on development within the context of families, close relationships, and communities.
- [Lifespan Development](#) (p. 253) focuses on understanding and supporting development across the entire lifespan.

### Internship Opportunities

Internships are not required for students to complete their degree in HDFS; however there are exciting opportunities to gain hands on experience. Students who want to take part in an internship apply during their junior year for an internship experience that spans their full senior year. An Early Childhood Education (ECE) Teacher Preparation internship is available for qualified students within the Child Development concentration. The Family Support and Lifespan concentrations offer an internship that introduces high-performing students to careers in human services, advocacy, and policy through placements in the Seacoast Region of New Hampshire.

### Undergraduate Minors

The HDFS department also offers three complementary undergraduate minors: Human Development and Family Studies, Adolescent and Youth Development, and Child Life. An undergraduate minor allows students to demonstrate a special area of interest, focus, or expertise and supports their academic major and future goals. Each HDFS minor highlights key aspects of individual and family development. Although the Human Development and Family Studies minor is only available to non-HDFS majors, HDFS majors may choose to minor in Adolescent and Youth Development or Child Life. A completed minor at UNH typically consists of 20 credits, or 5 classes, completed with a C- or better.

- [Human Development and Family Studies](#) minor complements undergraduate majors in the social sciences, health professions, and related disciplines by providing students with the opportunity to learn about individual and family development, interpersonal relationships, and the ecological contexts of development.
- [Adolescent and Youth Development](#) minor is an interdisciplinary minor that allows students to gain specialized knowledge and skills for working with adolescents and emerging adults in school, after-school, and community settings.
- [Child Life](#) minor introduces undergraduate students to the Child Life profession, which involves working with children, adolescents, and families facing challenges associated with hospitalization, medical procedures, illness, and disability.

## CHILD DEVELOPMENT CONCENTRATION

The Child Development concentration is intended for students who have a broad interest in working with children ranging in age from birth to age eight. The concentration has four major foci: child development, teaching methodology and curriculum development, developmentally appropriate

learning environments for young children, and home-school-community relations. This concentration prepares undergraduates for careers in early childhood education and related fields requiring in depth knowledge of early development and early childhood programs. Students in the Child Development concentration may apply to the Early Childhood Education (ECE) Teacher Preparation Program during their junior year.

### **Child Development: Early Childhood Education (ECE) Teacher Preparation Program**

The Early Childhood Education (ECE) Teacher Preparation program prepares students for a career in teaching young children. Course work for this program is designed to maximize in-classroom mentorship and to provide a broad range of exposure across the pre-kindergarten to 3rd-grade levels. This program within the Child Development concentration of the Human Development and Family Studies Department is approved by the New Hampshire State Board of Education. Juniors in the Child Development concentration who have maintained a minimum overall GPA of 3.2 and a departmental GPA of 3.2 are eligible to apply. Please note that this is a competitive program with limited enrollment. Those accepted into the program must maintain this level of academic achievement throughout the program. Students must be prepared to have their own transportation for off-campus internship placements as needed.

### **A Note about Obtaining State Teacher Certification**

Although students may graduate from UNH with a bachelor's degree in Human Development and Family Studies, having completed the ECE coursework along with all student teaching requirements, they will not be eligible to apply for the New Hampshire State Teaching Certification without the required set of passing test scores. This is a state of New Hampshire requirement; not a condition for graduation from UNH. In order to fulfill a teaching contract with a public-school district, a prospective teacher must be certified by the state in which he/she is to be employed.

### **Early Childhood Education (ECE) Internship Course Descriptions**

The ECE Internship course (HDFS 785 Seminar for Student Teachers) is a fall semester seminar-based course intended to prepare students, as teacher candidates, for the student teaching experience that takes place in the spring semester. This course emphasizes students' continued development as learners, researchers, and collaborators. Discussions and projects focus on the ways in which these three roles are developed within the classroom and school community. Students meet as a cohort in weekly/bi-weekly seminars on campus. Students should expect to spend a minimum of five hours per week in their assigned classroom (60+ hours). Other expectations for this course include but are not limited to: preparing a resume, observing at other sites, attending professional conferences, starting a professional portfolio to document their achievement of professional teaching standards, and completing additional assignments and readings.

HDFS 786 Seminar for Student Teachers and HDFS 788 Student Teaching Young Children: provide the student teaching experience in the spring semester of the senior year. Students should expect to spend a minimum of twenty-five hours per week (a minimum of 325+ hours total) in their assigned classrooms, gradually assuming increasing teaching responsibilities, culminating in the assumption of two to three lead-teaching weeks. Additional hours outside of actual classroom/program operation hours are expected for meeting and planning with cooperating teachers, preparing for teaching, and attending parent conferences and other school functions, as well as attending professional conferences.

Seminars provide continued opportunity for reflection on students' development as teacher candidates, reflecting on classroom practices, identifying teaching strengths and weaknesses, and planning their first professional appointment as teachers of young learners. Students should be prepared to meet weekly after school hours and to complete and present their professional portfolio to faculty and related professionals in the field.

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## **FAMILY SUPPORT CONCENTRATION**

The Family Support concentration focuses on individuals, couples, and families within their social and cultural contexts. Students in this concentration develop knowledge and skills that prepare them to work with individuals and families as they support healthy development and well-being in schools, social service agencies, and non-profit organizations.

Students in this concentration can apply for the status of Provisional Certified Family Life Educator (CFLE) through the National Council on Family Relations (NCFR). Because our HDFS program is a CFLE-approved undergraduate academic program through NCFR, our students can become certified simply by demonstrating the completion of our curriculum along with completion of our full-year, senior internship.

### **Family Internship**

Students who plan to apply for Provisional CFLE certification are required to complete the Family Internship, in which students apply knowledge gained from their academic studies in a supervised environment. Students who do not plan to become CFLEs may also choose to complete the Family Internship. The internship involves a commitment of sixteen hours per week for two semesters, in addition to a three-hour seminar (HDFS 792 Family Internship Seminar) every other week. Students apply for the internship by March 1st of their junior year. Internship applicants must have completed a minimum of twenty credits of departmental coursework prior to their senior year with a minimum departmental GPA of 3.0.

### **Certified Family Life Educator**

Students in the Family Support concentration who are accepted to the Family Internship are encouraged to apply for provisional status as a Certified Family Life Educator (CFLE). Family life educators work in a variety of settings including social services, health services, child care, family support, youth programs, parent education, junior and senior high schools, and universities and colleges. The CFLE certification demonstrates expertise in a broad range of topics and increases professional credibility by validating students' education and experience. The National Council on Family Relations (NCFR) has approved the Department of Human Development and Family Studies' Family Support concentration as meeting the standards and criteria required for CFLE certification. Students may apply to NCFR for provisional CFLE designation upon completion of required coursework (see marked courses in the table below.) Upon meeting additional requirements listed on the NCFR website, students can apply for full certification after graduation.

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## **LIFESPAN DEVELOPMENT CONCENTRATION**

The Lifespan Development concentration focuses on learning about developmental tasks and developmentally-appropriate practices across



the entire lifespan. Students in this concentration take courses in each of the developmental periods: childhood, adolescence, and adulthood. Students also gain expertise related to the social contexts impacting development, such as families and communities. Emphasis is placed on the impact of system dynamics, family systems, gender, and cultural differences on development. Students in the Lifespan Development concentration may also apply to take part in the [Family Internship program](#) during their senior year.

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## Requirements

### Major Requirements

The core curriculum required of each Human Development and Family Studies student is designed to give a broad introduction to individual and family development and interpersonal relationships across the lifespan. Building off this curriculum, each student will select an area of concentration in Child Development, Family Support, or Lifespan Development that will guide further required coursework. With assistance from faculty advisors, students also choose supporting courses that allow them an individualized component to the major, tailored to their specific interests and career objectives. Lastly, the senior year culminates in the required capstone experience and optional internship opportunity.

Candidates for the Human Development and Family Studies degree must satisfy all of the [University Discovery requirements](#) in addition to satisfying the requirements of their HDFS concentration.

### Core Curriculum

Code	Title	Credits
HDFS 525	Human Development	4
HDFS 545	Intimate Relationships and Families	4
One Approved Statistics Course		4
Selected Concentration (Requirements listed below)		24
Capstone experience (Requirement listed by concentration below)		4
Supporting Courses (applies to all concentrations) <sup>1</sup>		20

<sup>1</sup> Supporting courses are intended to provide an individualized component to the HDFS curriculum. Because HDFS is interdisciplinary, this allows students to explore related areas that contribute to their academic and professional goals. A supporting course may be any course, inside or outside of the HDFS department, that is:

1. At the 500-level or above
2. Approved by an HDFS adviser

Any non-required HDFS courses (including internships) may serve as supporting coursework. Other classes meeting supporting course criteria are often found in the psychology, sociology, social work, women's studies, education, and communication sciences and disorders departments.

## Concentrations and Requirements (p. 254)

[Child Development Concentration \(p. 254\)](#)

[Child Development Concentration: ECE Teacher Preparation Program \(p. 254\)](#)

[Family Support/Provisional CFLE Concentration \(p. 254\)](#)

[Lifespan Development Concentration \(p. 255\)](#)

*Note: Students apply to the ECE Teacher Preparation Program during their Junior year.*

### CHILD DEVELOPMENT CONCENTRATION Requirements

Code	Title	Credits
<b>HDFS Core Course Requirements</b>		
HDFS 525	Human Development	4
HDFS 545	Intimate Relationships and Families	4
One Approved Statistics Course		4
<b>Child Development Requirements</b>		
HDFS 623	Developmental Perspectives on Infancy and Early Childhood	4
HDFS 635	Teaching and Learning in Early Childhood Settings	4
HDFS 709	Child Development Internship	4
HDFS 734	Curriculum for Young Children	4
HDFS 771	Observation and Assessment of Young Children	4
Select one additional HDFS course 500 or above		4
HDFS 743	Families, Schools, and Community (Capstone)	4
Supporting Course Requirements (applies to all concentrations)		20
Supporting courses are intended to provide an individualized component to the HDFS curriculum. Because HDFS is interdisciplinary, this allows students to explore related areas that contribute to their academic and professional goals. A supporting course may be any course, inside or outside of the HDFS department, that is:		
1. At the 500-level or above		
2. Approved by an HDFS advisor		

Any non-required HDFS courses (including internships) may serve as supporting coursework. Other classes meeting supporting course criteria are often found in (but are not limited to) the psychology, sociology, social work, women's studies, education, and communication sciences and disorders departments.

### CHILD DEVELOPMENT Concentration: EARLY CHILDHOOD EDUCATION (ECE) TEACHER PREPARATION PROGRAM requirements

Code	Title	Credits
<b>HDFS Core Course Requirements</b>		
HDFS 525	Human Development	4
HDFS 545	Intimate Relationships and Families	4
One Approved Statistics Course		4
<b>Child Development: ECE Requirements</b>		
HDFS 623	Developmental Perspectives on Infancy and Early Childhood	4
HDFS 635	Teaching and Learning in Early Childhood Settings	4
HDFS 709	Child Development Internship	4
HDFS 734	Curriculum for Young Children	4
HDFS 771	Observation and Assessment of Young Children	4
HDFS 743	Families, Schools, and Community (Capstone)	4
<b>ECE Required Courses <sup>2</sup></b>		
HDFS 785	Seminar for Student Teachers	2
HDFS 786	Seminar for Student Teachers	2
HDFS 788	Student Teaching Young Children	8
EDUC 500	Exploring Teaching	4
MATH 601	Exploring Mathematics for Teachers I	4
MATH 703	Teaching of Mathematics in Grades K-5	4
EDUC 706	Teaching & Learning Literacy in the Elementary Classroom	4
EDUC 751A	Inclusive Elementary Education: Literacies and Learning for Diverse Learners	4
or EDUC 760	Introduction to Young Children with Special Needs	
EDUC 703F	Teaching Elementary School Science	4
EDUC 703M	Teaching Elementary Social Studies	4

<sup>2</sup> ECE Required courses may be counted as supporting courses if the supporting course criteria is met.

### FAMILY SUPPORT /PROVISIONAL CFLE CONCENTRATION requirements

Code	Title	Credits
<b>HDFS Core Course Requirements</b>		
HDFS 525	Human Development	4
HDFS 545	Intimate Relationships and Families	4
One Approved Statistics Course		4

**Family Support/Provisional CFLE Concentration Requirements**

HDFS 641	Parenting Across the Life Span <sup>3</sup>	4
HDFS 746	Human Sexuality <sup>3</sup>	4
HDFS 760	Family Programs and Policies <sup>3</sup>	4
HDFS 794	Families and the Law <sup>3</sup>	4
or HDFS 776	Children, Adolescents and the Law	
HDFS 623	Developmental Perspectives on Infancy and Early Childhood	4
or HDFS 624	Developmental Perspectives on Adolescence and Early Adulthood	
or HDFS 625	Adult Development and Aging	
HDFS 586	Families at Risk	4
or HDFS 553	Personal and Family Finance for Family Life Professionals	
or HDFS 797	Advanced Special Topics	
HDFS 757	Race, Class, Gender, and Families (Capstone) <sup>3</sup>	4

**Supporting Courses (Applies to all concentrations)**

Supporting courses are intended to provide an individualized component to the HDFS curriculum. Because HDFS is interdisciplinary, this allows students to explore related areas that contribute to their academic and professional goals. A supporting course may be any course, inside or outside of the HDFS department, that is:

1. At the 500-level or above
2. Approved by an HDFS advisor

Any non-required HDFS courses (including HDFS internships) may serve as supporting coursework. Other classes meeting supporting course criteria are often found in the psychology, sociology, social work, women's studies, education, and communication sciences and disorders departments.

<sup>3</sup> Required courses for provisional CFLE certification through NCFR. Plus HDFS 525 and HDFS 545.

Students who wish to become CFLEs are required to complete the Family Internship, including HDFS 782 Family Internship and HDFS 792 Family Internship Seminar.

The Certified Family Life Education designation acknowledges the preventive focus of family life education and assures the designate has met or exceeded the high standards and criteria needed to provide quality family life education.

shaped by diverse personal contexts and cultures. Understand and be aware of one's own biases, beliefs, and values.

- Understand ethical decision-making processes, and ethical standards and principles relevant to our discipline. Positively represent the profession in academic, professional and community settings.

## Adolescent and Youth Development Minor

<https://chhs.unh.edu/recreation-management-policy/program/minor/adolescent-youth-development>

### Description

The departments of Recreation Management and Policy and Human Development and Family Studies offer an interdisciplinary minor designed to give students an opportunity to develop knowledge and skills regarding adolescence and youth development. The two required courses offer a foundation in theory, research, and practice, and students choose three additional courses in order to better prepare students to work with this age group.

Interested? Contact one of the Minor Coordinators: [Dr. Cindy Hartman \(cindy.hartman@unh.edu\)](mailto:cindy.hartman@unh.edu) in Recreation Management and Policy or [Dr. Erin Hiley Sharp \(erin.sharp@unh.edu\)](mailto:erin.sharp@unh.edu) in Human Development and Family Studies.

### Requirements

The Adolescent and Youth Development minor requires students to complete 20 credits.

## LIFESPAN DEVELOPMENT Curriculum

Code	Title	Credits
<b>HDFS Core Course Requirements</b>		
HDFS 545	Intimate Relationships and Families	4
HDFS 525	Human Development	4
One Approved Statistics Course		4
<b>Lifespan Development Requirements</b>		
HDFS 623	Developmental Perspectives on Infancy and Early Childhood	4
HDFS 624	Developmental Perspectives on Adolescence and Early Adulthood	4
HDFS 625	Adult Development and Aging	4
HDFS 641	Parenting Across the Life Span	4
HDFS 746	Human Sexuality	4
HDFS 794	Families and the Law	4
or HDFS 776	Children, Adolescents and the Law	
HDFS 757	Race, Class, Gender, and Families (Capstone)	4
Supporting Courses		20
Supporting courses are intended to provide an individualized component to the HDFS curriculum. Because HDFS is interdisciplinary, this allows students to explore related areas that contribute to their academic and professional goals. A supporting course may be any course, inside or outside of the HDFS department, that is:		
1. At the 500-level or above		
2. Approved by an HDFS advisor		

Any non-required HDFS courses (including internships) may serve as supporting coursework. Other classes meeting supporting course criteria are often found (but are not limited to) in the psychology, sociology, social work, women's studies, education, and communication sciences and disorders departments

Code	Title	Credits
<b>Two (2) Required Courses:</b>		
RMP 668	Youth Culture and Programs	4
HDFS 624	Developmental Perspectives on Adolescence and Early Adulthood	4
<b>Select three supporting courses (12 credits) approved by a minor advisor.</b>		
EDUC 556	Peer to Peer Mentoring for Students with Disabilities	2
EDUC #717	Growing up Male in America	4
HDFS 444A	Children at Risk	4
HDFS 707	Practicum	1-6
HDFS 776	Children, Adolescents and the Law	4
RMP 563	Recreation Management and Policy Practicum	2
RMP 560	Recreational Sport Management	4
SOC 525	Juvenile Crime and Delinquency	4
CMN 714	Youth and Media	4
SML 565	Principles of Coaching	4
SW 705	Child and Adolescent Risks and Resiliency: Program, Policy and Practice	4
Other adolescent or youth-based courses as approved by minor coordinator.		

- RMP majors may use [RMP 668](#) Youth Culture and Programs to meet both major and minor requirements.
- The Adolescent and Youth Development Minor follows UNH's policy on minors. Following University policy, students must complete 20 semester hours with a grade of C- or better and a 2.00 grade point average.
- No more than 8 credits used by a student to satisfy major requirements may be used for the minor.
- Students must submit a *Certification of Completion of Minor form* during their final semester to one of the Minor Coordinators: [Dr.](#)

## Student Learning Outcomes

- Use theoretical frameworks and empirical research to understand and explain child/lifespan development, family process and the interaction of individuals and families with society.
- Recognize and respect a diversity of family forms and processes. Understand how human development and family interactions are

Cindy Hartman ([cindy.hartman@unh.edu](mailto:cindy.hartman@unh.edu)) in RMP or Dr. Erin Sharp ([erin.sharp@unh.edu](mailto:erin.sharp@unh.edu)) in HDFS.

## Child Life Minor

<https://chhs.unh.edu/human-development-family-studies/program/minor/child-life>

### Description

The department of Human Development and Family Studies offers a minor in Child Life. The minor introduces undergraduate students to the Child Life profession, which works with children, adolescents, and families facing challenges associated with hospitalization, medical procedures, illness, and disability. You will gain insight on how to support children and their families to effectively cope with the stress and anxiety of hospitalization using developmental play and normalized activities in their environment.

For students who wish to go on to become Child Life Specialists, the full list of UNH approved courses by the Association of Child Life Professionals can be found under HDFS Undergraduate Forms. [Click here to read more about ACLE certification.](#)

The Child Life minor may also be taken by HDFS students.

### Requirements

## Required Courses for Child Life Minor

Code	Title	Credits
HDFS 565	Introduction to Child Life <sup>2</sup>	4
or SW 565	Introduction to Child Life	
HDFS 623	Developmental Perspectives on Infancy and Early Childhood <sup>3</sup>	4
Select three courses from the following:		12
HDFS 624	Developmental Perspectives on Adolescence and Early Adulthood	
HDFS 635	Teaching and Learning in Early Childhood Settings	
HDFS 641	Parenting Across the Life Span <sup>2</sup>	
HDFS 697	Special Topics (Child Life Design and Programing) <sup>2</sup>	
HDFS 697	Special Topics (Learning Through Play)	
HDFS 707	Practicum <sup>1</sup>	
HDFS 709	Child Development Internship <sup>2</sup>	
HDFS 734	Curriculum for Young Children <sup>2</sup>	
NURS 535	Death and Dying <sup>2</sup>	

Note: Only 8 credits can count towards both your major and minor.

<sup>1</sup> Internship under the supervision of a CCLS. Contingent on approval from instructor and securing an internship site.

<sup>2</sup> Approved Child Life Certification course. These courses meet the Association of Child Life Professionals requirements to sit for the Exam. Note: Course work is only part of the ACLP requirements. Please visit the [ACLP Site by clicking here](#) for complete information.

## Human Development and Family Studies Minor

<https://chhs.unh.edu/human-development-family-studies/program/minor/human-development-family-studies>

### Description

The Human Development and Family Studies minor complements undergraduate majors in the social sciences, health professions, and related disciplines by providing students with the opportunity to learn about individual and family development, interpersonal relationships, and the ecological contexts of development.

### Requirements

Code	Title	Credits
HDFS 525	Human Development	4
HDFS 545	Intimate Relationships and Families	4
Select three additional courses chosen in consultation with a departmental adviser		12
<b>Total Credits</b>		<b>20</b>

Individual course grades must be C or above, and the overall grade-point average for the 20 human development and family studies credits must be at least 2.0.

## Interdisciplinary Health

- [Interdisciplinary Health Minor](#) (p. 256)

## Interdisciplinary Health Minor

<https://chhs.unh.edu/kinesiology/program/minor/interdisciplinary-health>

### Description

The Interdisciplinary Health Minor prepares future professionals to approach health and well-being through a culturally-responsive and trauma-informed lens across multiple dimensions of wellness. Students gain the knowledge and skills to promote, support, and affect behavior change in ways that positively impacts the health and well-being of individuals and communities. Those who complete this minor have the ability to apply their knowledge and skills in settings such as schools, before/after-school programs, clinical settings, community health centers, fitness centers, and/or corporate settings.

### Requirements

#### Interdisciplinary Health Minor Requirements

Code	Title	Credits
HDFS 746	Human Sexuality	4
HPE 648	Current Issues in Teaching Health	4
HPE 702/KIN 802	Health Content and Youth Risk Behavior	4
or NUTR 610	Nutrition Education and Counseling	
HPE 712	Health Education Practicum	4
NUTR 400	Nutrition in Health and Well Being	4
HPE 671	Health Education Pedagogy	4
<b>Total Credits</b>		<b>24</b>

## Kinesiology (KIN)

The mission of the Department of Kinesiology is to create, share, and apply knowledge in the promotion of health, physical activity, sport, and well-being. We achieve this through high quality teaching and mentoring of our students, conducting scholarly activity, and engaging in community outreach. Our programs purposefully blend theory, research,

and practice to support the professional needs of our students in all stages of their careers.

The department offers five areas of study for majors: athletic training, exercise science, health and physical education, health sciences and sport management and leadership. Candidates for degree requirements in any of the department majors must satisfy all University Discovery Program requirements in addition to satisfying specific program requirements.

<https://chhs.unh.edu/kin>

## Programs

- [Applied Human Anatomy & Physiology](#) (p. 240)
- [Coaching](#) (p. 241)
- [Exercise Science](#) (p. 243)
- [Health and Physical Education](#) (p. 244)
- [Health Sciences](#) (p. 249)
- [Interdisciplinary Health](#) (p. 256)
- [Kinesiology](#) (p. 257)
- [Sport Management and Leadership](#) (p. 270)

## Faculty

<https://chhs.unh.edu/kinesiology/faculty-staff-directory>

## Kinesiology Minor

<https://chhs.unh.edu/kinesiology/program/minor/kinesiology>

## Description

The Department of Kinesiology offers an interdisciplinary curriculum for nonmajors, which is designed to provide students with the basic knowledge of human movement and sport sciences. The minor consists of courses offered by several options within the department.

## Requirements

### Kinesiology Minor Requirements

1. Complete a minimum of 20 credits approved by the department minor advisor. Credits towards the minor come from courses in AT, EXSC, HPE, KIN, and/or SML.
2. Must have a C- (or better) in all graded courses. Pass/Fail option may NOT be used. Courses designated Credit/Fail MAY be used.
3. No more than 8 credits may satisfy BOTH major and minor requirements.
4. No more than 6 of the 20 credits may be in activity or coaching courses.

**Please note:** The designation of the completed minor will be "Kinesiology" which means that you *cannot* minor in any of the majors (i.e. athletic training, exercise science, health and physical education or sport management and leadership). *However*, you may create an emphasis by carefully selecting appropriate courses so that anyone looking at your final UNH transcript will be able to see the emphasis.

## Nursing (NURS)

The undergraduate nursing program is nationally accredited by the Commission on Collegiate Nursing Education

Students in the College's Department of Nursing learn about relationship-based care, reflective thinking and clinical decision making while following guidelines for developing safe, quality clinical skills. Nursing students learn from faculty who serve as facilitators and mentors within a supportive, scholarly environment, and as graduates become part of the workforce that will help shape the future of healthcare.

<https://chhs.unh.edu/nursing>

## Programs

- [Nursing Major \(B.S.\)](#) (p. 257)

## Faculty

<https://chhs.unh.edu/directory/all>

## Nursing Major (B.S.)

<https://chhs.unh.edu/nursing/program/bs/nursing-major>

## Description

The nursing program faculty believe learning is a creative process wherein students are active participants in their education, growth, and development as professional nurses. Faculty members are facilitators and mentors to students within a supportive, scholarly environment.

The curricula are divided into biological, social sciences, and humanities as a foundation for courses in the major, and nursing courses, which emphasize relationship-based care, reflective thinking, clinical decision making, and the application of evidence-based guidelines to develop quality and safe clinical skills. Clinical experiences are offered in area health facilities, community health agencies, and a state-of-the-art simulation laboratory. The senior year culminates in a capstone practicum, NURS 721C Integrating Professional Nursing Practice Clinical, in which students apply curricular concepts in a precepted clinical experience. Candidates for the nursing degree must satisfy all of the University Discovery Program requirements in addition to satisfying major requirements. Discovery courses listed below require a C or better in the major.

A grade of C or better in high school chemistry is also required, as well as biology or physics.

Code	Title	Credits
ENGL 401	First-Year Writing	4
BMS 507 & BMS 508	Human Anatomy and Physiology I and Human Anatomy and Physiology II	8
PSYC 401	Introduction to Psychology	4
BMS 501	Microbes in Human Disease	4
<b>Total Credits</b>		<b>20</b>

A course in statistics (HHS 540, PSYC 402, SOC 402, MATH 439) must be completed prior to, or taken concurrent with, nursing research. The statistics course also requires a C or better in the major.

Prerequisite courses require grades of C or better and only one prerequisite course may be repeated one time in order to progress. Most of the prerequisite courses also meet Discovery requirements. Major courses require a minimum grade of C. Nursing courses may not be repeated. A cumulative grade-point average of 2.5 must be maintained throughout the program.

Students are responsible for their own transportation to clinical agencies, uniforms, professional equipment, health insurance coverage, yearly criminal background checks, drug screening, fingerprinting, yearly health assessment, and select immunizations and titers. Students must maintain certification in cardiopulmonary resuscitation at the American Heart Association Basic Life Support for Healthcare Professionals level. All clinical documents must be received by July 1st before the sophomore year, except flu vaccine, which is due by October 15th, and remain up to date until graduation. Clinical documents cannot expire during the academic year; documents that must be submitted yearly must be dated between May 1 and June 30. Students will be assessed a late fee if clinical documents are not received by the due date. Students will be dropped from nursing courses if documentation is not received by the first day of class. Additional costs associated with the program include, but are not limited to, simulation laboratory fees, fees associated with program requirements, and attendance at professional meetings.

### Honors-in-Major Program

The Honors-in-Major Program is offered to interested junior nursing students who achieve a minimum grade-point average of 3.75 in NURS courses and cumulative GPA of 3.4 at the end of the sophomore year in nursing and/or junior nursing students who are members of the University Honors Program. A total of 18 credits taken at the honors level is required for the Honors-in-Major Program. Orientation to the Honors-in-Major Program is held at the beginning of junior nursing year. Students must successfully complete with a grade of B or better 8 additional credits of honors coursework drawn from the following courses:

Code	Title	Credits
Select two courses from the following:		
NURS 612	Care of the Adult with Acute Illness II	4
NURS 627	Clinical Judgment in Nursing	4
NURS 704	Public Health Nursing	4
NURS 705	Contemporary Leadership within Health Care Systems	4

Honors-in-major students must also successfully complete with a grade of B or better:

Code	Title	Credits
NURS 648W	Nursing Honors Seminar I	1-4
NURS 748W	Nursing Honors Thesis I	1
NURS 749W	Nursing Honors Thesis II	4

These self-directed learning experiences, related to the student's interests, are designed to help students acquire advanced knowledge and skills to undertake inquiry or scholarly projects. Students must submit a project description to a faculty adviser at the beginning of the senior year. Students present the results of this study at the Nursing Inquiry Day.

## Requirements

### Major Requirements

Code	Title	Credits
NURS 500	Introduction to Professional Nursing	2
NURS 501	Research for Nursing Professionals	4
NURS 504	Disease and Drugs I	4

NURS 505	Diseases and Drugs II	4
NURS 506	Human Development, Interaction and Learning Across the Lifespan	4
NURS 516	Health Assessment and Nursing Fundamentals	4
NURS 516C	Health Assessment and Nursing Fundamentals Clinical	2
NURS 517C	Clinical Integration	2
NURS 601	Function and Wellbeing of Older Adults	2
NURS 611	Care of the Adult with Acute Illness I	4
NURS 611C	Care of the Adult with Acute Illness I Clinical	2
NURS 612	Care of the Adult with Acute Illness II	4
NURS 612C	Care of the Adult with Acute Illness II Clinical	2
NURS 616	Living with Mental Illness	2
NURS 616C	Living with Mental Illness Clinical	2
NURS 621	Maternal and Newborn Nursing	2
NURS 621C	Maternal Newborn Nurs Clin	2
NURS 627	Clinical Judgment in Nursing	4
NURS 702	Child Health Nursing	2
NURS 702C	Child Health in the Community Clinical	2
NURS 704	Public Health Nursing	4
NURS 704P	Public Health Nursing Project	2
NURS 705	Contemporary Leadership within Health Care Systems	4
NURS 711	Clinical Judgment in Complex Illness	2
NURS 721	Integrating Professional Nursing Practice	2
NURS 721C	Integrating Professional Nursing Practice Clinical	6

## Degree Plan

### Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
BMS 507	Human Anatomy and Physiology I	4
ENGL 401	First-Year Writing	4
HHS 401	College of Health and Human Services Seminar	1
NURS 500	Introduction to Professional Nursing <sup>1</sup>	2
Discovery/Inquiry		4
Discovery/Inquiry		4
<b>Credits</b>		<b>19</b>
<b>Spring</b>		
BMS 508	Human Anatomy and Physiology II	4
PSYC 401	Introduction to Psychology	4
NURS 501	Research for Nursing Professionals	4
Discovery/Inquiry		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
BMS 501	Microbes in Human Disease	4
NURS 504	Disease and Drugs I	4
NURS 516	Health Assessment and Nursing Fundamentals (plus lab)	4
NURS 516C	Health Assessment and Nursing Fundamentals Clinical	2
Discovery		4
<b>Credits</b>		<b>18</b>
<b>Spring</b>		
Statistics <sup>3</sup>		4
NURS 505	Diseases and Drugs II	4



NURS 506	Human Development, Interaction and Learning Across the Lifespan	4
NURS 517C	Clinical Integration (plus lab)	2
NURS 601	Function and Wellbeing of Older Adults	2

**Credits** 16

### Third Year

#### Fall

NURS 611	Care of the Adult with Acute Illness I (plus lab)	4
NURS 611C	Care of the Adult with Acute Illness I Clinical	2
NURS 616	Living with Mental Illness <sup>2</sup>	2
NURS 616C	Living with Mental Illness Clinical	2
Discovery/Elective		4
Discovery/Elective		4

**Credits** 18

#### Spring

NURS 612	Care of the Adult with Acute Illness II (plus lab)	4
NURS 612C	Care of the Adult with Acute Illness II Clinical	2
NURS 621	Maternal and Newborn Nursing (plus lab) <sup>2</sup>	2
NURS 621C	Maternal Newborn Nurs Clin	2
NURS 627	Clinical Judgment in Nursing (writing intensive) <sup>4</sup>	4
Discovery/Elective		4

**Credits** 18

### Fourth Year

#### Fall

NURS 702	Child Health Nursing	2
NURS 702C	Child Health in the Community Clinical	2
NURS 704	Public Health Nursing	4
NURS 704P	Public Health Nursing Project	2
NURS 711	Clinical Judgment in Complex Illness (plus lab)	2
Discovery/Elective		4

**Credits** 16

#### Spring

NURS 705	Contemporary Leadership within Health Care Systems	4
NURS 721	Integrating Professional Nursing Practice	2
NURS 721C	Integrating Professional Nursing Practice Clinical	6

**Credits** 12

**Total Credits** 133

<sup>1</sup> May be taken fall or spring semester

<sup>2</sup> May be taken fall or spring semester.

<sup>3</sup> PSYC 402 Statistics in Psychology, SOC 402 Statistics, MATH 439 Statistical Discovery for Everyone, HHS 540 Statistics for Health and Human Service Professionals

<sup>4</sup> May be taken fall or spring semester

## Student Learning Outcomes

The undergraduate student is prepared to:

- Synthesize core knowledge from the liberal arts, sciences, and nursing as the foundation of professional practice.
- Integrate knowledge and skills to assess, design, implement, and evaluate nursing care in a safe, compassionate, culturally sensitive, evidence-based manner.
- Engage clients, families, and communities in collaborative decision-making incorporating evidence-based knowledge and anticipatory guidance.
- Employ team leadership and collaborative skills with other health professionals to optimize client and system outcomes.
- Recognize the influence of complex health systems on health care practice and advocate for policies that promote a socially just, patient centered healthcare system.
- Engage in scholarly inquiry to identify, evaluate and integrate the best current practice.
- Integrates health promotion, clinical prevention strategies when providing care at the individual or population level.
- Incorporates principles of patient safety and risk mitigation when using healthcare technology and therapeutics in the provision of care.
- Uses effective written, verbal, and nonverbal communication strategies when engaged in professional practice.
- Embrace professional values embodied in the ANA code of ethics.

## Occupational Therapy (OT)

Occupational therapy enables individuals of all ages to engage in everyday activities in the areas of work, self-care, home management, school, and leisure/play. Occupational therapists support people to promote their participation in desired activities in natural contexts. This process often involves working on skill development or adapting tasks or an environment to optimize peoples' ability to fulfill their social roles and engage in activities that are meaningful and support health and well-being. A program of study in occupational therapy includes a foundation in the liberal arts; biological, behavioral, and health sciences; and discipline-specific studies in occupational science and occupational therapy.

The Professional Occupational Therapy Program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE), located at 6116 Executive Boulevard, Suite 200, North Bethesda, MD 20852-4929. Their phone number is 303-652-AOTA and their website is: [www.acoteonline.org](http://www.acoteonline.org)

Graduates from an accredited program are eligible to sit for the certification examination for the occupational therapist, administered by the National Board for Certification in Occupational Therapy (NBCOT). After successful completion of this exam, the individual will be a registered occupational therapist (OTR). All states require licensure in order to practice, however, state licenses are usually based on the results of the NBCOT certification examination. A felony conviction may affect a person's ability to sit for the NBCOT certification examination and/or obtain licensure.

<https://chhs.unh.edu/ot>

## Programs

- [Disability Studies Minor](#) (p. 261)
- [Occupational Therapy Major \(B.S.\)](#) (p. 260)

## Faculty

<https://chhs.unh.edu/directory/all>

## Occupational Therapy Major (B.S.)

<https://chhs.unh.edu/occupational-therapy/program/bs/occupational-therapy-major>

## Description

### Bachelor of Science to Advanced MS/OTD Program

The University of New Hampshire Department of Occupational Therapy offers a Bachelor's Degree leading to an entry with Advanced Standing into our MS or OTD program. Students in the Bachelor of Science (BS) program smoothly enter into one of the graduate programs by completing professional level OT courses as part of their BS degree. The BS and MS degree programs are completed in five and half years, while the BS and OTD programs require 6 years with two summer terms. Students declare their intent to graduate with an Advanced Standing MS or an Advanced Standing OTD at the end of their sophomore year. Students may enter the BS program as first-year students or apply to transfer within UNH into the BS program during the fall semester of their sophomore year, space permitting. Students interested in transferring into this program should contact the Department of Occupational Therapy for information about transfer requirements, the application process and deadlines.

Students' academic advisor guides them through a stream-lined application process to enter the Occupational Therapy: Advanced Standing MS or OTD Program during the senior year. Students must have a minimum of a 3.0 grade point average, earned a B- or above in all professional level OT courses (700 level or higher), with no more than 8 credits at B-, pass level I fieldwork, and meet professional behavioral standards, which are detailed in the *OT Department Policy and Procedure Manual*, available to all OT students on the department's learning platform, MyCourses.

The Accreditation Council for Occupational Therapy Education (ACOTE), located at 6116 Executive Boulevard, Suite 200, North Bethesda, MD 20852-4929; telephone: 301-652-AOTA; website: [www.acoteonline.org](http://www.acoteonline.org) grants accreditation to entry level MS and OTD programs in the United States. Our Master's degree program is currently accredited by ACOTE.

The OTD program at the University of New Hampshire has received candidacy for accreditation from the ACOTE. The program must have a pre-accreditation review, complete an onsite evaluation, and be granted Accreditation Status before its graduates will be eligible to sit for the National Certification examination.

After completing the Master's degree or OTD in occupational therapy, including 24 weeks of Level II Fieldwork, students will be eligible to sit for the national certification examination offered by the National Board for Certification in Occupational Therapy (NBCOT), which is required to

practice as an occupational therapist. Detailed information regarding the Occupational Therapy: Advanced Standing MS and OTD Program may be found in the UNH Graduate Catalog. A felony conviction may affect a graduate's ability to sit for the NBCOT certification examination or attain state licensure.

## Requirements

Students begin the BS curriculum with preprofessional courses, which include courses in biological and social sciences as well as occupational therapy. In addition to meeting the University Discovery Program requirements, students take the following courses during the first three years of the program.

## Core Curriculum

Code	Title	Credits
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
OT 500	Behavior and Development of Children	4
OT 501	Developmental Tasks of Adulthood	4
OT 510	Exploring Occupational Therapy and Occupation	4
OT 610	Occupation, Identity, Disability <sup>2</sup>	4
OT 685	Psychosocial Disorders and Everyday Life	4
KIN 652 & KIN 653A	Clinical Kinesiology and Musculoskeletal Assessment	6
KIN 706 & KIN 707	Neurology and Neurology Lab	6
OT 720	Medical Terminology	2
PSYC 401	Introduction to Psychology	4
Select one statistics course from the following:		4
HHS 540	Statistics for Health and Human Service Professionals	
PSYC 402	Statistics in Psychology	
SOC 402	Statistics	
Select one health or social policy course from the following:		4
HDFS 760	Family Programs and Policies	
HDFS 776	Children, Adolescents and the Law	
HDFS 794	Families and the Law	
HMP 401	United States Health Care Systems	
HMP 403	Introduction to Public Health	
HMP 744	Health Ethics and Law	
HMP 746	Health Policy	
POLT 500	American Public Policy	
RMP 663	Management and Finance in the Experience Industry	
SW 525	Social Welfare Policy: History of Social and Economic Justice	
SW 705	Child and Adolescent Risks and Resiliency: Program, Policy and Practice	
<b>Total Credits</b>		<b>54</b>

Details on satisfying these requirements are provided by the student's academic adviser and are outlined in the *OT Department Policy and Procedure Manual*. All students receive an electronic copy of the manual in their first year, and it is also available on the Occupational Therapy Student Resources site on the University learning platform.

Volunteer or work experience in a health and human service organization is recommended, although not required.

## Professional Curriculum

Students in the BS-MS or BS-OTD curriculum with a GPA of 3.0 or higher transition into the professional program and take professional level courses during their undergraduate education. The following courses are required.

Code	Title	Credits
<b>Required Courses BS-MS and BS-OTD</b>		
OT 710	OT Practice and Professional Roles	4
OT 715	Introduction to Group Process: Theory and Application	2
OT 744	Fieldwork and Professionalism - Level I	1
OT 750	Neuro-Occupation: The Relationship Between Occupation and the Brain <sup>1</sup>	3
OT #751	Mind Body Systems/Neurologically Based Function and Dysfunction	4
OT 752 & 752L	Human Movement and Environmental Effects on Everyday Occupations and Human Movement Lab	4
OT 763 & 763L & 763R	Occupational Therapy Evaluation and Intervention for Adults Lab and Occupational Therapy Evaluation and Intervention for Adults Recitation	4
OT 781	Introduction to Research and Evidence-Based Practice	3
OT 782	Research Methods and Application	3
OT 792	Level I Fieldwork	1
Select one of the following:		
OT 730 & 730L	Assistive Technology for Enhancing Occupational Performance and Assistive Technology for Enhancing Occupational Performance Lab	4-5
or OT 771 & 771L	Enabling Participation in Community Groups and Enabling Participation in Community Groups Lab	
Select one of the following:		
OT 760 & 760L & 760R	Psychosocial Evaluation and Intervention and Psychosocial Evaluation and Intervention Lab and Psychosocial Evaluation & Intervention Recitation	4
or OT 762 & 762L & 762R	Occupational Therapy Evaluation and Intervention for Children and Occupational Therapy Evaluation and Intervention for Children Lab and Occupational Therapy Evaluation and Intervention for Children Recitation	
Capstone:		
OT 741	Human Occupation <sup>2</sup>	4
<b>Total credits for BS-MS: 38-39</b>		
<b>Total Credits</b>		<b>41-42</b>

<sup>1</sup> This course is an elective for students advancing to the BS-MS program and a requirement for students advancing to the BS-OTD program. Total credits for BS-MS is 38-39.

<sup>2</sup> This course also fulfills the writing intensive in major course.

Students need to declare their choice for Advanced Standing MS or OTD by the end of their sophomore year. At the end of the senior year, students are awarded a Bachelor of Science Degree in Occupational Therapy. However, students must earn a graduate degree (MS or OTD) to become registered occupational therapists. Students apply to the Graduate School for Occupational Therapy: Advanced Standing MS or the OTD Program during their senior year. An overall minimum grade point of 3.0 is required for admission to the MS Program or OTD program, and students must earn a minimum grade of B- in all OT classes at the 700 level, with no more than 8 credits of B- in OT courses at the 700 level, pass Level I Fieldwork, and meet professional behavior expectations. Please refer to the Graduate Catalog for additional information about the Advanced Standing MS and OTD Programs and the graduate portion of the professional occupational therapy curriculum including Fieldwork Level II requirements.

Students entering as first-year undergraduate students complete both the BS degree and Advanced Standing MS degree in 5.5 academic years (11 semesters and one January-term), including Level II Fieldwork, while those opting for the Advanced Standing OTD will complete the degree in 6 academic years including two summer terms (14 semesters total), including Level II Fieldwork and a Capstone experience. Students completing either of the advanced standing programs will be eligible to sit for the certification examination administered by the National Board of Certification of Occupational Therapists (NBCOT). A felony conviction may affect a student's ability to complete fieldwork, sit for the NBCOT certification examination, and/or obtain state licensure.

Students are responsible for transportation to off-campus practicum and fieldwork locations.

Curriculum review and revision is undertaken annually. The department works closely with students during academic advising sessions and shares information about any policy and requirement changes during registration periods as well as throughout the academic year. Students also are expected to take an active role in verifying expectations and should check with their academic adviser each September for updated policies and requirements. Program requirements and policies for retention in the major are in the *OT Department Policy and Procedure Manual*, which is available online.

## Student Learning Outcomes

Student Learning Outcomes: BS in Occupational Therapy focuses on the study of human participation in life occupations and prepares students for an entry-level graduate degree to become registered occupational therapists. Occupations are the activities that people do every day across the lifespan, including but not limited to self-care, employment, volunteer work, leisure, and play. The aim of the BS program is to prepare students for employment in health services fields, or for graduate study in occupational therapy, or other varied fields and disciplines.

Upon graduation with a BS in OTS degree from UNH, students will:

- Critically evaluate biological, psychosocial, and educational theories that influence human behavior and occupational participation.
- Demonstrate an understanding of the value of human occupation in health and wellness.
- Demonstrate critical appraisal of how disease and disability influences health promotion and occupational well-being.
- Recognize the role of culture, socioeconomic status, abilities, and other factors on occupational performance and participation of all members of society.
- Demonstrate an understanding of concepts of occupational deprivation and occupational justice as related to health and well being for all people.
- Demonstrate competency in information and basic research literacy.
- Demonstrate professional behaviors and skills in written and oral communication.
- Be prepared to apply for graduate study in the field of occupational therapy or other disciplinary area of graduate study.

## Disability Studies Minor

<https://chhs.unh.edu/recreation-management-policy/program/minor/disabilities>

### Description

The minor in Disability Studies gives students the opportunity to explore the meaning, nature and consequences of disability from multiple perspectives. Ways of supporting people with disabilities and their families is addressed including the influences of disability policy, applications of technology, and societal and cultural attitudes and understanding related to persons with disability. This interdisciplinary program introduces topics such as exceptionality, the lived experience of disability and effects of stigma, disability policy, assistive technologies and universal design to enhance function and access, and health and

human services for supporting individuals with disability. Students select from a wide range of electives to support their individual areas of interest. Students may expand career options by combining the minor in Disability Studies with majors such as Education, Occupational Therapy, Recreation Management and Policy, Psychology, Human Development and Family Studies, Communication Sciences and Disorders, Kinesiology, and Social Work.

When you minor in Disability Studies at UNH, depending on how you design your program and your course selection, you may work collaboratively with faculty from the Departments of Occupational Therapy, Recreation Management and Policy, Communication Sciences and Disorders, Social Work, Nutrition, Kinesiology, Human Development and Family Studies, and Education. You'll also have the option of pursuing a faculty sponsored independent study or a small-scale research project.

## Requirements

Code	Title	Credits
<b>Required Course</b>		
One of the following courses is required from the student's major or any other disability related intensive course outside of the major with permission:		
OT 610	Occupation, Identity, Disability	4
OT 685	Psychosocial Disorders and Everyday Life	4
EDUC 650	Introduction to Disability in Inclusive Schools and Communities <sup>2</sup>	4
RMP 501	Recreation Services for Individuals with Disabilities	4
SW 712	Understanding Developmental Disabilities	4
<b>Electives</b>		
Select 16 credits from the course list below. Note that any of the courses in the required course list above may be used as an elective course if not taken as the required course		
OT 444	Living and Doing with Technology	4
INTR 438	A Socio-cultural Perspective on the Deaf Community	4
NUTR 740	Nutrition for Children with Special Needs	4
OT 730	Assistive Technology for Enhancing Occupational Performance	3
OT 733	Assistive Technology for Physical Access I: Electronic Technologies	2
OT 734	Assistive Technology for Physical Access II: Mobility, Seating, and Transportation	2
OT 735	Assistive Technology for Communication and Cognition	2
OT 736	Assistive Technology for Vision and Hearing	2
OT 520	Happy and Healthy at Work: Promoting Wellness, Diversity and Inclusion	4
HMG 520	Happy and Healthy at Work: Promoting Wellness, Diversity and Inclusion	4
EDUC 760	Introduction to Young Children with Special Needs	4
RMP 444A	Taking the "Dis" out of Disability	4
RMP 720	Adaptive Sport Facilitation for Recreation Therapy and Related Professions	4
SW 704	Adolescents with Emotional and Behavioral Challenges	4
HPE 781	Inclusion in Physical Education	4

SW, OT, EDUC, KIN, NUTR, RMP Independent Study with a disability focus <sup>1</sup>

- <sup>1</sup> The purpose of the independent study is to explore a topic that provides a detailed focus on an important issue related to individuals with disabilities. A student may also choose to engage in a small-scale research project to investigate an issue that affects individuals with disabilities. Each project will be negotiated with the student's departmental faculty adviser and the coordinator of the minor program.
- <sup>2</sup> Prerequisite courses EDUC 500 Exploring Teaching and EDUC 402 Introduction to Educational Studies: Social Change and Education in Local and Global Contexts are waived with permission for students in non-education majors.

Please note: Additional elective courses may be added in the future as deemed appropriate and approved by disabilities studies coordinator.

Also note: Students must achieve C- or better and a 2.00 grade-point average in courses that the minor department approves. Courses taken

on a pass/fail basis may not be used for a minor. No more than 8 credits used to satisfy major requirements may be used for a minor. There is no limit on the number of overlapping credits allowed between minors. Students should declare the intent to earn a minor as early as possible and no later than the end of the junior year. During the final term, an application should be made to the dean to have the minor show on the academic record.

## Recreation Management and Policy (RMP)

As the fabric of life in contemporary society grows in complexity, people are increasingly turning to leisure and recreation services to find meaning, renewal, and enrichment. Recreation services can improve public health and wellness, promote sustainable environments, develop a sense of community, and enhance the quality of life of all citizens. Recreation professionals work in diverse settings, including human services, health care, natural recreation resource areas such as parks, wilderness programs, and commercial recreation businesses. Population and economic projections suggest that recreation service industries will continue to expand and thereby continue to provide numerous professional career opportunities.

The Department of Recreation Management and Policy maintains three national accreditations. Our core is nationally accredited by the Council on Accreditation of Parks, Recreation, Tourism, and Related Professions (COAPRT). Our OLM option is accredited by the Association for Experiential Education (AEE). Further, our therapeutic recreation option is accredited by the Committee on Accreditation of Recreational Therapy Education (CARTE). CARTE is an approved accreditation program under the Commission on Accreditation of Allied Health Education Programs (CAAHEP). The Department's curriculum supports a broad-based education and an opportunity to acquire specialized professional knowledge and skills. Graduates are employed in a broad range of settings, such as community recreation agencies, resorts, conference centers, youth services agencies, state or national parks, government agencies, universities, hospitals, rehabilitation centers, and long-term care facilities.

## Curriculum Structure

Students entering the major may choose an option in Outdoor Leadership and Management ("OLM"), Program and Event Management ("PEM"), or Therapeutic Recreation ("TR"). The options include the professional core and required courses. Candidates for a degree in Recreation Management and Policy must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of each individual major option.

## Professional Internship

A supervised internship (RMP 764 Internship) is required of all majors and serves as their **major capstone requirement**. The internship is designed to create a bridge between theory and practical application. Students, working with their advisers and the internship coordinator, select an appropriate setting based on their professional and career interests. They must register for an 8 or 12 credit full-time internship that ranges from 10 to 16 weeks and is under the supervision of a qualified professional. Specific requirements are identified in the *Internship Manual* available from the Department of Recreation Management and Policy.



## Declaring a Major

First-year students entering UNH who wish to apply to the Bachelor of Science (B.S.) program in Recreation Management and Policy with an option in Outdoor Leadership and Management, Program and Event Management, or Therapeutic Recreation should contact the [Office of Admissions](#). The admissions web site contains complete campus visit information and an online visitor registration. It also contains admission criteria and important dates, as well as an online application form.

## How to apply for students transferring from within UNH

**Outdoor Leadership and Management:** UNH's outdoor leadership and management program prepares students for dynamic careers in outdoor education, adventure programming, outdoor recreation management, parks and protected areas management, youth and after-school programming, and conservation. Our curriculum combines experiential learning in urban, rural and backcountry landscapes with a classic liberal arts education. You'll gain a solid foundation in the theories, philosophies and methods of outdoor recreation leadership and management while gaining skills in outdoor activities such as climbing, canoeing and backpacking. Admission decisions are made after the student completes the [online internal transfer application](#) process and has a meeting with the OLM option coordinator. If you have questions about the program and event management option, please contact [Nate Fitch](#) ([nate.fitch@unh.edu](mailto:nate.fitch@unh.edu)). OLM applications are accepted throughout the year and decisions are made on a rolling admission basis.

**Program and Event Management:** This option prepares students for supervisory or middle management positions and emphasizes planning, leadership, and administrative concepts in settings such as youth sport organizations, recreation resource management, business and entrepreneurial recreation, municipal recreation, campus recreation, residential communities, festivals and events planning, employee services recreation, recreational sports agencies, youth service agencies, and resorts. Admission decisions are made after the student completes the [online internal transfer application](#) process and has a meeting with the PEM option coordinator. If you have questions about the program and event management option, please contact [Sean McLaughlin](#) ([sean.mclaughlin@unh.edu](mailto:sean.mclaughlin@unh.edu)). PEM applications are accepted throughout the year and decisions are made on a rolling admission basis.

**Therapeutic Recreation:** The Therapeutic Recreation option prepares students for work primarily in clinical, allied health facilities such as hospitals, rehabilitation centers, mental health programs, and extended care facilities as well as inclusive community recreation programs. Admission decisions are based upon the content of the online application as well as a personal interview with the therapeutic recreation option coordinator. Students must have a minimum cumulative grade point average of 2.75 to be considered for admission into the major and it is highly recommended that students have completed or are enrolled in BMS 507 Human Anatomy and Physiology I or BMS 508 Human Anatomy and Physiology II at the time of application. If you have questions about the therapeutic recreation option, please contact [Matt Frye](#) ([matt.frye@unh.edu](mailto:matt.frye@unh.edu)).

To apply, we ask students to go through a short informational meeting with the TR Option Coordinator [Matt Frye](#) ([matt.frye@unh.edu](mailto:matt.frye@unh.edu)) prior to completing the [online internal transfer application](#). TR applications are accepted throughout the year and decisions are made on a rolling admission basis.

<https://chhs.unh.edu/rmp>

## Programs

- [Recreation Management and Policy Major: Outdoor Leadership and Management Option \(B.S.\)](#) (p. 263)
- [Recreation Management and Policy Major: Program and Event Management Option \(B.S.\)](#) (p. 264)
- [Recreation Management and Policy Major: Therapeutic Recreation Option \(B.S.\)](#) (p. 265)
- [Adolescent and Youth Development Minor](#) (p. 266)
- [Outdoor Adventure Recreation Minor](#) (p. 267)
- [Recreation Management Minor](#) (p. 267)

## Faculty

<https://chhs.unh.edu/directory/all>

## Recreation Management and Policy Major: Outdoor Leadership and Management Option (B.S.)

<https://chhs.unh.edu/recreation-management-policy/program/bs/recreation-management-policy-major-outdoor-leadership-management-option>

## Description

UNH's Outdoor Leadership and Management (OLM) Program is designed for students who want to study and work in outdoor programs, parks, and public or commercial recreation settings. Our graduates are guides, leaders, directors, and managers of agencies that provide healthy outdoor activities for people across their lifespan. Our curriculum combines experiential learning in urban, rural, and backcountry landscapes with a classic liberal arts education. You'll gain a solid foundation in the theories, philosophies, and methods of outdoor recreation leadership and management while gaining skills in outdoor activities, pursuits or disciplines such as climbing, canoeing, and backpacking. This program will prepare you for dynamic careers in outdoor education, adventure programming, outdoor recreation management, parks and protected areas management, youth and after-school programming, conservation, and other outdoor fields.

## Requirements

### Outdoor Leadership and Management Option Course Requirements:

Code	Title	Credits
<b>RMP Shared Core (24 credits)</b>		
RMP 490	Recreation & Tourism in Society	4
RMP 501	Recreation Services for Individuals with Disabilities	4
RMP 557	Program and Event Design	4
RMP 563	Recreation Management and Policy Practicum	2
RMP 654	Professional Development and Ethics	2
RMP 764	Internship	8



OLM Option Core (22 credits)		
RMP 411	Applied Recreation Risk Management	2
OUT 681	Foundations of Adventure Education	4
OUT 686	Wilderness Emergency Medical Care	4
RMP 711	Recreation Resource Management	4
RMP 772	Law and Public Policy in Leisure Services	4
RMP 776	Human Dimensions of Natural Environments	4
<b>Leadership or Management course - select one of the following:</b>		<b>4</b>
OUT 682	Experiential Teaching and Leadership	
RMP 661	Leadership in Recreation Services	
RMP 670	Venue Management Design & Operations	
<b>Field Leadership - select at least 2 of the following:</b>		<b>8</b>
OUT 540	Top Rope Rock Climbing	
OUT 551	Adventure Programming: Backcountry Based Experience	
OUT 552	Adventure Programming: Water Based Experiences	
<b>Electives minimum 10 credits (at least 4 credits of which must be selected from 2 credit outdoor LAP courses):</b>		<b>10</b>
Field Leadership course (OUT 540, OUT 551, OUT 552 not selected above can be selected as an Elective)		
LAP 501	Lifetime Activity Program (Select any applicable LAP course.)	
OUT 539	Artificial Climbing Wall Management	
OUT 541	Management of Challenge Courses	
OUT #542	Sea Kayaking	
OUT 543	Winter Adventure Programming	
OUT 545	High Angle Rescue	
OUT 546	Whitewater Canoeing	
OUT 547	Lead Rock Climbing	
OUT 549	Wilderness Navigation	
RMP 603	New Hampshire Ski Industry Management	
RMP 668	Youth Culture and Programs	
RMP 775	Entrepreneurial and Commercial Recreation	
Total Credits		68

### Professional Internship

A supervised internship (RMP 764) is required of all majors and serves as their **major capstone requirement**. The internship is designed to create a bridge between theory and practical application. Students, working with their advisers and the internship coordinator, select an appropriate setting based on their professional and career interests. They must register for an **8 credit or 12 credit, 400 hour internship** that is under the supervision of a qualified professional. Specific requirements are identified in the *Internship Manual* available from the Department of Recreation Management and Policy.

## Student Learning Outcomes

- Students will know and demonstrate the nature and scope of the outdoor industry, including outdoor education, adventure leadership, and parks and protected-areas management.
- Students will know and demonstrate the techniques and processes used by professionals and staff in the outdoor industry.
- Students will know and demonstrate the foundation of the outdoor industry in history, science, and philosophy.
- Students will be able to demonstrate the ability to design, implement, and evaluate services that facilitate targeted human experiences and that embrace personal and cultural dimensions of diversity in outdoor settings.
- Students will demonstrate entry-level knowledge about operations, strategic management, and administration in the outdoor industry.
- Students will demonstrate the potential to succeed as professionals at supervisory or higher levels in the outdoor industry through participation in structured practicum and internship experiences.

## Recreation Management and Policy Major: Program and Event Management Option (B.S.)

<https://chhs.unh.edu/recreation-management-policy/program/bs/recreation-management-policy-major-program-event-management-option>

### Description

This option prepares students for managerial positions in commercial, public, and nonprofit organizations that provide recreation and leisure services. Curriculum design emphasizes the effective and efficient planning, delivery, and evaluation of leisure-based programs, services, and enterprises. Applied experience is a component of most courses, in addition to a required practicum and the 10-16 week full-time internship under professional supervision. Depending upon the RMP electives and the career support emphasis or minor chosen, students may expect to find employment in a broad range of settings. Recent graduates have found employment in the areas of conference and event planning, municipal park and recreation services, recreational sports, commercial and entrepreneurial recreation businesses, youth-serving agencies, resorts, camps, and natural resource management positions in state and federal agencies.

### Requirements

## Core Requirements

All majors must complete a core curriculum of seven courses.

Code	Title	Credits
RMP 490	Recreation & Tourism in Society <sup>1</sup>	4
RMP 501	Recreation Services for Individuals with Disabilities	4
RMP 557	Program and Event Design	4
RMP 563	Recreation Management and Policy Practicum	2
RMP 654	Professional Development and Ethics	2
RMP 724	Research, Evaluation, and Data-Driven Decisions	4
RMP 764	Internship <sup>2</sup>	8-12

<sup>1</sup> RMP majors cannot count RMP 490 Recreation & Tourism in Society toward the University Social Sciences requirement.

<sup>2</sup> All RMP students must complete an 8 or 12 credit hour internship.

## Program and Event Management Option - Course Requirements:

Code	Title	Credits
RMP 559	Marketing the Recreation Experience	4
RMP 661	Leadership in Recreation Services	4
RMP 663	Management and Finance in the Experience Industry	4
RMP 772	Law and Public Policy in Leisure Services	4
<b>Statistics - select one of the following:</b>		<b>4</b>
PSYC 402	Statistics in Psychology	
SOC 402	Statistics	
MATH 439	Statistical Discovery for Everyone	
ADMN 510	Business Statistics	
<b>Community Recreation &amp; Sport - Career Support Electives - select two of the following: <sup>1</sup></b>		<b>8</b>
RMP 560	Recreational Sport Management	
RMP 668	Youth Culture and Programs	
RMP 670	Venue Management Design & Operations	
<b>Event Planning, Tourism &amp; Commercial Recreation - Career Support Electives - select two of the following: <sup>1</sup></b>		<b>8</b>

RMP 603	New Hampshire Ski Industry Management
RMP 680	Festival and Event Planning
RMP 775	Entrepreneurial and Commercial Recreation
RMP 780	Event and Experience Design
<b>Emphasis or Minor requirement</b>	
<b>18-20</b>	
Emphasis (minimum of 18 credits) or Minor (18-20 credits) with C- or better, approved by their advisor.	
<b>Total Credits</b>	
<b>84-92</b>	

<sup>1</sup> RMP courses completed to fulfill the elective course requirement may not be used to fulfill the emphasis area requirement; unless prior approval from the student's academic advisor is granted.

## Professional Internship

A supervised internship (RMP 764) is required of all majors and serves as their **major capstone requirement**. The internship is designed to create a bridge between theory and practical application. Students, working with their advisers and the internship coordinator, select an appropriate setting based on their professional and career interests. They must register for an **8 or 12 credit full-time internship** that ranges from 10 to 16 weeks and is under the supervision of a qualified professional. Specific requirements are identified in the *Internship Manual* available from the Department of Recreation Management and Policy.

## Student Learning Outcomes

- Students will know and demonstrate the nature and scope of the recreation, events, and tourism profession and their associated industries.
- Students will know and demonstrate the techniques and processes used by professionals and staff in the recreation, events, and tourism industry.
- Students will know and demonstrate the foundation of the recreation, events, and tourism profession in history, science, and philosophy.
- Students will demonstrate the ability to design, implement, and evaluate services that facilitate targeted human experiences and that embrace personal and cultural dimensions of diversity.
- Students will demonstrate knowledge about operations, strategic management, and administration in recreation, events, and tourism organizations.
- Students will demonstrate the potential to succeed as professionals at supervisory or higher levels in recreation, events, tourism, or related organizations through participation in structured practicum and internship experiences.

## Recreation Management and Policy Major: Therapeutic Recreation Option (B.S.)

<https://chhs.unh.edu/rmp/therapeutic-recreation-bs>

### Description

Therapeutic recreation utilizes recreation to assist people with disabilities or illnesses to develop and use their leisure in ways that enhance health, independence, and well-being. Therapeutic recreation recognizes the importance of quality of life and uses activities to remediate or rehabilitate functional abilities. Therapeutic recreation services are provided in a variety of settings, including hospitals, long-term care

facilities, residential treatment facilities, schools, home health care, community recreation, correctional facilities, rehabilitation centers, camp and outdoor education centers, and adult day programs. Observation and applied experience is a component of several courses. Students complete a 14-16-week full-time clinical internship under the supervision of a certified therapeutic recreation specialist (CTRS). The Bureau of Labor Statistics occupational outlook reports the "employment of recreational therapists is projected to grow 8 percent from 2019 to 2029, which is much faster than the average for all occupations. As the large baby-boom generation ages, they will need recreational therapists to help treat age-related injuries and illnesses, such as strokes. Recreational therapists will also be needed to help patients manage chronic conditions such as diabetes and obesity (Bureau of Labor Statistics). A CNN Money report identifies recreation therapy among the top ten "best jobs for saving the world." In particular, they note the profession's high benefit to society and high personal job satisfaction (CNN Money Magazine). On the job front, interested readers may also wish to review an article on Recreational Therapy published on Monster.com at <https://www.monster.com/career-advice/article/recreational-therapists-help-patients-play-to-win-0615> (2015).

Upon successful completion of this option, students are prepared to meet sitting requirements for the National Council for Therapeutic Recreation Certification Examination. Students/graduates who pass the NCTRC exam and attain the CTRS are eligible to seek licensure to practice in the state of New Hampshire.

Students may be required to submit to a criminal background check.

## Requirements

### Core Requirements

All majors must complete a core curriculum of seven courses.

Code	Title	Credits
RMP 490	Recreation & Tourism in Society <sup>1</sup>	4
RMP 501	Recreation Services for Individuals with Disabilities	4
RMP 557	Program and Event Design	4
RMP 563	Recreation Management and Policy Practicum	2
RMP 654	Professional Development and Ethics	2
RMP 724	Research, Evaluation, and Data-Driven Decisions	4
RMP 764	Internship <sup>2</sup>	8-12

<sup>1</sup> RMP majors cannot count RMP 490 Recreation & Tourism in Society toward the University Social Sciences requirement.

<sup>2</sup> All RMP students must complete an 8 or 12 credit hour internship.

### Therapeutic Recreation Option Course Requirements:

Code	Title	Credits
RMP 500	Therapeutic Recreation Methods in Physical Rehabilitation Settings	1
RMP 502	Foundations of Therapeutic Recreation	4
RMP 503	Therapeutic Recreation Rehabilitation Principles & Interventions	4
RMP 504	Therapeutic Recreation Mental Health Principles and Interventions	4
RMP 505	Therapeutic Recreation: Aging Services Principles & Interventions	4
RMP 612	Therapeutic Communication and Facilitation Techniques in Therapeutic Recreation	4
RMP 613	Interventions and Documentation in Therapeutic Recreation	3
RMP 614	Assessment and Treatment Planning in Therapeutic Recreation	4
RMP 615	Clinical Lab in Therapeutic Recreation	2
RMP 663	Management and Finance in the Experience Industry	4

TR Elective: Select one of the following <sup>3</sup>		4
RMP 720	Adaptive Sport Facilitation for Recreation Therapy and Related Professions	
RMP 740	Therapeutic Recreation Service Delivery in Community Settings	
Required Support Courses		
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
HDFS 525	Human Development	4
PSYC 561	Abnormal Behavior	4
Statistics - Select one of the following:		
PSYC 402	Statistics in Psychology	4
SOC 402	Statistics	
Total Credits		92-94

<sup>3</sup> Or other TR related courses as approved by Academic Advisor.

### Professional Internship

A supervised internship RMP 764 is required of all majors and serves as their **major capstone requirement**. The internship is designed to create a bridge between theory and practical application. Students, working with their advisers and the internship coordinator, select an appropriate setting based on their professional and career interests. They must register for an **8 or 12 credit full-time internship** that ranges from 14 to 16 weeks and is under the supervision of a Certified Therapeutic Recreation Specialist. Specific requirements are identified in the *Internship Manual* available from the Department of Recreation Management and Policy.

## Student Learning Outcomes

- Students will integrate an understanding of history, service models, theory/philosophy, ethics, credentials, professional conduct, evidence-based practice and professional development with Recreational Therapy (RT) practice.
- Students will develop competence to individually screen, assess and systematically collect comprehensive and accurate data about patients/clients in an efficient and effective manner and to analyze the data collected to determine the course of actions subsequent to an individualized treatment/program plan.
- Students will develop competence in the planning and development of individualized treatment plans that identify functional outcome goals, modalities, facilitation techniques and interventions based on assessment data collected and evidence regarding the diagnosis and treatment of specific medical, psychiatric and other disabling conditions.
- Students will know how to use structured, systematic and evidence-based treatment interventions and facilitation techniques to improve patient/client functioning and independence in life activities.
- Students will develop competence to implement the individualized treatment/program plan using appropriate evidence-based treatment interventions and programs to restore, remediate, or rehabilitate patient/client functioning as well as to reduce or eliminate the limitations to participation in life activities resulting from medical, psychiatric or other disabling conditions.
- Students will acquire specific modality/skills and facilitation techniques used as treatment interventions in Recreational Therapy practice.
- Students will systematically conduct evaluation and research to determine the effectiveness of treatment interventions and programs used to reach patient/client outcomes.

- Students will develop the competencies to manage a Recreational Therapy practice, department, and staff.
- Students will develop an understanding of human anatomy and physiology, growth/development, psychology, functioning in life activities and an understanding of health care services to serve as a foundation for Recreational Therapy practice.
- Students will develop entry-level clinical proficiency and professional behavior through field-based clinical opportunities in accordance with professional standards of practice in Recreational Therapy

## Adolescent and Youth Development Minor

<https://chhs.unh.edu/recreation-management-policy/program/minor/adolescent-youth-development>

### Description

The departments of Recreation Management and Policy and Human Development and Family Studies offer an interdisciplinary minor designed to give students an opportunity to develop knowledge and skills regarding adolescence and youth development. The two required courses offer a foundation in theory, research, and practice, and students choose three additional courses in order to better prepare students to work with this age group.

Interested? Contact one of the Minor Coordinators: [Dr. Cindy Hartman \(cindy.hartman@unh.edu\)](mailto:cindy.hartman@unh.edu) in Recreation Management and Policy or [Dr. Erin Hiley Sharp \(erin.sharp@unh.edu\)](mailto:erin.sharp@unh.edu) in Human Development and Family Studies.

### Requirements

The Adolescent and Youth Development minor requires students to complete 20 credits.

Code	Title	Credits
<b>Two (2) Required Courses:</b>		
RMP 668	Youth Culture and Programs	4
HDFS 624	Developmental Perspectives on Adolescence and Early Adulthood	4
<b>Select three supporting courses (12 credits) approved by a minor advisor.</b>		
EDUC 556	Peer to Peer Mentoring for Students with Disabilities	2
EDUC #717	Growing up Male in America	4
HDFS 444A	Children at Risk	4
HDFS 707	Practicum	1-6
HDFS 776	Children, Adolescents and the Law	4
RMP 563	Recreation Management and Policy Practicum	2
RMP 560	Recreational Sport Management	4
SOC 525	Juvenile Crime and Delinquency	4
CMN 714	Youth and Media	4
SML 565	Principles of Coaching	4
SW 705	Child and Adolescent Risks and Resiliency: Program, Policy and Practice	4
Other adolescent or youth-based courses as approved by minor coordinator.		

- RMP majors may use [RMP 668](#) Youth Culture and Programs to meet both major and minor requirements.
- The Adolescent and Youth Development Minor follows UNH's policy on minors. Following University policy, students must complete 20 semester hours with a grade of C- or better and a 2.00 grade point average.

- No more than 8 credits used by a student to satisfy major requirements may be used for the minor.
- Students must submit a *Certification of Completion of Minor form* during their final semester to one of the Minor Coordinators: Dr. Cindy Hartman ([cindy.hartman@unh.edu](mailto:cindy.hartman@unh.edu)) in RMP or Dr. Erin Sharp ([erin.sharp@unh.edu](mailto:erin.sharp@unh.edu)) in HDFS.

## Outdoor Adventure Recreation Minor

<https://chhs.unh.edu/recreation-management-policy/program/minor/outdoor-adventure-recreation>

### Description

The purpose of the minor in Outdoor Recreation Management is to complement major courses of study that prepare students for professional fields that work in outdoor environments across human service, natural resources, educational, or recreation sectors. It will provide an orientation to the technical, risk management, and leadership skills required for personal preparedness and program organization involving backcountry and facilities-based adventure activities. In addition, the minor seeks to improve the standards for fieldwork in professional fields that use the outdoors by offering high-quality training that employs current risk management principles that govern engagement in outdoor activities.

#### Program Objectives:

- Provide the highest quality professional preparation in outdoor technical skills
- Surpass national standards so students can pursue certifications if desired
- Cultivate life-long learners who are motivated to seek continuous improvement
- Improve quality and help to reduce risks across professional fields that depend on a common skillset
- Expand participation in outdoor activities both on campus and in public and private sectors
- Enhance the experiences of future participants by emphasizing best practices that validate a range of life experiences, identities, and goals

### Requirements

## Minor Requirements

Code	Title	Credits
<b>Three required courses:</b>		<b>12</b>
OUT/RMP 515	History of Outdoor Pursuits in North America	
or RMP 511	Issues of Wilderness and Nature in American Society	
Select two courses from the following:		
OUT 540	Top Rope Rock Climbing	
OUT 551	Adventure Programming: Backcountry Based Experience	
OUT 552	Adventure Programming: Water Based Experiences	
<b>Electives - Select at least 8 credits from the following:</b>		<b>8</b>
RMP 603	New Hampshire Ski Industry Management	
RMP 670	Venue Management Design & Operations	
RMP 711	Recreation Resource Management	
RMP 775	Entrepreneurial and Commercial Recreation	
RMP 776	Human Dimensions of Natural Environments	
OUT 539	Artificial Climbing Wall Management	
OUT #542	Sea Kayaking	

OUT 543	Winter Adventure Programming	
OUT 545	High Angle Rescue	
OUT 546	Whitewater Canoeing	
OUT 547	Lead Rock Climbing	
OUT 549	Wilderness Navigation	
OUT 681	Foundations of Adventure Education	
LAP 501	Lifetime Activity Program (Select from the following course sections: F- snowshoeing and hiking, G-fly fishing, I-standup paddleboarding, J-indoor rock climbing, K-introduction to canoeing)	
<b>Total Credits</b>		<b>20</b>

Following University policy, you must complete 20 semester hours with a grade of C- or better. At the beginning of his/her **final** semester, students must complete and submit a Certification of Completion of Minor form to their college dean's office.

## Recreation Management Minor

### Description

The recreation industry is a broad field including festival and event planning, non-profit administration, travel and tourism, sport, municipal recreation, and outdoor recreation. This industry is experiencing worldwide growth which is opening up tremendous workforce opportunities. The primary goal of the recreation management minor is to provide a basic understanding of the recreation industry and the variety of careers associated with this industry for students interested in staying on their existing academic pathway. The required core course for this minor, RMP 490 Recreation & Tourism in Society, provides a comprehensive overview of the recreation industry. Students will select four additional elective courses from a list of offerings that lend themselves to specific areas of knowledge and interest. In total, five courses (18-20 credits) will be required to complete this minor.

### Requirements

The minor requires students to complete 18-20 credits.

Code	Title	Credits
<b>Required Course</b>		
RMP 490	Recreation & Tourism in Society	4
<b>Electives</b>		
Select 4 courses from the following:		
RMP 501	Recreation Services for Individuals with Disabilities	4
RMP 557	Program and Event Design	4
RMP 560	Recreational Sport Management	4
RMP 603	New Hampshire Ski Industry Management	4
RMP 668	Youth Culture and Programs	4
RMP 670	Venue Management Design & Operations	4
RMP 680	Festival and Event Planning	4
RMP 711	Recreation Resource Management	4
RMP 720	Adaptive Sport Facilitation for Recreation Therapy and Related Professions	4
RMP 775	Entrepreneurial and Commercial Recreation	4
RMP 780	Event and Experience Design	4
LAP 501	Lifetime Activity Program (may be repeated for up to 4 credits)	2
<b>Suggested Areas of Emphasis (for 4 Electives)</b>		
<b>Event Planning</b>		
RMP 557	Program and Event Design	4
RMP 670	Venue Management Design & Operations	4
RMP 680	Festival and Event Planning	4
RMP 780	Event and Experience Design	4
<b>Community Recreation &amp; Sport</b>		
RMP 501	Recreation Services for Individuals with Disabilities	4
RMP 557	Program and Event Design	4

RMP 560	Recreational Sport Management	4
RMP 668	Youth Culture and Programs	4
Commercial Recreation		
RMP 603	New Hampshire Ski Industry Management	4
RMP 670	Venue Management Design & Operations	4
RMP 711	Recreation Resource Management	4
RMP 775	Entrepreneurial and Commercial Recreation	4

## Social Work (SW)

The Department of Social Work's undergraduate program is accredited by the Council on Social Work Education (CSWE) and must meet rigorous academic standards to retain this accreditation. Social work majors pursue a program that encompasses the professional social work competencies of professional identity, critical thinking, knowledge of diversity and human rights, social, environmental and economic justice, social welfare policy and services, social work practice with all client system sizes, human behavior in the social environment, research, and ethics.

According to the National Association of Social Workers (NASW), "The social work profession provides ethical, practical, and compassionate leadership to help people confront and resolve personal and social challenges" through their work with individuals, families, small groups, organizations, and communities. All social work majors complete a field internship under the direction of a qualified supervisor.

<https://chhs.unh.edu/sw>

### Programs

- [Social Work Major \(B.S.\)](#) (p. 268)
- [Social Work Minor](#) (p. 269)
- [Gerontology Multidisciplinary Minor](#) (p. 269)

### Faculty

<https://chhs.unh.edu/directory/all>

## Social Work Major (B.S.)

<https://chhs.unh.edu/social-work/program/bs/social-work-major>

### Description

The Department of Social Work's undergraduate program is accredited by the Council on Social Work Education (CSWE) and must meet rigorous academic standards to retain this accreditation.

The Department of Social Work's undergraduate program offers both a major and a minor in social work. It is a specialized degree that prepares graduates for generalist social work practice with a solid foundation in the liberal arts and in the knowledge, skills, and value base of social work. Through the mastery of core competencies, social work graduates apply their education working with individuals, families, groups, organizations, and communities. In addition, the program prepares qualified students to pursue graduate education in schools of social work and related fields.

To connect the theoretical and conceptual content of the classroom with the practice world, students must complete:

- 40 hours of human service in an approved agency/program setting by the end of the semester when they apply to the field. Twenty of the forty hours must be in the same agency/program. The remaining hours may be across multiple sites/programs. This experience may be paid or volunteer and must be pre-approved by the student's faculty adviser. The service hours must be completed post high school and by the end of the semester when to field applications are due.
- Students complete a 450-hour internship over two semesters during the senior year. This is the senior capstone experience. The field placement in the final year of the baccalaureate program is arranged between the student and the field education coordinator. In compliance with CSWE accreditation standards, the B.S. in social work program does not grant social work course credit for life or work experience.

Social work majors earn a B.S. degree in social work. Graduates are eligible for practice in a variety of social work settings throughout the United States. In preparation for graduate school, the program offers an Accelerated Masters that qualified students can consider applying for their junior year. In addition, qualified graduates are eligible to apply for advanced standing in M.S.W. programs that offer advanced standing. Depending upon the program, this can mean earning the M.S.W. in one calendar year versus two academic years.

## Requirements

### Academic Program

Candidates for a degree must satisfy all of the University Discovery Program requirements in addition to satisfying the requirements of the social work major. Social work majors are required to take:

Code	Title	Credits
<b>Required Courses</b>		
SW 424	Introduction to Social Work	4
SW 525	Social Welfare Policy: History of Social and Economic Justice	4
SW 550	Human Behavior and Social Environment I	4
SW 551	Human Behavior and Social Environment II	4
SW 601	Research Methods in Social Work	4
SW 622	Social Work Practice: Interventions with Individuals and Families	4
SW 623	Social Work Practice: Interventions with Groups, Organizations and Communities	4
SW 625	Social Welfare Policy in a Global Context	4
SW 630	Race Equity in Health and Human Services	4
<b>Category I: Anthropology &amp; Sociology</b>		
Select one course from the following:		4
ANTH 411	Global Perspectives on the Human Condition: An Introduction to Anthropology	
ANTH 500	Peoples and Cultures of the World	
SOC 400	Introductory Sociology	
SOC 515	Introductory Criminology	
SOC 520	Family	
SOC 525	Juvenile Crime and Delinquency	
SOC 535	Homicide	
<b>Category II: Human Biology Requirement</b>		
Select one course from the following:		4
ZOOL 401	Human Biology	
BMS 507	Human Anatomy and Physiology I	
BMS 508	Human Anatomy and Physiology II	
<b>Category III: Diversity Requirement (1)</b>		
Select one of the following		4
ANTH #450	Introduction to Race, Culture, and Power	
ANTH 625	Sexuality in Cross-Cultural Perspectives	
CMN 567	Gender, Race, and Class in the Media	
ENGL 549	In the Groove: African American Music as Literature	
ENGL 550	Introduction to the Literature and Culture of Race	



GERO 500	I'm Old, So What! An introduction to aging in the United States
HIST 440A	Martin Luther King, Jr., and the Struggle for Racial Justice
HIST 505	African American History
HIST #506	African American History
HIST 532	Modern Latin America
INCO 505A	Semester in the City Becoming a Problem Solver
PHIL 510	Philosophy and Feminism
RMP 444A	Taking the "Dis" out of Disability
SOC 645	Class, Status and Power
SOC 745	Race, Ethnicity, and Inequality
SW 650	Exploring Social Justice and Cultural Competency Using an Experiential Learning Approach
SW 660	Exploring Issues in Housing and Homelessness
SW 697	Special Topics in Social Welfare
SW 706	Social Action in the Dominican Republic
SW 715	Affirming Practice with Lesbian, Gay, Bisexual, Transgender, Queer+ People
WS 401	Introduction to Women's Studies
WS 405	Gender, Power and Privilege
WS 444	Trans/Forming Gender
WS 444A	Race Matters
WS #444C	On the Roads to Equality
WS 632	Feminist Thought
<b>Senior Capstone Course Sequence</b>	
SW 740	Social Work Field Experience 4
SW 740A	Social Work Field Experience I: Seminar 4
SW 741	Social Work Field Experience II 4
SW 741A	Social Work Field Experience II: Seminar 4
<b>Total Credits</b>	<b>64</b>

Students must maintain a 2.0 and earn a C or better in the 13 social work major courses. In addition, students are expected to successfully complete three additional courses as part of a liberal arts foundation for the major. Students choose one course from an approved list of courses in two different categories: anthropology/sociology and zoology and then must choose an additional course from an approved list of diversity courses. These three courses may also satisfy University Discovery requirements. Lastly, students are required to complete 40 hours of advisor approved human service hours by end of first semester junior year.

## Student Learning Outcomes

- Student demonstrates ethical and professional behavior.
- Student engages diversity and difference in practice.
- Student advances human rights and social, economic and environmental justice.
- Engage in practice informed research and research-informed practice.
- Engages in policy practice.
- Engage with individuals, families, groups, organizations, and communities.
- Assess individuals, families, groups, organizations, and communities.
- Intervenes with individuals, families, groups, organizations, and communities.
- Evaluates practice with individuals, families, groups, organizations, and communities.

## Social Work Minor

<https://chhs.unh.edu/social-work/program/minor/social-work>

## Description

The department offers a minor in social work.

Students interested in a minor in social work should consult with the undergraduate program coordinator, Gretchen Bean, Pettee Hall, Room 241, (603) 862-4551.

## Requirements

Students wishing to minor in social work are required to take:

Code	Title	Credits
SW 424	Introduction to Social Work	4
SW 525	Social Welfare Policy: History of Social and Economic Justice	4
Select any three other courses offered by the department <sup>1</sup>		12
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Excluding SW 622, SW 623, SW 625, SW 740, SW 740A, SW 741, SW 741A.

SW 622, SW 623, and SW 625 are by permission only with program coordinator approval.

## Gerontology Multidisciplinary Minor

<https://chhs.unh.edu/social-work/program/minor/gerontology>

## Description

The gerontology multidisciplinary minor (GMM) provides students with the opportunity to examine and evaluate the aging process as it affects the individual and society within the United States and in the world. Through a multidisciplinary course selection, students develop an understanding of aging from a variety of perspectives with a focus on how people age physically, cognitively, emotionally, and socially. Students are encouraged to analyze the historical and philosophical foundation from which policies, programs, and professional activities affecting the aged are developed, implemented, and evaluated. The purpose of GMM is to prepare students as they enter their career fields on the effects that the growing elderly population will have in every component of modern life.

## Requirements

To complete a minor in gerontology students are required to take a minimum of 20 credits.

- Special Topic courses on aging-related topics can be used for GMM if approved by the GMM coordinator (e.g. SW 797 Special Topics in Social Welfare - End of Life Care)
- The GMM follows UNH's policy on minors. Following University policy, students must complete 20 credit hours with a grade of C- or better and a 2.00 grade point average.
- Students must submit a Certification of Completion of Minor form during their final semester to the GMM Coordinator: Dr. BoRin Kim in the Department of Social Work.

Code	Title	Credits
<b>Required courses:</b>		<b>8</b>
EXSC 607	Biology of Aging	
GERO 500	I'm Old, So What! An introduction to aging in the United States	

Select 3 additional courses from the following:		12
ANTH 695	Globalization and Global Population Health	
GERO #795	Independent Study <sup>2</sup>	
HDFS 625	Adult Development and Aging	
HDFS 707	Practicum <sup>1</sup>	
HHS #444	The Right to be Disabled in the Extreme Makeover Society	
HHS 798	Special Topics	
HPE 601	Lifetime Sports	
NURS 506	Human Development, Interaction and Learning Across the Lifespan	
NURS 535	Death and Dying	
NUTR 400	Nutrition in Health and Well Being	
NUTR 600	Field Experience in Nutrition <sup>1</sup>	
NUTR 650	Life Cycle Nutrition	
NUTR 773	Clinical Nutrition	
NURS 601	Function and Wellbeing of Older Adults	
OT 501	Developmental Tasks of Adulthood	
PHIL 660	Law, Medicine, and Ethics	
RMP 503	Therapeutic Recreation Rehabilitation Principles & Interventions	
RMP 563	Recreation Management and Policy Practicum <sup>1</sup>	
SOC 725	Social Demography	
SW 444	You've Got Your Troubles, I've Got Mine	
SW 702	Aging and Society	
SW 740	Social Work Field Experience <sup>1</sup>	
SW 741	Social Work Field Experience II <sup>1</sup>	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Up to 4 credits from the practicum courses including HDFS 707 Practicum, NUTR 600 Field Experience in Nutrition, RMP 563 Recreation Management and Policy Practicum, SW 740 Social Work Field Experience or SW 741 Social Work Field Experience II can be used for GMM if a student did their internship at aging-related institutions.

<sup>2</sup> GERO #795 Independent Study is not a required course but up to 4 credits can be used toward GMM. GERO #795 is used by students and faculty as an option for creating an individual experience relating to aging. A faculty member must approve and oversee (mentor) the student's work. Additionally, the GMM coordinator must also approve of the proposal and retain a copy. A copy of the proposal and the final copy will be kept in the student's major academic folder.

## Sport Management and Leadership

- [Sport Management and Leadership Major \(B.S.\)](#) (p. 270)
- [Sport Management Minor](#) (p. 272)

## Sport Management and Leadership Major (B.S.)

<https://chhs.unh.edu/kinesiology/program/bs/sport-management-leadership-major>

### Description

The Sport Management and Leadership Major at UNH prepares students for successful careers in the sport industry. The SML major meets the needs of the ever-changing sport marketplace, by balancing academic preparation through related coursework with extensive opportunities to gain experience in the sport industry. Analyzing and integrating the context/culture of sport is embedded throughout our curriculum and grounds students' preparation for careers in interscholastic, intercollegiate, and professional sport including sport marketing, event management, coaching, administration, and sport media/communication.

SML also prepares students for graduate study in areas such as sport law, sport business, sport psychology, or sport communication.

Majors take a core of foundation courses, in addition to applied electives and choose one of three focus areas: Sport Marketing and Event Management, Coaching/Athletic Administration, or Sport Media/Communication. Majors must earn a grade of B- or better in SML 580 Sport Industry, and a grade of C or better in an approved statistics course as well as each required Sport Management and Leadership course. In addition, a targeted internship experience is required since it is critical to career development. Students in this major are expected to complete a minor, cognate or a double major in a related field (e.g. business, communication, english/journalism, psychology, education) that ensures breadth and depth as well as appropriate knowledge and skills for entry into a sport-related career. Interested students should consult with major coordinator, Gretchen Browne, [Gretchen.Browne@unh.edu](mailto:Gretchen.Browne@unh.edu).

## Requirements

Code	Title	Credits
<b>Major Requirements<sup>1</sup></b>		
<b>Core Courses</b>		
SML 580	Sport Industry	4
SML 645	Leadership in Sport	4
SML 650C	Internship in Sport Management and Leadership	1-8
SML 741	Social Issues in Contemporary Sports	4
SML 761	Senior Seminar Sport Management and Leadership <sup>2</sup>	4
PSYC 402	Statistics in Psychology <sup>3</sup>	4
or SOC 402	Statistics	
or ADMN 510	Business Statistics	
or HHS 540	Statistics for Health and Human Service Professionals	
<b>Focus Areas</b>		
Students must select one of three focus areas-12 credits- 1 required four credit course/8 advisor approved credits from within the focus area.		
<b>Sport Marketing and Event Management</b>		
SML 564	Introduction to Sport Marketing	4
Select 8 credits from the following:		
SML 630	Sport Facility and Event Management	4
SML 634	Sport Sponsorship and Sales	4
SML 764	Advanced Sport Marketing	4
SML 738	Sport Finance	4
SML 643	Social Media Marketing in Sport	4
<b>Coaching/Athletic Administration</b>		
SML 565	Principles of Coaching	4
Select 8 credits from the following:		
SML 565A	Clinical Practice in Coaching	2
SML 560	Sport Psychology	4
SML 630	Sport Facility and Event Management	4
SML 765	Advanced Topics in Coaching	4
SML 780	Psychological Factors in Sport	4
SML 521	Theory of Coaching Basketball	2
SML 523	Theory of Coaching Ice Hockey	2
SML 525	Theory of Coaching Soccer	2
SML 528	Theory of Coaching Track and Field	2
SML 740	Athletic Administration	4
<b>Sport Media/Communication</b>		
SML 562	Sport Media Relations	4
Select 8 credits from the following:		
SML 631	Sport Media Production	4
SML 643	Social Media Marketing in Sport	4
SML 564	Introduction to Sport Marketing	4
SML 630	Sport Facility and Event Management	4
<b>Electives: Select 12 credit hours min. from the following:<sup>4</sup></b>		
SML 568	Global Perspectives in Sport	4
SML 764	Advanced Sport Marketing	4
SML 738	Sport Finance	4

SML 634	Sport Sponsorship and Sales	4
SML 564	Introduction to Sport Marketing	4
SML 565A	Clinical Practice in Coaching	2
SML 560	Sport Psychology	4
SML 565	Principles of Coaching	4
SML 562	Sport Media Relations	4
SML 740	Athletic Administration	4
SML 521	Theory of Coaching Basketball	2
SML 522	Theory of Coaching Football	2
SML 523	Theory of Coaching Ice Hockey	2
SML 525	Theory of Coaching Soccer	2
SML 528	Theory of Coaching Track and Field	2
SML 561	History of American Sport and Physical Culture	4
SML 561W	History of American Sport and Physical Culture	4
SML 630	Sport Facility and Event Management	4
SML 631	Sport Media Production	4
SML 643	Social Media Marketing in Sport	4
SML 650C	Internship in Sport Management and Leadership	1-8
SML 693	Teaching Assistantship	2
SML 696	Independent Study	2-4
SML 765	Advanced Topics in Coaching	4
SML 780	Psychological Factors in Sport	4
SML 798	Special Topics	1-4
SML 761	Senior Seminar Sport Management and Leadership <sup>2</sup>	4

<sup>1</sup> All students are required to complete an advisor approved minor, cognate or double major or 20 credits of coursework in a related field and approved in advance by faculty adviser.

<sup>2</sup> Majors must complete a minimum of 150 hours of industry experience before they can take SML 761 Senior Seminar Sport Management and Leadership. Students must be enrolled as a sport management and leadership major for one full semester before taking SML 761 Senior Seminar Sport Management and Leadership. See adviser for details.

<sup>3</sup> All students are required to have a minimum grade of C in Statistics, PSYC 402, SOC 402, ADMN 510 or HHS 540, or an approved Statistics course.

<sup>4</sup> Electives can include any courses listed within any focus area or the two additional courses listed below, including an additional 4 credits of internship. Credits applying to a declared focus area cannot also count as elective credits.

Internal transfer applicants to Sport Management and Leadership must have at least a 2.5 GPA as well as a minimum grade of C in Statistics (PSYC 402, SOC 402, ADMN 510 or HHS 540 or another approved statistics course) and a minimum grade of B- in SML 580 Sport Industry.

## Degree Plan

### Recommended Major Sequencing of Courses

This list only includes major classes. Students should be registered for, and take an average of 16 credits per semester to be 'on track' to graduate in 4 years. In most semesters, this means a student will be taking Discovery or elective courses, to meet this 16 credit 'load'.

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ENGL 401	First-Year Writing	4
SML 580	Sport Industry	4
<b>Credits</b>		<b>8</b>

### Spring

SML 564 or SML 565 or SML 562	Introduction to Sport Marketing or Principles of Coaching or Sport Media Relations	4
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**Credits** **4**

### Second Year

#### Fall

PSYC 402 or SOC 402 or ADMN 510 or HHS 540	Statistics in Psychology or Statistics or Business Statistics or Statistics for Health and Human Service Professionals	4
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#### Focus Area Elective

**Credits** **4**

### Spring

SML 645	Leadership in Sport	4
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Focus Area Elective **4**

**Credits** **8**

### Third Year

#### Fall

SML 650C	Internship in Sport Management and Leadership	1-8
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SML Elective **4**

**Credits** **5-12**

### Spring

SML Elective OR

SML 741	Social Issues in Contemporary Sports	4
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**Credits** **4**

### Fourth Year

#### Fall

SML 650C	Internship in Sport Management and Leadership	1-8
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SML 761	Senior Seminar Sport Management and Leadership	4
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OR SML Elective

**Credits** **5-12**

### Spring

SML 741	Social Issues in Contemporary Sports	4
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OR SML Elective **4**

**Credits** **8**

**Total Credits** **46-60**

## Student Learning Outcomes

- SML students will understand the socio-cultural components of sport integrated throughout the curriculum while translating theory to practice in order to apply classroom knowledge in the sport setting.
- SML students will distinguish and employ effective leadership principles, management styles, and decision-making skills in sport organizations.
- SML students will identify and understand major issues in sport and how they can reflect as well as bring about change in society relative to diversity, equity, and inclusion.

- SML students will understand the importance of working collaboratively in order to effectively solve problems and reach organizational goals.
- SML students will be exposed to the basic operating principles in the sport industry in order to gain an understanding of the potential career paths.
- SML Students will be able to organize, apply and synthesize information and ideas while effectively expressing these in both oral and written form (critical and technical) through various contexts, technologies and platforms.
- SML students will develop, utilize and reflect on professional skills while demonstrating an ability to self-advocate in their career development.
- SML students will apply critical thinking and problem-solving skills to develop and analyze research data on issues related to the sport industry.

## Sport Management Minor

### Description

The Sport Management minor offers an opportunity for students outside of the major to strategically take classes in our SML curriculum, specifically designed to provide students with the basic knowledge of sport management. The minor consists of two required Sport Management courses and then a variety of options across our SML curriculum and within Paul College.

Admission into the minor is based on successful completion of SML 580 Sport Industry and a minimum GPA of 2.0

### Requirements

- To graduate with a sport management minor, individuals must earn a grade of C- or better in all courses associated with the minor.
- Sport Management and Leadership/Sport Studies majors are not permitted to minor in sport management.
- Please contact [Zachary.Scola@unh.edu](mailto:Zachary.Scola@unh.edu) for additional information.

Code	Title	Credits
<b>Two Required Courses</b>		
SML 580	Sport Industry <sup>1</sup>	4
SML 564	Introduction to Sport Marketing	4
<b>Select two courses from the following:</b>		
SML 630	Sport Facility and Event Management	4
SML 634	Sport Sponsorship and Sales	4
SML 738	Sport Finance	4
SML 740	Athletic Administration	4
SML 764	Advanced Sport Marketing <sup>2</sup>	4
<b>Select one course from the following:</b>		
PAUL 450	Personal Finance	4
MGT 535	Organizational Behavior	4
or ADMN 575	Behavior in Organizations	
MKTG 649	Foundations of Personal Selling	4
ECON 676	Economics of Sports	4

<sup>1</sup> SML 580 Sport Industry should be the first class students take in this minor. Additionally, enrolling in this class is when a student fills out the intent to minor form.

<sup>2</sup> If not taken as one of the two required courses.

## College of Life Sciences and Agriculture

Anthony S. Davis, Dean

Kimberly J. Babbitt, Associate Dean

Anton Bekkerman, Associate Dean

The College of Life Sciences and Agriculture (COLSA) provides students a fundamental education in the agricultural, biological, life, natural, and social sciences. Advanced technical and professional courses are offered to prepare students for graduate school or entry-level positions in their chosen field. Preparation can vary from fundamental studies of cancer cells to community service planning, resource protection to genetic engineering, and molecular biology to biotechnology.

A blend of Discovery and foundational science courses, careful selection of supportive upper level courses, and ample opportunities to engage in internships, research, and study abroad experiences ensures graduates develop the background and experiences necessary to be competitive in the job market. Potential employers include federal, state, and local governments, consulting firms and industrial organizations. Graduates are employed as watershed, soil, and natural resource managers, associates in biomedical and agricultural research laboratories, marketing analysts and extension specialists, nutrition supervisors and environmental regulators, and information educators and communication experts. Community governments employ graduates as service planners and land-use specialists, teachers in traditional education, public health technicians, and urban pest control specialists. Positions are available in private and commercial organizations in production agriculture, food processing, landscaping, agribusiness, sales, and private planning. Graduates may also pursue entrepreneurial careers.

Additionally, COLSA prepares students for advanced study in their chosen field of interest where graduate study is required for attaining their career goals.

## Degrees

The college offers three undergraduate degrees: the bachelor of arts, the bachelor of science, and the bachelor of science in forestry. Some of the courses prescribed in these degree programs partially fulfill the University's Discovery requirements. Students should see their advisers for specific information.

## General Science Certification

Students majoring in biochemistry, molecular and cellular biology, biomedical science, biology, environmental conservation and sustainability, environmental sciences, forestry, wildlife and conservation biology, or zoology may seek certification to teach science at the middle, junior, or high school level.

For further information, contact the coordinator of teacher education in the Department of Education.

## Academic Advising

A member of the faculty whose area of interest is closely related to the student's is appointed as an adviser to assist the undergraduate in planning his or her academic program. Further advising is also available in the dean's office, Rudman Hall.

## Undeclared Status

Students may select a major upon entering the college or wait until registration for the sophomore year. Students who are uncertain about choosing a specific major may remain undeclared during their freshman year. In most cases, they should take the following courses, after which they should be ready to declare a major.

Course	Title	Credits
<b>Fall</b>		
LSA 400	Freshman Academic Experience I	1
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 403	General Chemistry I	4
Discovery Program requirement		4
Discovery Program Requirement or an introductory course in any department in the college		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
LSA 402	Freshman Academic Experience II	1
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 404	General Chemistry II	4
MATH 424B	Calculus for Life Sciences	4
Discovery Program requirement		4
<b>Credits</b>		<b>17</b>
<b>Total Credits</b>		<b>34</b>

Undeclared freshmen should explore possible majors by taking courses in the areas or programs that interest them most. They should talk to faculty, students, and their adviser concerning requirements, job opportunities, etc. in the various programs and should be prepared to declare a major when they register for the first semester of the sophomore year.

## Bachelor of Arts

The bachelor of arts degree is available in Sustainable Agriculture and Food Systems, and Zoology. Students must accumulate 128 credits, attain a 2.0 cumulative grade-point average, satisfy Discovery requirements, and complete a foreign language requirement (see University Academic Requirements for specific B.A. language requirements). Check individual departmental listings for specific major requirements and minimum acceptable grades in major courses.

## Bachelor of Science

The bachelor of science degree is available in all departments or programs. University requirements are the same as for the bachelor of arts degree, except that a foreign language is not required and minimum acceptable grades may differ in some programs. Check individual departmental or program listings for specific major requirements.

<https://colsa.unh.edu/>

## Departments

- [Agriculture, Nutrition, and Food Systems](#)
- [Biological Sciences](#)
- [Molecular, Cellular, and Biomedical Sciences](#)
- [Natural Resources and the Environment](#)



## Programs of Study

- [Agribusiness](#) (p. 274)
- [Animal Science \(ANSC\)](#) (p. 274)
- [Biochemistry, Molecular and Cellular Biology \(BMCB\)](#) (p. 280)
- [Biology](#) (p. 283)
- [Biomedical Science \(BMS\)](#) (p. 287)
- [Community and Environmental Planning \(CEP\)](#) (p. 297)
- [Ecogastronomy](#) (p. 300)
- [Environmental and Resource Economics \(EREC\)](#) (p. 301)
- [Environmental Conservation and Sustainability](#) (p. 303)
- [Environmental Sciences](#) (p. 306)
- [Equine Studies](#) (p. 310)
- [Forestry](#) (p. 318)
- [Genetics \(GEN\)](#) (p. 321)
- [GeoSpatial Analysis](#) (p. 328)
- [Green Real Estate](#) (p. 328)
- [Marine, Estuarine, and Freshwater Biology \(MEFB\)](#) (p. 329)
- [Neuroscience and Behavior \(NSB\)](#) (p. 332)
- [Nutrition \(NUTR\)](#) (p. 334)
- [Sustainable Agriculture and Food Systems \(SAFS\)](#) (p. 341)
- [Sustainable Energy](#) (p. 346)
- [Tourism Management](#) (p. 347)
- [Wildlife and Conservation Biology](#) (p. 347)
- [Zoology \(ZOOL\)](#) (p. 350)

## Agribusiness

### Programs

- [Agribusiness Minor](#) (p. 274)

## Agribusiness Minor

<https://colsa.unh.edu/natural-resources-environment/program/minor/agribusiness>

### Description

The agribusiness minor is designed to provide students in disciplines other than environmental and resource economics with training in the economics and management of agricultural and other natural resource business firms. This program prepares students to work for private companies, governmental agencies, or nonprofit, nongovernmental organizations. Students who are interested in operating their own businesses will also find this minor very useful. The courses in the agribusiness minor emphasize the applications of economic and business management principles.

### Requirements

Code	Title	Credits
<b>Required Courses</b>		
EREC 411	Environmental and Resource Economics Perspectives (or equivalent) <sup>1</sup>	4
ACC 501	Survey of Accounting	4
MKTG 530	Survey of Marketing	4

ANSC 548	Agricultural Business Management	4
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes	4
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> EREC 411 cannot be taken for credit if credit has been earned for ECON 402.

For additional information, contact John M. Halstead, Environmental and Resource Economics Program Coordinator, 168 James Hall, (603) 862-3914.

## Animal Science (ANSC)

The undergraduate program in animal science is designed to prepare students for a variety of careers by providing strong fundamental and applied education in animal nutrition, reproduction, genetics, physiology, health, and animal management. On-campus animal facilities available to provide practical experience with agricultural animals include the Fairchild Dairy Teaching and Research Center, the Lou and Lutza Smith Equine Center, the nearby organic dairy housed at the Burley-Demeritt Farm, two high tunnels for small livestock species, and aquaculture facilities. Program graduates may be employed in animal business ownership, management, marketing, the pharmaceutical industry, agribusiness, finance, manufacturing, public relations, extension, vocational education, or consulting. Students who are considering continuing their studies through graduate school or veterinary school are advised to take the recommended additional courses in chemistry, math, and physics.

<https://colsa.unh.edu/agriculture-nutrition-food-systems>

### Programs

- [Animal Science Major \(B.S.\)](#) (p. 274)
- [Animal Science Major Dairy Management Option \(B.S.\)](#) (p. 277)
- [Animal Science Minor](#) (p. 279)
- [Dairy Management Minor](#) (p. 280)

### Faculty

<https://colsa.unh.edu/agriculture-nutrition-food-systems/faculty-staff-directory>

## Animal Science Major (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/animal-science-major>

### Description

Animal Science is the study of the biology and management of animals that enhance human life and well-being. Completion of the Animal Science B.S. is designed to prepare students for a variety of animal-focused careers. The Animal Science B.S. is one of many pathways for admission to veterinary school. Because admission to veterinary school is highly competitive due to the limited number of available spaces and the high standards for admission, students are advised to choose an academic program that deeply interests them. Simply taking the

prerequisite courses required by veterinary schools without considering alternate career goals is not advisable.

## Requirements

### Major Requirements

Code	Title	Credits
<b>Foundation Courses</b>		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
BIOL 528	Applied Biostatistics I	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMCB 501	Biological Chemistry <sup>1</sup>	4
<b>Requirements for All Animal Science Majors</b>		
AAS 439	Fundamentals of Animal Health	2
ANSC 406	Careers in Animal Science	1
ANSC 421	Introduction to Animal Science	4
ANSC 511	Anatomy and Physiology	4
ANSC 512	Anatomy and Physiology	4
ANSC 543	Technical Writing in Animal Sciences (or equivalent) <sup>2</sup>	2
ANSC 602	Animal Rights and Societal Issues	4
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Animals	4
ANSC 625	Animal Diseases	4
<b>Reproduction Course</b>		
Select one of the following:		4
ANSC 701	Physiology of Reproduction	
ANSC 715	Physiology of Lactation	
ANSC 724	Reproductive Management and Artificial Insemination	
BMS 702	Endocrinology	
<b>Major Electives</b>		
Select 3 electives from the following list. At least 2 electives must be at the 500 level or above. Electives less than 3 credits must be combined to equal 3 credits or more to count as 1 elective. At least one elective must be from the Experiential category.		12
AAS 421	Large Animal Behavior and Handling Techniques	
AAS 423	Dairy Selection	
AAS 425	Introduction to Dairy Herd Management	
AAS 432	Introduction to Forage and Grassland Management	
AAS 434	Equipment and Facilities Management	
ADMN 502	Financial Accounting	
ANSC 426	Equine Conformation and Lameness	
ANSC 437	Equine Husbandry Techniques	
ANSC 504	Equine Physiology	
ANSC 507	Survey of Equine Training Techniques	
ANSC 510	Integration of Culture and Agriculture in Ireland: Past, Present, and Future	
ANSC 546	Animal Business Applications	
ANSC 547	Equine Stable Management	
ANSC 548	Agricultural Business Management	
ANSC 600	Field Experience	
ANSC 603	Introduction to Livestock Management	
ANSC 605	Poultry Production and Health Management	
ANSC 627	Animal Health Applications	
ANSC 635	Nonprofit Management for Agriculture Business	
ANSC 650	Dairy Industry Travel Course	
ANSC 670	Exotic Companion Species Health and Management	
ANSC 690	Livestock and Wildlife in Namibia: Challenges, Opportunities and Geography	
ANSC 695	Supervised Teaching Experience (Course can only be used once for elective credit)	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM) (Each semester counts as 1 elective. However, if taken in the senior year >90 credits, 1 semester can count as the capstone and 1 as an elective.)	
ANSC 701	Physiology of Reproduction	
ANSC 708	Ruminant Nutritional Physiology	
ANSC 710	Dairy Nutrition	

ANSC 715	Physiology of Lactation
ANSC 724	Reproductive Management and Artificial Insemination
ANSC 725	Equine Sports Medicine
ANSC 727	Advanced Dairy Management I
ANSC 728	Advanced Dairy Management II
ANSC 750	Collaborative Farm Design and Development
ANSC 795	Investigations
ANSC 796	Equine Senior Seminar
ANSC 799	Honors Senior Thesis
BMCB 753	Cell Culture
BMS 602	Pathogenic Microbiology
BMS 623	Histology: Microscopic Cellular Structure and Function
BMS 655	Human and Animal Parasites
BMS 702	Endocrinology
BMS 703	Infectious Disease and Health
BMS 704	Pathologic Basis of Disease
BMS 705	Immunology
BMS 706	Virology
BMS 711	Toxicology
BMS 712	Experiences in Applied Veterinary Diagnostics
BMS 718	Mammalian Physiology
BUS #410	Introduction to Entrepreneurship
CMN 500	Public Speaking
CMN 600	Public Speaking as a Civic Art
EREC 411	Environmental and Resource Economics Perspectives
EREC 680	Agricultural and Food Policy
MEFB 773	Physiology of Fishes
MGT 535	Organizational Behavior
SAFS 632	Urban Agriculture
ZOOL 610	Principles of Aquaculture
ZOOL 613	Animal Behavior
ZOOL 777	Neuroethology
<b>Experiential Electives</b>	
ANSC 600	Field Experience
ANSC 603	Introduction to Livestock Management
ANSC 605	Poultry Production and Health Management
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)
ANSC 727	Advanced Dairy Management I
ANSC 728	Advanced Dairy Management II
ANSC 750	Collaborative Farm Design and Development
ANSC 795	Investigations
ANSC 799	Honors Senior Thesis
<b>Total Credits</b>	<b>78</b>

<sup>1</sup> Students interested in graduate school should take 2 semesters of Organic Chemistry (CHEM 651/CHEM 653 and CHEM 652/CHEM 654) and one semester of General Biochemistry (BMCB 658/BMCB 659) in place of BMCB 501.

<sup>2</sup> ENGL 501 Introduction to Creative Nonfiction, ENGL 502 Professional and Technical Writing, ENGL 503 Persuasive Writing or ENGL 419 How to Read Anything

### Capstone Experience

The capstone requirement must be completed during the senior year, and may be satisfied through a course (e.g., ANSC 698 Cooperative for Real Education in Agricultural Management (CREAM), ANSC 728 Advanced Dairy Management II, ANSC 750 Collaborative Farm Design and Development, ANSC 797 Equine Capstone Experience, or ANSC 799 Honors Senior Thesis) or some form of experiential learning (e.g., mentored research projects and other special student activities).

## GPA Requirements for All Students in Animal Science

Students will be required to earn a C- or better in all required courses for the animal science major to receive credit toward graduation. Students failing to do this will need to retake the course in order to receive credit.

## Requirements for Animal Science Students Interested in Graduate/Veterinary School

Code	Title	Credits
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
MATH 424B	Calculus for Life Sciences	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4

Students interested in veterinary medicine should consult the [pre-veterinary medicine program website](#).

## Degree Plan

### ANSC Sample Student Schedule by Semester

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ANSC 421	Introduction to Animal Science	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing (WI) or Discovery course (Not SS, FPA, or WC)	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ANSC 406	Careers in Animal Science	1
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 404	General Chemistry II	4
ENGL 401	First-Year Writing (WI or Discovery course)	4
Elective		4
<b>Credits</b>		<b>17</b>
<b>Second Year</b>		
<b>Fall</b>		
ANSC 511	Anatomy and Physiology	4
ANSC 612	Genetics of Animals	4
Discovery course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
AAS 439	Fundamentals of Animal Health	2
ANSC 512	Anatomy and Physiology	4
ANSC 543	Technical Writing in Animal Sciences	2
BIOL 528	Applied Biostatistics I	4

Discovery Course	4
<b>Credits</b>	<b>16</b>

### Third Year

#### Fall

ANSC 625	Animal Diseases	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
Discovery course		4
Elective		4

<b>Credits</b>	<b>17</b>
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#### Spring

ANSC 609	Principles of Animal Nutrition	4
BMCB 501	Biological Chemistry	4
Discovery course		4
Elective		4

<b>Credits</b>	<b>16</b>
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### Fourth Year

#### Fall

ANSC Reproduction course or Discovery course	4
Elective	4
Elective	4
Elective	4

<b>Credits</b>	<b>16</b>
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#### Spring

ANSC 602	Animal Rights and Societal Issues (WI)	4
ANSC Reproduction course or Discovery course		4
Capstone course		4
Elective		4

<b>Credits</b>	<b>16</b>
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<b>Total Credits</b>	<b>130</b>
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### ANSC Sample Student Schedule by Semester - Pre-Veterinary/Graduate School Intent

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ANSC 421	Introduction to Animal Science	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing (WI) or Discovery course (Not SS, FPA, or WC)	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ANSC 406	Careers in Animal Science	1
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 404	General Chemistry II	4
MATH 424B	Calculus for Life Sciences	4
ENGL 401	First-Year Writing (WI or Discovery course)	4
<b>Credits</b>		<b>17</b>

### Second Year

#### Fall

ANSC 511	Anatomy and Physiology	4
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BIOL 528	Applied Biostatistics I	4
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
Discovery course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
AAS 439	Fundamentals of Animal Health	2
ANSC 512	Anatomy and Physiology	4
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
ENGL 501	Introduction to Creative Nonfiction (WI and FPA DISC)	4
Elective		2
<b>Credits</b>		<b>17</b>
<b>Third Year</b>		
<b>Fall</b>		
ANSC 612	Genetics of Animals	4
ANSC 625	Animal Diseases	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
Discovery course or Elective		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
ANSC 609	Principles of Animal Nutrition	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
Discovery course		4
Elective		4
<b>Credits</b>		<b>17</b>
<b>Fourth Year</b>		
<b>Fall</b>		
PHYS 401	Introduction to Physics I	4
ANSC Repro Course or Discovery course		4
Discovery course or Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ANSC 602	Animal Rights and Societal Issues (WI)	4
PHYS 402	Introduction to Physics II	4
ANSC Repro Course or Discovery course		4
Capstone		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>133</b>

## Student Learning Outcomes

Students will gain a fundamental knowledge of the animal science related disciplines of:

### Anatomy & physiology

- Students will be able to recognize the complimentary relationship of anatomic structure and function and accurately describe the basic physiologic processes of mammalian organ systems.

### Nutrition

- Students will be able to identify, compare, contrast, and link different concepts regarding animal feeding and metabolism of carbohydrates, lipids, and protein in major livestock species and equine. - Genetics o Students will understand basic principles and applications of inheritance, the difference between qualitative and quantitative genetics, and be able to discuss the various disciplines within genetics.

### Disease

- Students will understand the modes of transmission of infectious diseases, recognize signs of illness associated with notable diseases in livestock species, and be able to appropriately apply general concepts of disease prevention and biosecurity to a variety of management situations.

### Reproduction

- Students will comprehend the mechanisms and endocrine control of gametogenesis, fertilization, pregnancy, and lactation and understand the variety of factors that can influence reproductive success.

### Animal Ethics

- Students will recognize the numerous ways that humans use, benefit from, and conflict with non-human animals and have an awareness of the variety of motivations and influences that drive these relationships.

Students will be able to develop critical questions that facilitate their independent investigation of topics related to animal science and demonstrate an integration of discipline specific knowledge through engaging in experiential education opportunities.

Students will be able to conduct literature searches using relevant databases to critically evaluate both academic and popular press resources pertinent to the animal sciences.

Students will be able to construct well-supported, effectively organized written arguments to express informed perspectives on animal science related topics. These writings will demonstrate professional style, appropriate mechanics (grammar, punctuation, and spelling), and the correct use of citations.

## Animal Science Major: Dairy Management Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/animal-science-major-dairy-management-option>

## Description

The ANSC: dairy management option is designed to provide students with solid training in areas important to the successful management of a dairy enterprise, for employment in related agribusinesses (e.g., pharmaceutical and feed industries), or for those wishing to pursue additional training leading to the M.S. or Ph.D. degree in dairy science or its related disciplines. Dairy management students receive training in areas such as nutrition, reproduction, diseases, genetics, lactation physiology, forages, agribusiness finance, personnel management, computer science, and public relations. The Fairchild Dairy Teaching

and Research Center and the Burley-DeMerritt Organic Dairy Research Farm are modern dairy facilities. The Fairchild Dairy houses 100 lactating Holstein cows plus a similar number of non-lactating animals. The Burley-DeMerritt Farm houses 50 lactating Jersey cows plus a small number of non-lactating animals. For additional information and answers to questions regarding the option in dairy management, email Dr. Peter Erickson.

Requirements

Major Requirements

Code	Title	Credits
Foundation Courses		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
BIOL 528	Applied Biostatistics I	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
Select from the following:		
BMCB 501 or BMCB 658 & BMCB 659	Biological Chemistry General Biochemistry and General Biochemistry Lab	4-5
Requirements for All Animal Science/Dairy Management Option Majors		
AAS 425	Introduction to Dairy Herd Management	4
AAS 439	Fundamentals of Animal Health	2
ANSC 406	Careers in Animal Science	1
ANSC 511	Anatomy and Physiology	4
ANSC 512	Anatomy and Physiology	4
ANSC 543	Technical Writing in Animal Sciences (or equivalent) <sup>1</sup>	2
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Animals	4
Total Credits		54-55

<sup>1</sup> ENGL 501 Introduction to Creative Nonfiction, ENGL 502 Professional and Technical Writing, ENGL 503 Persuasive Writing or ENGL 419 How to Read Anything (WI)

Students are responsible for the completion of the animal science foundation courses and the requirements for all animal science majors (both lists of courses above).

Students interested in graduate school should take two semesters of Organic Chemistry and one semester of Biochemistry.

Animal Science: Dairy Management Option B.S. students must also complete:

Code	Title	Credits
AAS 423	Dairy Selection	2
AAS 432	Introduction to Forage and Grassland Management	3
ANSC 602	Animal Rights and Societal Issues	4
ANSC 627	Animal Health Applications	4
ANSC 650	Dairy Industry Travel Course	1
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM) (two-semester course)	4
ANSC 710	Dairy Nutrition	4
ANSC 715 or ANSC 724	Physiology of Lactation Reproductive Management and Artificial Insemination	4
ANSC 727	Advanced Dairy Management I	4
ANSC 728	Advanced Dairy Management II (will also fulfill the Capstone requirement)	4
EREC 411	Environmental and Resource Economics Perspectives	4
Total Credits		38

GPA Requirements for All Students in Animal Science

Students will be required to earn a C- or better in the foundation courses and all required courses for the animal science major to receive credit toward graduation. Students failing to do this will need to retake the course in order to receive credit.

Degree Plan

Sample Student Schedule by Semester: Dairy Management

Course	Title	Credits
First Year		
Fall		
AAS 425	Introduction to Dairy Herd Management	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 403	General Chemistry I	4
EREC 411 or ENGL 401	Environmental and Resource Economics Perspectives (SS DISC, ANSC elective) or First-Year Writing	4
Credits		16
Spring		
AAS 423	Dairy Selection (Little Royal)	2
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 404	General Chemistry II	4
Discovery Course		4
Elective		4
Credits		18
Second Year		
Fall		
AAS 432	Introduction to Forage and Grassland Management	3
ANSC 511	Anatomy and Physiology	4
BMS 503	General Microbiology	3
BIOL 528	Applied Biostatistics I	4
Discovery Course		4
Credits		18
Spring		
AAS 439	Fundamentals of Animal Health	2
ANSC 406	Careers in Animal Science	1
ANSC 512	Anatomy and Physiology	4
BMCB 501	Biological Chemistry	4
Discovery Course		4
Credits		15
Third Year		
Fall		
ANSC 543	Technical Writing in Animal Sciences <sup>1</sup>	2
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Animals	4
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
Credits		14



**Spring**

ANSC 602	Animal Rights and Societal Issues	4
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
ANSC 710	Dairy Nutrition	4
Discovery Course		4
Elective		2
<b>Credits</b>		<b>18</b>

**Fourth Year****Fall**

ANSC 727	Advanced Dairy Management I	4
ANSC Recommended Elective		4
ANSC Reproductive Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>

**Spring**

ANSC 650	Dairy Industry Travel Course (repeated)	1
ANSC 627	Animal Health Applications	4
ANSC 728	Advanced Dairy Management II (WI)	4
Discovery Course		4
<b>Credits</b>		<b>13</b>

**Total Credits** **128**

<sup>1</sup> ENGL 419, ENGL 501, ENGL 502 and ENGL 503 may be substituted.

## Student Learning Outcomes

Students will gain a fundamental knowledge of the animal science related disciplines of:

**Anatomy & physiology**

- Students will be able to recognize the complimentary relationship of anatomic structure and function and accurately describe the basic physiologic processes of mammalian organ systems.

**Nutrition**

- Students will be able to identify, compare, contrast, and link different concepts regarding animal feeding and metabolism of carbohydrates, lipids, and protein in major livestock species and equine. - Genetics  
o Students will understand basic principles and applications of inheritance, the difference between qualitative and quantitative genetics, and be able to discuss the various disciplines within genetics.

**Disease**

- Students will understand the modes of transmission of infectious diseases, recognize signs of illness associated with notable diseases in livestock species, and be able to appropriately apply general concepts of disease prevention and biosecurity to a variety of management situations.

**Reproduction**

- Students will comprehend the mechanisms and endocrine control of gametogenesis, fertilization, pregnancy, and lactation and understand the variety of factors that can influence reproductive success.

**Animal Ethics**

- Students will recognize the numerous ways that humans use, benefit from, and conflict with non-human animals and have an awareness of the variety of motivations and influences that drive these relationships.
- Students will be able to develop critical questions that facilitate their independent investigation of topics related to animal science and demonstrate an integration of discipline specific knowledge through engaging in experiential education opportunities.
- Students will be able to conduct literature searches using relevant databases to critically evaluate both academic and popular press resources pertinent to the animal sciences.
- Students will be able to construct well-supported, effectively organized written arguments to express informed perspectives on animal science related topics. These writings will demonstrate professional style, appropriate mechanics (grammar, punctuation, and spelling), and the correct use of citations.

## Animal Science Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/animal-science>

### Description

A minor in Animal Science consists of a minimum of 20 credits of Animal Science (ANSC) courses. No more than 7 credits may be taken in the Thompson School of Applied Science (AAS) and at the 400- level. Students must receive a minimum grade of C- in any course used for the minor. Students failing to do this will need to retake the course in order to receive credit. No courses taken on a pass (credit)/fail basis may count toward the minor. Students who transfer from other institutions may petition the animal science program faculty for course approval. No more than eight credits used to satisfy major requirements may be used for the minor.

Students wanting to declare a minor in animal science must meet with animal science minor coordinator as early as possible and no later than first semester of their junior year.

Students must complete a minor completion form during their final semester at UNH.

### Requirements

Code	Title	Credits
<b>Choose one of the following introductory courses:</b>		<b>4</b>
AAS 425	Introduction to Dairy Herd Management	4
ANSC 401	Animals and Society	4
ANSC 421	Introduction to Animal Science	4
<b>Choose one of the following experiential courses:</b>		<b>4-12</b>
ANSC 600	Field Experience	4
ANSC 603	Introduction to Livestock Management	4
ANSC 605	Poultry Production and Health Management	4
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM) <sup>1</sup>	4
ANSC 727	Advanced Dairy Management I <sup>1</sup>	4
ANSC 728	Advanced Dairy Management II <sup>1</sup>	4

Choose one of the following courses:		4-12
ANSC 510	Integration of Culture and Agriculture in Ireland: Past, Present, and Future	4
ANSC 511	Anatomy and Physiology	4
ANSC 512	Anatomy and Physiology	4
ANSC 543	Technical Writing in Animal Sciences	2
ANSC 602	Animal Rights and Societal Issues	4
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Animals	4
ANSC 625	Animal Diseases	4
ANSC 627	Animal Health Applications	4
ANSC 670	Exotic Companion Species Health and Management	4
ANSC 690	Livestock and Wildlife in Namibia: Challenges, Opportunities and Geography	4
ANSC 701	Physiology of Reproduction	4
ANSC 708	Ruminant Nutritional Physiology	3
ANSC 710	Dairy Nutrition	4
ANSC 715	Physiology of Lactation	4
ANSC 724	Reproductive Management and Artificial Insemination	4
ANSC 750	Collaborative Farm Design and Development	4
ANSC 795	Investigations	1-4

<sup>1</sup> Note that previous dairy course work is highly recommended for success in these upper level courses

## Dairy Management Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/dairy-management>

### Description

A minor in Dairy Management consists of 20 credits with C- or better and a 2.0 grade point average in subjects that the minor department approves. Courses taken on the pass/fail basis cannot be used for a minor. No more than 8 credits used to satisfy major requirements may be used for the minor.

### Requirements

Code	Title	Credits
<b>Required Courses</b>		<b>12</b>
AAS 425	Introduction to Dairy Herd Management	
ANSC 710	Dairy Nutrition	
ANSC 715	Physiology of Lactation	
<b>Select 8 credits from the following:</b>		<b>8</b>
AAS 423	Dairy Selection	
ANSC 650	Dairy Industry Travel Course	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM) (must be taken for 2 semesters)	
ANSC 728	Advanced Dairy Management II	

## Biochemistry, Molecular and Cellular Biology (BMCB)

The field of biochemistry, molecular and cellular biology (BMCB) encompasses a wide range of life sciences, from biophysics and biochemistry to applied biology and medicine. The B.S. in biochemistry, molecular and cellular biology is designed for students to gain a solid foundation in biology, chemistry, physics, and mathematics, along with advanced knowledge in molecular biology, biochemistry, cell biology, and genetics. BMCB students have plenty of exposure to cutting-edge techniques and frontier research topics through inquiry-based learning and hands-on research opportunities. The program offers research

opportunities with program faculty in the areas of structural biology, cell signaling pathways, cancer biology, gene regulation, neurobiology, cellular structure and function, proteomics, glycomics, and lipid metabolism. Graduates are "profession-ready" and well-prepared for entry-level positions in biomedical research or in the biotechnology and pharmaceutical industries, for graduate education, or for post-baccalaureate professional programs (e.g., medical school, veterinary school, dental school, etc.).

The curriculum provides most of the required and recommended courses for students seeking admission to graduate schools and to professional schools in medicine, dentistry, veterinary medicine, or pharmacy. Students obtaining a B.S. in BMCB enjoy excellent job prospects immediately upon graduation, due to high demand for skilled research technicians in biotech and pharmaceutical companies, government agencies, academic research laboratories, and medical diagnostic laboratories. Graduates also have knowledge and skills that are valuable in the fields of management, sales, marketing, regulatory affairs, technical writing, and science journalism. Students who major in BMCB can also use their training in conjunction with advanced degrees in law and business. With additional courses in education, the B.S. degree in BMCB also qualifies graduates to teach at the elementary, junior high, or high school levels.

Faculty participating in the BMCB major combine a passion for teaching and student advising with strong expertise and achievements in their research areas. BMCB faculty are committed to providing independent research experiences for undergraduate students, and most faculty have active and well-funded research programs utilizing state-of-the-art techniques and instruments. On-campus facilities that students can use to enhance their research experience include the Hubbard Center for Genome Studies, the University Instrumentation Center, and the Center of Integrated Biomedical and Bioengineering Research.

## Pre-Professional Health Programs

Students interested in postgraduate education in healthcare occupations (e.g., medical, dental, physician assistant, pharmacy, etc.) should visit the [UNH Pre-Professional Health Programs Advising Office](#) website or in person (Rudman Hall, Room G02). Students interested in veterinary medicine should consult the [Pre-Veterinary Medicine Program](#). While many of the prerequisite courses required by professional schools are also requirements of the BMCB major, students should consult with their faculty adviser to create a plan of study that best prepares them for pursuing a career in one of these health professions.

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences>

### Programs

- [Biochemistry, Molecular and Cellular Biology Major \(B.S.\)](#) (p. 281)
- [Biochemistry, Molecular and Cellular Biology Minor](#) (p. 283)

### Faculty

[BMCB affiliated faculty.](#)

# Biochemistry, Molecular and Cellular Biology Major (B.S.)

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/bs/biochemistry-molecular-cellular-biology-major>

## Description

The Biochemistry, Molecular & Cellular Biology (BMCB) major provides you with conceptual competence, analytical skills, and laboratory experiences to understand life at the molecular and cellular level. Your BMCB degree will prepare you for immediate employment as a research associate or for entry into graduate or professional programs in medicine, dentistry or other allied health professions, as well as other career tracks.

**The BMCB program offers advanced coursework and laboratories in diverse research areas of modern biology**

- Cancer biology
- Cell biology
- Cell culture & tissue engineering
- Endocrinology
- Molecular biology
- Pharmacology
- Physical biochemistry
- Protein structure, function & proteomics

**BMCB majors participate in experiential learning activities**

- Many courses have integrated laboratory experiences to foster inquiry-based learning and to train creative and critical thinkers
- Independent research experiences are available in faculty research laboratories
- Many courses provide exposure to cutting-edge techniques and instrumentation
- Job preparation can be enhanced by internships with regional biotechnology and pharmaceutical companies
- Summer undergraduate research fellowships at U.S. or international academic institutions combine travel with research opportunities outside UNH

**BMCB graduates have been successful in many careers**

- Research associates and laboratory technicians
  - Biotechnology and pharmaceutical companies
  - Government agencies
  - Forensics laboratories
  - Academic research laboratories
  - Hospitals
- Science journalists and technical writers
- Healthcare workers
- Pharmaceutical sales and marketing staff
- Regulatory agency staff
- Primary and secondary school educators (with additional coursework in education)

**BMCB graduates are well prepared for post-baccalaureate education**

- Masters and doctoral programs in a wide variety of disciplines
- Professional health programs
  - Medical
  - Dental
  - Pharmacy
  - Physician's Assistant and other allied health programs

**Note:** The BMCB major is designed so you can complete all of the prerequisite courses needed to seek admission to graduate schools or health professional schools in four years.

## Requirements

Students in the Biochemistry, Molecular and Cellular Biology (BMCB) major take eight Foundation courses, four Bioscience Core courses, five BMCB Core courses, one Laboratory Techniques course, and three Major Elective courses. One capstone experience, supervised and approved within the major, is required of all seniors. In addition, all other University academic requirements must be completed, including those for the [Discovery Program](#) and the [University Writing Requirement](#).

A grade of C-minus or better is required in Statistics and in all Bioscience Core, BMCB Core, Laboratory Techniques, and Major Elective courses.

Code	Title	Credits
<b>Foundation Core Courses</b>		
CHEM 403	General Chemistry I <sup>1</sup>	4
CHEM 404	General Chemistry II	4
CHEM 547 & CHEM 549	Organic Chemistry I and Organic Chemistry Laboratory <sup>2</sup>	5
CHEM 548 & CHEM 550	Organic Chemistry II and Organic Chemistry Laboratory <sup>2</sup>	5
MATH 424B	Calculus for Life Sciences <sup>3, 4</sup>	4
BIOL 528	Applied Biostatistics I <sup>4</sup>	4
PHYS 401	Introduction to Physics I <sup>5</sup>	4
PHYS 402	Introduction to Physics II <sup>5</sup>	4

<sup>1</sup> Fulfills Physical Science Discovery requirement

<sup>2</sup> CHEM 651/CHEM 653 & CHEM 652/CHEM 654 can be substituted for CHEM 547/CHEM 549 & CHEM 548/CHEM 550.

<sup>3</sup> Fulfills Quantitative Reasoning Discovery requirement

<sup>4</sup> MATH 425 and MATH 426 can be substituted for MATH 424B and BIOL 528

<sup>5</sup> PHYS 407 and PHYS 408 can be substituted for PHYS 401 and PHYS 402

### Bioscience Core Courses

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular <sup>6</sup>	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4

<sup>6</sup> BIOL 411 fulfills the Biological Science Discovery requirement, Discovery Laboratory requirement, and Discovery Inquiry requirement

### BMCB Core Courses

Code	Title	Credits
BMCB 401	Professional Perspectives in Biochemistry, Molecular and Cellular Biology	1
BMCB 605	Principles of Cell Biology	4
BMCB 751	Principles of Biochemistry	4

BMCB 752	Principles of Biochemistry	4
GEN 704	Genetics of Prokaryotic Microbes	4-5
or GEN 771	Molecular Genetics	

### Laboratory Techniques Courses (Pick one)

Code	Title	Credits
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
BMCB 755	Protein Biochemistry Laboratory	5
BMS 725	Cell Phenotyping and Tissue Engineering Laboratory	4

### BMCB Major Electives (Pick three)

A total of three unique major electives is required.

Code	Title	Credits
BMCB 750	Physical Biochemistry	3
BMCB 753	Cell Culture <sup>7</sup>	5
BMCB 754	Molecular Biology Research Methods <sup>7</sup>	5
BMCB 755	Protein Biochemistry Laboratory <sup>7</sup>	5
BMCB 760	Pharmacology	4
BMCB 763	Biochemistry of Cancer	4
BMCB 794	Protein Structure and Function	4
BMCB 795	Investigations in Molecular and Cellular Biology (4-credit minimum) <sup>8</sup>	1-4
BMCB 795W	Investigations in Molecular and Cellular Biology (4-credit minimum) <sup>8</sup>	1-4
BMCB 799	Senior Thesis (4-credit minimum) <sup>8</sup>	1-4
BMCB 799H	Honors Senior Thesis (4-credit minimum) <sup>8</sup>	1-4
ANSC 701	Physiology of Reproduction	4
ANSC 715	Physiology of Lactation	4
BIOL 706	Data Science with R for the Life Sciences	4
BMS 507 & BMS 508	Human Anatomy and Physiology I and Human Anatomy and Physiology II	8
BMS 702	Endocrinology	4
BMS 704	Pathologic Basis of Disease	4
BMS 705 & BMS 715	Immunology and Immunology Laboratory	5
BMS 706 & BMS 708	Virology and Virology Laboratory	5
BMS 718	Mammalian Physiology	4
BMS 725	Cell Phenotyping and Tissue Engineering Laboratory <sup>7</sup>	4
BMS 735	Molecular and Cellular Parasitology	4
CHEM 755	Advanced Organic Chemistry	3
GEN 704	Genetics of Prokaryotic Microbes <sup>7</sup>	5
GEN 705	Population Genetics <sup>9</sup>	3
GEN 706	Human Genetics	4
GEN 711	Genomics and Bioinformatics	4
GEN 713	Microbial Ecology and Evolution	4
GEN 715	Molecular Evolution	4
GEN 717	Molecular Microbiology	5
GEN 721	Comparative Genomics	4
GEN 771	Molecular Genetics <sup>7</sup>	4
NUTR 750	Nutritional Biochemistry	4
PSYC 731	Brain and Behavior	4
ZOOL 777	Neuroethology	4

<sup>7</sup> If course is used to fulfill BMCB Core or Laboratory Technique requirement, course cannot count as BMCB Major Elective.

<sup>8</sup> Choose no more than ONE of the following courses to fulfill a major elective: BMCB 795, BMCB 795W, BMCB 799, BMCB 799H

<sup>9</sup> Taking GEN 725 Population Genetics Lab is recommended, but not required.

### Approved BMCB Capstone Courses

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning

(e.g., honors thesis, mentored research project, or other special student activity). Students may take more than one capstone course. Capstone completion is never displayed on Degree Works; your advisor will certify capstone completion at the time of graduation. Students must have 90 credits or more when completing their capstone requirement. See your advisor for questions about capstones.

Code	Title	Credits
BMCB 750	Physical Biochemistry	3
BMCB 760	Pharmacology	4
BMCB 763	Biochemistry of Cancer	4
BMCB 794	Protein Structure and Function	4
BMCB 795	Investigations in Molecular and Cellular Biology (4-credit minimum)	1-4
BMCB 795W	Investigations in Molecular and Cellular Biology (4-credit minimum)	1-4
BMCB 799	Senior Thesis (4-credit minimum)	1-4
BMCB 799H	Honors Senior Thesis (4-credit minimum)	1-4
INCO 790	Advanced Research Experience (4-credit minimum)	1-4

For a Capstone experience not listed above, such as an internship, submit a [Capstone Approval form](#) prior to beginning the experience.

## Degree Plan

### SAMPLE Course Sequence for Biochemistry, Molecular, and Cellular Biology

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
BMCB 401	Professional Perspectives in Biochemistry, Molecular and Cellular Biology	1
ENGL 401	First-Year Writing	4
CHEM 403	General Chemistry I	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
CHEM 404	General Chemistry II	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
MATH 424B	Calculus for Life Sciences	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
CHEM 547 & CHEM 549	Organic Chemistry I and Organic Chemistry Laboratory	5
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BIOL 528	Applied Biostatistics I	4
PHYS 401	Introduction to Physics I	4
<b>Credits</b>		<b>18</b>
<b>Spring</b>		
CHEM 548 & CHEM 550	Organic Chemistry II and Organic Chemistry Laboratory	5
GEN 604	Principles of Genetics	4
PHYS 402	Introduction to Physics II	4

Discovery Course	4
<b>Credits</b>	<b>17</b>
<b>Third Year</b>	
<b>Fall</b>	
BMCB 605 Principles of Cell Biology	4
BMCB 751 Principles of Biochemistry	4
BMCB Core or Lab Techniques course	4-5
Discovery Course	4
<b>Credits</b>	<b>16-17</b>
<b>Spring</b>	
BMCB 752 Principles of Biochemistry	4
BMCB Core or Lab Techniques course	4-5
Discovery Course	4
Elective (any course)	4
<b>Credits</b>	<b>16-17</b>
<b>Fourth Year</b>	
<b>Fall</b>	
BMCB Major Elective (possible Capstone)	4
Discovery Course	4
BMCB Major Elective (any course)	4
Elective (any course)	4
<b>Credits</b>	<b>16</b>
<b>Spring</b>	
Elective (any course)	4-5
BMCB Major Elective	4
Elective (any course)	4
<b>Credits</b>	<b>12-13</b>
<b>Total Credits</b>	<b>128-131</b>

## Student Learning Outcomes

SLO: Core Knowledge in Biochemistry, Molecular Biology, and Cell Biology.

- Students will be able to explain the structure and function of macromolecules, including key functional groups, higher order structure and function of macromolecules, catalysis and enzyme kinetics.
- Students will be able to explain matter and energy conversion, including thermodynamics, catalysis, biological energy, ATP and its function in metabolism.
- Students will be able to explain cellular homeostasis, including major metabolic pathways for carbohydrates, lipids, proteins and nucleic acids, key regulatory steps in these pathways and the organization of metabolic enzymes.
- Students will be able to explain the flow of biological information, including detailed replication, transcription and translation processes in the context of homeostasis and development.

SLO: Quantitative Literacy, Inquiry & Analysis

- Students will be able to apply the scientific method to examine experimental evidence and draw informed conclusions.
- Students will be able to use graphs to represent scientific data.
- Students will be able to apply statistical methods to interpret scientific data.

SLO: Critical Thinking & Problem Solving

- Students will be able to use data to troubleshoot an unexpected outcome.
- Students will be able to apply core knowledge to critically interpret scientific data.

SLO: Written Communication

- Students will demonstrate written skills to communicate scientific knowledge and experimental data.

SLO: Oral Communication

- Students will be able to demonstrate oral presentation skills to communicate scientific knowledge and experimental data.

## Biochemistry, Molecular and Cellular Biology Minor

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/minor/biochemistry-molecular-cellular-biology>

### Description

Students who wish to develop focused competencies in biochemistry, molecular biology, and/or cell biology can complement their major academic program with a minor in biochemistry, molecular and cellular biology (BMCB).

### Requirements

Complete 20 credits from the courses listed below, with a grade of C-minus or better. A C average (2.00) is required in courses that the minor program approves.

No more than 8 credits used to satisfy major requirements may be used for the minor.

4 credits of BMCB 795 Investigations in Molecular and Cellular Biology may be used toward the minor.

Pass/fail courses may not be used for the minor.

It is the student's responsibility to complete a Certification of Completion of Minor form during their final semester at UNH.

Code	Title	Credits
BMCB 605	Principles of Cell Biology	4
BMCB 750	Physical Biochemistry	3
BMCB 751	Principles of Biochemistry	4
BMCB 752	Principles of Biochemistry	4
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
BMCB 755	Protein Biochemistry Laboratory	5
BMCB 760	Pharmacology	4
BMCB 763	Biochemistry of Cancer	4
BMCB 794	Protein Structure and Function	4
BMCB 795	Investigations in Molecular and Cellular Biology (4-credit maximum)	1-4
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 771	Molecular Genetics	4

## Biology

<https://colsa.unh.edu/biological-sciences>



Description

UNH's location and facilities provide unique opportunities for the study of biology due to its access to the seacoast, the [Shoals Marine Laboratory](#), the lakes region of NH, and White Mountain National Forest. The Biology faculty strongly believe in a hands-on approach to teaching and active involvement of undergraduates in research. We have a wide range of faculty expertise, including freshwater, estuarine, ecology, physiology, neurobiology, and behavior. A Biology degree provides the background for a variety of professional positions in the public and private sectors, and provides an excellent foundation for students seeking to apply for graduate, medical, or veterinary school.

Programs

- [Biology Major \(B.S.\)](#) (p. 284)
- [Biology Minor](#) (p. 286)
- [Plant Biology Minor](#) (p. 287)

Faculty

<https://colsa.unh.edu/biological-sciences/people>

Biology Major (B.S.)

<https://colsa.unh.edu/biological-sciences/program/bs/biology-major>

Description

Biology is one of the most popular science majors since it provides a broad background in the biological sciences while allowing flexibility and specialization within the major. It integrates theoretical and practical (hands-on laboratory and field work) courses in different aspects of the biology of multicellular life. It encompasses the study of structural and functional relationships of living organisms at the molecular, cellular, and organismal level, the interactions of living systems with the environment and with each other, and the evolutionary relationships of life. Our goal is to create an environment for those with a scholarly interest in the biological sciences, and to extend their understanding, awareness, and appreciation of the diversity inherent in the biological sciences. Our major is aimed at promoting an excellent education in biological sciences by involving undergraduate students in a strong interaction with faculty both in the classroom and in research laboratories.

The biology major prepares students for post graduate degrees in the biological and medical fields, and for job opportunities in industry (environmental, biomedical, pharmaceutical, and biotechnological) and governmental research, and secondary school teaching. Completion of the four-year undergraduate program plus a fifth-year internship will be necessary for biology teaching certification. Students who plan to enter medical, dental, or related professional schools are advised to confer with their faculty adviser to work the requirements for these programs into their academic majors.

Core courses in the biology major are from departments that contribute to the biological sciences community at UNH. The core curriculum consists of introductory and upper-level science courses plus seven

additional courses in the biological sciences; three of these must be selected from course lists in three broad categories.

While students are advised to declare the biology major as incoming first-year students to assure adequate program planning, transfer into this major at a later stage is also possible. Several of the other biological science majors share the same biology core curriculum. For the first to two years, it is quite easy to change to or from these other majors.

Requirements

Biology Core Curriculum

The biology courses in the core curriculum constitute an integrated sequence that train students in the basic skills and concepts of knowledge inherent to the biological sciences. The biology core allows a student to obtain a broad background in biology, and in the related physical sciences and math that provide a foundation for success in understanding biological principals.

Code	Title	Credits
Core Curriculum Courses		
BIOL 400	Professional Perspectives on Biology <sup>1</sup>	1
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 541	Ecology	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	8
MATH 424B or MATH 425	Calculus for Life Sciences Calculus I	4
BIOL 528	Applied Biostatistics I	4
PHYS 401 & PHYS 402	Introduction to Physics I and Introduction to Physics II	8
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory <sup>2</sup>	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BIOL 780	Capstone Companion Course	1
Total Credits		57

Biology Electives

In addition to the biology core curriculum, students must complete seven biology elective courses. One course must be taken from each of the three categories/disciplines; the other four electives can be chosen from the category lists or can be any other biological sciences course with approval of the student's adviser. At least two of these courses must have labs. All courses must be 500-level or above. There must be one animal-identified course (A) and one plant/fungal/algae course (FP). One capstone experience is required of all seniors; see subsequent section on capstones for detailed requirements. Corequisite lecture and lab courses count as one course.

Code	Title	Credits
Category 1: Form and Function (Morphology, Anatomy and Physiology)		
ANSC 511	Anatomy and Physiology (A)	4
ANSC 512	Anatomy and Physiology (A)	4
ANSC 701	Physiology of Reproduction (A)	4
BIOL 701	Plant Physiology (FP)	4
BIOL #702	Lab Techniques in Plant Physiology and Biochemistry (FP)	4
BIOL 709	Plant Stress Physiology (FP)	3
BMS 507	Human Anatomy and Physiology I (A)	4
BMS 508	Human Anatomy and Physiology II (A)	4

BMS 702	Endocrinology (A)	4
BMS 718	Mammalian Physiology (A)	4
MEFB 628	Marine Invertebrate Evolution and Ecology (A)	5
NR #625	Physiological Ecology	4
ZOOL 518	Comparative Morphology and Biology of Vertebrates (A)	4
ZOOL 625	Principles of Animal Physiology (A, ZOOL 626 Lab optional)	3
MEFB 773	Physiology of Fishes (A)	4
ZOOL 777	Neuroethology (A, C)	4
MEFB 754	Anatomy and Function of Marine Vertebrates (SML, A)	4
<b>Category 2: Genetics/Development (including molecular biology and bioinformatics)</b>		
ANSC 612	Genetics of Animals (A)	4
BMCB 605	Principles of Cell Biology	4
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 705	Population Genetics (GEN 725 lab optional)	3
GEN 706	Human Genetics (A)	4
GEN 711	Genomics and Bioinformatics	4
GEN 721	Comparative Genomics	4
GEN 771	Molecular Genetics	4
GEN 772	Evolutionary Genetics of Plants (FP)	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology (FP)	4
NSB 705	Molecular and Cellular Neurobiology (A, C)	4
ZOOL 529	Developmental Biology (A)	4
ZOOL 736	Genes and Behavior (A, C)	4
<b>Category 3: Evolution, Ecology and Biodiversity (including population biology)</b>		
BIOL 510	Mushrooms, Molds, and Mildews: Introduction to the Fungal Kingdom (FP)	4
BIOL #550	Mushroom Madness (FP)	3
BIOL 566	Systematic Botany (FP)	4
BIOL 601	Biology and Ecology of Plants (FP)	4
BIOL 704	Plant-Microbe Interactions (FP)	3
BIOL 720	Plant-Animal Interactions (FP, C)	4
BIOL 752	New England Mushrooms: a Field and Lab Exploration (FP)	4
GEN 715	Molecular Evolution	4
MEFB 503	Introduction to Marine Biology	4
MEFB 510	Field Ornithology (SML, A)	4
MEFB 530	Evolution and Marine Diversity (SML)	4
MEFB 625	Introduction to Marine Botany (FP)	5
MEFB #630	Biodiversity and Biology of Marine Invertebrates (SML, A)	4
MEFB 674	Ecology and Marine Environment (SML)	4
MEFB 714	Field Animal Behavior (SML, A)	4
MEFB 717	Lake Ecology	4
MEFB 725	Marine Ecology	4
MEFB 747	Aquatic Plants in Restoration/Management (FP, C)	4
NR 506	Forest Entomology (A)	4
MEFB 772	Fisheries Biology: Conservation and Management (A)	4
NR 642	Introduction to Biogeography	4
NR 660	Ecology and Biogeography of New Zealand	5
NR 663	Applied Directed Research in New Zealand	4
NR 712	Mammalogy (A)	4
NR 713	Quantitative Ecology	4
NR 765	Community Ecology	4
SAFS 651	Plant Pathology (FP)	4
ZOOL 542	Ornithology (A)	4
ZOOL 555	Introduction to Entomology (A)	4
ZOOL 566	Herpetology (A)	4
ZOOL 613	Animal Behavior (A)	5
ZOOL 690	Evolution	4
ZOOL 708	Stream Ecology	4
ZOOL 710	Sharks and Bony Fishes (A)	4
ZOOL 726	Conservation Behavior (A)	4
ZOOL 733	Behavioral Ecology (A, C)	4
<b>Other Elective Options</b>		
BIOL 600	Field Experience <sup>3</sup>	1-4
BIOL #633	Data Analysis for Life Science	4
BIOL 675	Medical Botany (FP)	4
BIOL 695	Biology Teaching Practices <sup>3</sup>	1-4
BIOL 700	Current and Controversial Issues in Biology (C)	4
BIOL 711	Experimental Design & Analysis	4
BIOL 770	Senior Seminar in Biology (C)	2

BIOL 795	Independent Investigations in Biology <sup>3</sup>	1-4
BIOL 799	Honors Senior Thesis <sup>3</sup>	2-8
BMCB 753	Cell Culture	5
BMCB 760	Pharmacology	4
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 655	Human and Animal Parasites (A)	3
BMS 703	Infectious Disease and Health	4
BMS 706 & BMS 708	Virology and Virology Laboratory	5
BMS 705	Immunology (BMS 715 optional lab)	3
BMS 711	Toxicology	4
GEN 717	Molecular Microbiology	5
HMP 501	Epidemiology and Community Medicine	4
MEFB 631	Ecotoxicology and Quantitative Reasoning	4
MEFB 741	Sharks: Biology and Conservation (A)	4
MEFB 755	Biological Oceanography (C)	3
NR 508	Communicating Science	4
NSB 727	Animal Communication (A, C)	4
NSB #728	Research Methods in Animal Behavior (A)	4
PSYC 531	Psychobiology	4
PSYC 716	Cognitive Neuroscience	4
PSYC 731	Brain and Behavior	4
PSYC 733	Drugs and Behavior	4
PSYC 737	Behavioral Medicine	4
SAFS 651	Plant Pathology (P)	4
TECH 797	Undergraduate Ocean Research Project (A, C) <sup>4</sup>	2
ZOOL 610	Principles of Aquaculture	4

<sup>1</sup> BIOL 400 Professional Perspectives on Biology is required only for first-year biology majors.

<sup>2</sup> Students exploring pre-health professions should take a full year of Organic Chemistry (CHEM 651/CHEM 653 and CHEM 652/CHEM 654).

<sup>3</sup> A 600, 695, 795, or 799 experience may substitute for one elective with academic advisor approval, but only if taken for at least four credits. These four credits may be spread over multiple semesters if they are consecutive and with the same faculty mentor.

<sup>4</sup> This class requires enrollment in both fall and spring sections, 2 credits/semester for a total of 4 credits.

A 600, 695, 795, or 799 experience may substitute for one elective in any category with academic advisor approval, but only if taken for at least four credits. These four credits may be spread over multiple semesters if they are consecutive and with the same faculty mentor.

Note: It is strongly recommended that students participate in an exchange semester at another university, or in a field-oriented program or internship. There are many exchange opportunities available in which a full semester of credits toward the major may be earned. It is further recommended that students explore possibilities of one or more semesters of independent investigation (research projects). For details, students should contact their adviser. Financial support is available for most of these programs. In addition, students can explore the courses at the Shoals Marine Laboratory (SML), which provides an excellent setting for several "field-oriented" courses during the summer. Often there is financial support available for the SML programs. (See the SML website at <https://marine.unh.edu/SML> or the Cornell website at <http://www.shoalsmarinelaboratory.org> for details.)

### Academic Requirements

To receive the B.S. degree in biology, students must complete 128 credit hours with at least a 2.0 cumulative grade-point average for completion of the degree. All UNH Discovery Program requirements, biology core curriculum requirements, plus seven additional courses from the biological sciences, and a capstone experience (see below). A

minimum grade of C- is required in all biological science courses that are counted toward the requirements for a degree in biology. Students who expect to compete successfully for post-baccalaureate programs should attain a cumulative GPA of 3.0 or higher by the end of the sophomore year and maintain it at that level.

## Capstone Experience

As part of the University of New Hampshire's Discovery Program requirements, all students must complete a capstone experience during their senior year (after earning at least 90 credits). **The capstone experience for students majoring in Biology consists of BOTH (1) an approved individual experience AND (2) the successful completion of the BIOL 780 Capstone Companion Course.** Students will not be approved for graduation until capstone certification has been granted.

### 1) The individual experience

The individual experience may be satisfied through various forms of experiential learning (e.g., Honors thesis, mentored research project, internship) or a course denoted with a "(C)" in the courses listed above. The individual experience must fulfill **at least one** of the University's capstone criteria:

- synthesizes and applies disciplinary knowledge and skills
- fosters reflection on undergraduate learning and experience
- demonstrates emerging professional competencies
- applies, analyzes, and/or interprets research, data, or artistic expression
- explores areas of interest based on the integration of the prior learning

**Before beginning any capstone individual experience, students MUST SUBMIT A COMPLETED CAPSTONE APPROVAL FORM to their Program Coordinator.**

Students can obtain this form on the Department's Capstone page or from their Program Coordinator. Here they will describe their proposed individual experience and how it fulfills at least one of the University's capstone criteria listed above. If the student is selecting a "C" course for their individual experience, they should obtain the course syllabus from the instructor for information about the course's content and learning objectives.

### 2) Enrollment in BIOL 780

Students will also be required to enroll in BIOL 780 Capstone Companion Course (1 cr.) **during the semester of their individual experience.** BIOL 780 is offered every Fall and Spring semester.

- If the individual experience is a two-semester thesis, BIOL 780 should be taken during the second semester.
- If the individual experience occurs during the summer (e.g., internship), BIOL 780 should be taken during the Fall semester that immediately follows.
- Note: Because BIOL 780 is not offered during the summer, students cannot complete their individual experience during the summer *and graduate during that same August*. Summer experiences could only be used as individual capstone experiences if completed the summer before the student's senior year.

## Student Learning Outcomes

- Students demonstrate that they understand basic principles of biology. Demonstrate a fundamental understanding of the relationships between structure, function, and process at the level of molecular, cellular, and organismal levels. Describe the principles and mechanisms of organismal evolution and genetics as the central unifying and explanatory concepts of biology. Explain the relationship between organisms and their physical, chemical, and biological environments. Explain what biodiversity is, its value in ecosystems, and the need for its conservation.
- Students demonstrate that they can undertake scientifically valid methods of inquiry. Demonstrate proficiency in searching, reading, and understanding scientific literature. Apply the scientific process, including the framework of initiation, designing, and conducting experiments, and the appropriate analysis and discussion based on the data gathered. Exhibit technical skills in the use of appropriate laboratory and field techniques commonly used in biology.
- Students demonstrate that they can think critically and analytically. Demonstrate an ability to critically and objectively evaluate data, develop hypotheses, interpret and or design biological experiments and studies.
- Students demonstrate that they can communicate effectively. Communicate scientific material effectively in written and oral formats.
- Students practice science responsibly and ethically, and acknowledge the influence of cultural and historical biases in the sciences.

## Biology Minor

<https://colsa.unh.edu/biological-sciences/program/minor/biology>

### Description

The Biology Minor is designed to give students a broad background in basic biological understanding of life processes, while providing experiences in ecology, evolution, and organismal diversity. Five courses are required for completion of the minor, of which no more than two can overlap with major requirements.

### Requirements

Code	Title	Credits
Required Courses		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 541	Ecology (both are writing intensive)	4
or ZOOL 690	Evolution	
Select two courses in organismal surveys from the below: <sup>1</sup>		
Animal Survey: Select one course		4-5
MEFB 628	Marine Invertebrate Evolution and Ecology	
ZOOL 542	Ornithology	
ZOOL 710	Sharks and Bony Fishes	
NR 712	Mammalogy	
Plant or Fungus Survey: Select one course		4
Plant Survey Course:		
BIOL 566	Systematic Botany	
Fungus Survey Course:		
BIOL 752	New England Mushrooms: a Field and Lab Exploration	

<sup>1</sup> One course must focus on animals, and the other on plants or fungi.

## Plant Biology Minor

<https://colsa.unh.edu/biological-sciences/program/minor/plant-biology>

### Description

The Minor in Plant Biology is designed to provide a broad introduction to plant biology and why plants are important to humans, while providing a framework for understanding plant diversity, function, and behavior. Two electives allow the opportunity to choose a specialized area of plant biology that is of interest. Five courses are required for completion of the minor, of which no more than two can overlap with major requirements.

### Requirements

Code	Title	Credits
<b>Required courses:</b>		
BIOL 409	Green Life: Introducing the Botanical Sciences	4
BIOL 566	Systematic Botany	4
<b>Choose one of the following 400-level courses that focus on plant value to humans:</b>		
BIOL 408	Plants and Civilization	4
or SAFS 421	Introductory Horticulture	
<b>Choose two additional plant-based courses at the 500 level or higher.</b>		
BIOL 601	Biology and Ecology of Plants	4
BIOL 675	Medical Botany	4
BIOL 701	Plant Physiology	4
BIOL #702	Lab Techniques in Plant Physiology and Biochemistry	4
BIOL 704	Plant-Microbe Interactions	3
BIOL 709	Plant Stress Physiology	3
BIOL 720	Plant-Animal Interactions	4
BIOL 795	Independent Investigations in Biology (If taken for 4 credits)	1-4
GEN 772	Evolutionary Genetics of Plants	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4
MEFB 500	Coastal Habitat Field Research Methods	4
MEFB 625	Introduction to Marine Botany	5
MEFB 747	Aquatic Plants in Restoration/Management	4
MEFB 795	Independent Investigations in Marine, Estuarine, and Freshwater Biology (If taken for 4 credits)	1-4
SAFS 651	Plant Pathology	4

The minimum acceptable grade in these courses is a C-; the average grade for these courses must be a C or better.

## Biomedical Science (BMS)

The Biomedical Science (BMS) major focuses on fundamental concepts in biological sciences as they apply to human and animal health, medicine, and disease. Students attracted to Biomedical Science have a profound interest in human and animal physiology and diseases. The BMS major encompasses three options: Medical Laboratory Sciences (MLS), Medical Microbiology (MM), and Medical and Veterinary Sciences (MVS). Each of the options in the BMS major is based on foundational and advanced courses in chemistry and the biological sciences. BMS:MLS focuses on the laboratory diagnosis of human disease, BMS:MM focuses on infectious agents and host response, and BMS:MVS focuses on health and manifestations of disease in animals, including humans.

Faculty in the BMS major have expertise in many areas of biomedical science, including physiology, cell biology, infectious diseases, veterinary

pathology, and laboratory medicine. The biomedical science faculty strongly encourage students to complement their academic courses with experiential learning opportunities through internships, field experience, and independent research projects conducted with biomedical research faculty. On-campus facilities include state-of-the-art research and teaching laboratories and the [New Hampshire Veterinary Diagnostic Laboratory](#) (NHVDL) that provide unique learning opportunities for students interested in veterinary medicine, pathobiology, and laboratory diagnostics.

There is high demand for skilled biomedical scientists as research assistants/technicians in biotechnology companies, pharmaceutical companies, government agencies, forensics, academic research laboratories, and hospitals, so BMS majors enjoy excellent job prospects upon graduation. The BMS curriculum also provides graduates with the required and recommended courses for admission to most graduate schools and professional schools of medicine, veterinary medicine, dentistry, public health, and pharmacy, as well as to physician assistant and pathologist's assistant programs. BMS graduates have a knowledge base that is valuable in the fields of sales, marketing, regulatory affairs, technical writing, patent law, and scientific journalism. With additional courses in education, the B.S. in biomedical science also qualifies graduates to teach at the elementary, junior high, or high school levels.

## Pre-Professional Health Programs

Students interested in postgraduate careers in the health care professions (e.g., physician, dentist, physician assistant, pharmacist, etc.) should visit the [Pre-Professional Health Programs Advising Office](#). Students interested in veterinary medicine should consult the [Pre-Veterinary Medicine Program](#). While many of the prerequisite courses required by professional schools are also requirements of the biomedical science major, students should consult with their faculty adviser to create a plan of study that best prepares them for pursuing a career in one of these human and animal health professions.

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences>

### Programs

- [Biomedical Science Major: Medical and Veterinary Sciences Option \(B.S.\)](#) (p. 287)
- [Biomedical Science Major: Medical Laboratory Sciences Option \(B.S.\)](#) (p. 291)
- [Biomedical Science Major: Medical Microbiology Option \(B.S.\)](#) (p. 294)
- [Biomedical Science Minor](#) (p. 296)

### Faculty

[Biomedical Science affiliated faculty.](#)

## Biomedical Science Major: Medical and Veterinary Sciences Option (B.S.)

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/bs/biomedical-science-major-medical-veterinary>

## Description

The **Biomedical Science: Medical and Veterinary Sciences (BMS:MVS)** program is informed by the principles of the [One Health Initiative](#), which unites human and veterinary medicine. This rigorous academic program meets requirements for entry into veterinary school, medical school, and graduate school in the area of biomedical science or for a career as a research scientist in either the biotechnology/pharmaceutical sector or government and academic research labs.

**You will select elective courses from three major areas of study:**

- biomedical systems
- pathobiology and disease
- health and environmental issues

**As a BMS:MVS major, you have many opportunities for career-relevant learning experiences including:**

- [NH Veterinary Diagnostic Laboratory](#) located on the UNH campus
- [UNH Agricultural Experiment Station](#) farm facilities
- independent research in laboratories of UNH biomedical science faculty
- experience in local hospitals
- internships in biotechnology and pharmaceutical companies in the Greater Boston area

**BMS:MVS graduates are prepared for post-baccalaureate education in:**

- **professional health programs**
  - [veterinary school](#)
  - [medical school](#)
  - allied health programs ([physician assistant](#) or [pathologist's assistant](#))
- **graduate programs**
  - biomedical science
  - pathology
  - public health
  - nursing

**Careers of previous Medical & Veterinary Sciences graduates include:**

- **research scientists/laboratory technicians**
  - biotechnology and pharmaceutical companies
  - academic biomedical research programs
  - forensic laboratories
  - hospitals/health clinics
- **state and federal government employment**
  - public health laboratories
  - health inspector (e.g., Food and Drug Administration)

## Requirements

Students in the Medical and Veterinary Sciences (MVS) option take eight Foundation courses, six Bioscience Core courses, three BMS-MVS Core courses, and six BMS-MVS Major Elective courses. One capstone experience, supervised and approved within the major, is required of all seniors. In addition, all other university academic requirements must be

completed, including those for the [Discovery Program](#) and the [University Writing Requirement](#).

A grade of C-minus or above is required in all courses within the major, which includes Foundation, Bioscience Core, and BMS-MVS Core courses, and BMS-MVS Major Electives.

Students applying to health profession schools need a full year of English. ENGL 415C, ENGL 419, ENGL 501, ENGL 502 or ENGL 503 should be taken in addition to ENGL 401. For further details, visit the [Pre-Professional Health Program Advising Office](#) on-line or in person (Rudman Hall, Room G02).

### Foundation Courses

Code	Title	Credits
CHEM 403	General Chemistry I <sup>1</sup>	4
CHEM 404	General Chemistry II	4
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
MATH 424B	Calculus for Life Sciences <sup>2</sup>	4
BIOL 528	Applied Biostatistics I	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4

<sup>1</sup> CHEM 403 fulfills the Physical Science Discovery requirement

<sup>2</sup> MATH 424B fulfills the Quantitative Reasoning Discovery requirement

### Bioscience Core Courses

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular <sup>3</sup>	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
BMCB 605	Principles of Cell Biology	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5

<sup>3</sup> BIOL 411 fulfills the Biological Science Discovery requirement, Discovery Laboratory requirement, and the Discovery Inquiry requirement.

### BMS-MVS Core Courses

Code	Title	Credits
BMS 401	Professional Perspectives in Biomedical Sciences	1
BMS 507 or ANSC 511	Human Anatomy and Physiology I Anatomy and Physiology	4
BMS 508 or ANSC 512	Human Anatomy and Physiology II Anatomy and Physiology	4

### BMS-MVS Major Elective Courses

A total of six **unique** major elective courses are required. Two courses must be taken in each of the following subject areas: biomedical systems, pathobiology and disease, and health and environmental issues.

### Biomedical Systems Electives

#### Recommended Courses

Code	Title	Credits
BMS 702	Endocrinology	4
BMS 718	Mammalian Physiology	4



BMCB 760	Pharmacology	4
GEN 717	Molecular Microbiology	5
NUTR 750	Nutritional Biochemistry	4

### Other Appropriate Courses

Code	Title	Credits
BMS 623	Histology: Microscopic Cellular Structure and Function	4
BMS 740	Human Microbiome	4
ANSC 605	Poultry Production and Health Management	4
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Animals	4
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
ANSC 701	Physiology of Reproduction	4
ANSC 708	Ruminant Nutritional Physiology	3
ANSC 710	Dairy Nutrition	4
ANSC 715	Physiology of Lactation	4
ANSC 724	Reproductive Management and Artificial Insemination	4
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
BMCB 794	Protein Structure and Function	4
CHE 762	Biomedical Engineering	4
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 705	Population Genetics <sup>4</sup>	3
GEN 706	Human Genetics	4
GEN 711	Genomics and Bioinformatics	4
GEN 713	Microbial Ecology and Evolution	4
GEN 715	Molecular Evolution	4
GEN 721	Comparative Genomics	4
GEN 771	Molecular Genetics	4
KIN 684 & KIN 685	Emergency Medical Care: Emergency Medical Technician (EMT) and Emergency Medical Care: EMT Lab	5
ZOOL 613	Animal Behavior	5
ZOOL 777	Neuroethology (the Neural Basis of Animal Behavior)	4

<sup>4</sup> Enrolling in GEN 725 concurrently is encouraged but not required

### Pathobiology and Disease Electives

#### Recommended Courses

Code	Title	Credits
BMS 602	Pathogenic Microbiology	3
BMS 655	Human and Animal Parasites	3
BMS 704	Pathologic Basis of Disease	4
BMS 705	Immunology	3
BMS 711	Toxicology	4
BMS 719	Host-Microbe Interactions	4
BMCB 763	Biochemistry of Cancer	4

### Other Appropriate Courses

Code	Title	Credits
BMS 644	Clinical Hematology	3
BMS 650	Molecular Diagnostics	4
BMS 656	Immunohematology	3
BMS 658	Medical Biochemistry	3
BMS 703	Infectious Disease and Health	4
BMS 706	Virology	3
BMS 712	Experiences in Applied Veterinary Diagnostics (4-credit minimum)	2
BMS 720	Mycology, Parasitology, and Virology	3
BMS 735	Molecular and Cellular Parasitology	4
ANSC 627	Animal Health Applications	4
NUTR 773	Clinical Nutrition	4

### Health and Environmental Issues Electives

#### Recommended Courses

Code	Title	Credits
BMS #716	Public Health: Food- and Water-borne Diseases	4
BMS 730	Ethical Issues in Biomedical Science	4
ANSC 602	Animal Rights and Societal Issues	4
ANSC 750	Collaborative Farm Design and Development	4
ANTH 610	Medical Anthropology: Illness and Healing	4
BIOL 541	Ecology	4
HMP 401	United States Health Care Systems <sup>5</sup>	4
HMP 501	Epidemiology and Community Medicine	4
NR 435	Contemporary Conservation Issues and Environmental Awareness <sup>5</sup>	4
SOC 635W	Medical Sociology	4

<sup>5</sup> Only one 400-level course may be taken to fulfill a Major Elective requirement.

### Other Appropriate Courses

Code	Title	Credits
ANTH 685	Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa	4
BIOL 706	Data Science with R for the Life Sciences	4
CLAS 525	Greek and Latin Origins of Medical Terms	4
HMP 642	Health Economics	4
HMP 669	Human Behavior and the Public Health	4
NR 650	Principles of Conservation Biology	4
PSYC 531	Psychobiology	4
PSYC 737	Behavioral Medicine	4

### BMS: MVS Capstone

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). Students may take more than one capstone course. Capstone completion is never displayed on Degree Works; your advisor will certify capstone completion at the time of graduation. Students must have 90 credits or more when completing their capstone requirement. See your advisor for questions about capstones.

### Approved BMS:MVS Capstone Courses

Code	Title	Credits
BMS 635	Preceptorial in Prehospital Care (4-credit minimum)	2
BMS 702	Endocrinology	4
BMS 704	Pathologic Basis of Disease	4
BMS 711	Toxicology	4
BMS 712	Experiences in Applied Veterinary Diagnostics (4-credit minimum)	2
BMS 718	Mammalian Physiology	4
BMS 719	Host-Microbe Interactions	4
BMS 740	Human Microbiome	4
BMS 795	Investigations in Biomedical Science (4-credit minimum)	1-8
BMS 795W	Investigations in Biomedical Science (4-credit minimum)	1-8
BMS 799	Senior Thesis (4-credit minimum)	1-4
BMS 799H	Senior Honors Thesis (4-credit minimum)	1-4
BMCB 760	Pharmacology	4
BMCB 763	Biochemistry of Cancer	4
ANSC 605	Poultry Production and Health Management	4
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
BMCB 753	Cell Culture	5
INCO 790	Advanced Research Experience (4-credit minimum)	1-4
NUTR 750	Nutritional Biochemistry	4
Other 795 Investigations course in the biological sciences (4-credit minimum)		

For a Capstone experience not listed above, such as an internship, submit a [Capstone Experience Approval form](#) prior to beginning the experience.

## Degree Plan

### SAMPLE Course Sequence for Medical and Veterinary Sciences. Several courses are flexible in order of completion, as indicated by footnotes.

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
BMS 401	Professional Perspectives in Biomedical Sciences	1
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing	4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 404	General Chemistry II	4
MATH 424B	Calculus for Life Sciences	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
BMS 507 or ANSC 511	Human Anatomy and Physiology I or Anatomy and Physiology	4
BMCB 605	Principles of Cell Biology <sup>1</sup>	4
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
BMS 508 or ANSC 512	Human Anatomy and Physiology II or Anatomy and Physiology	4
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory <sup>1</sup>	5
Discovery Course		4
<b>Credits</b>		<b>18</b>
<b>Third Year</b>		
<b>Fall</b>		
BIOL 528	Applied Biostatistics I	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
PHYS 401	Introduction to Physics I	4
GEN 604	Principles of Genetics <sup>1</sup>	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
PHYS 402	Introduction to Physics II	4
Major Elective		4
Major Elective		4

Discovery Course	4
<b>Credits</b>	<b>16</b>
<b>Fourth Year</b>	
<b>Fall</b>	
Major Elective (Capstone)	4
Major Elective	4
Discovery Course	4
Elective (any course)	4
<b>Credits</b>	<b>16</b>
<b>Spring</b>	
Major Elective	4
Major Elective	4
Elective (any course)	4
<b>Credits</b>	<b>12</b>
<b>Total Credits</b>	<b>129</b>

<sup>1</sup> BMCB 605, BMS 503 & BMS 504, and GEN 604 and may be taken in other semesters, but all should be completed by the end of Fall semester in junior year.

## Student Learning Outcomes

### SLO: Core Knowledge

Students will demonstrate an understanding of core knowledge in biochemistry, molecular biology, cell biology, genetics & biomedical sciences.

### Biomedical Science: Medical & Veterinary Science option

- Students will be able to list the major organ systems in mammals and describe their basic structure and function.
- Students will be able to describe the differences between Gram-negative and Gram-positive bacteria.
- Students will be able to describe the structure and function of the major cellular organelles.
- Students will understand the principles of Mendelian genetics.
- Students will understand the pathogenesis of disease and effects on the major organ systems.
- Students will be able to describe the inter-relationships between health and disease, society, and the environment.

### SLO: Quantitative Literacy, Inquiry & Analysis

- Students will be able to apply the scientific method to examine experimental evidence and draw informed conclusions.
- Students will be able to use graphs to represent scientific data.
- Students will be able to apply statistical methods to interpret scientific data.

### SLO: Critical Thinking & Problem Solving

- Students will be able to use data to troubleshoot an unexpected outcome.
- Students will be able to apply core knowledge to critically interpret scientific data.

## SLO: Written Communication

- Students will demonstrate written skills to communicate scientific knowledge and experimental data.

## SLO: Oral Communication

- Students will be able to demonstrate oral presentation skills to communicate scientific knowledge and experimental data.

## Biomedical Science Major: Medical Laboratory Sciences Option (B.S.)

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/bs/biomedical-science-major-medical-laboratory>

### Description

The Biomedical Science: **Medical Laboratory Science (BMS:MLS) program** provides you with the medical knowledge and understanding of diagnostic testing needed for a fulfilling career in the biomedical sciences, including as an American College of Clinical Pathology-certified Medical Laboratory Scientist.

#### As a Biomedical Science: Medical Laboratory Science major, you will:

- learn to determine the presence, extent, or absence of human disease through understanding the diagnostic testing that medical professionals use to make these determinations (*70% of physician decisions are based on diagnostic testing results*)
- obtain hands-on experience by performing immunological, biochemical, molecular, and microbiological procedures that aid in the diagnosis, treatment, and prevention of disease

#### Unique features of the MLS option include:

- the only 4-year degree program in NH that includes a path for students to become certified as Medical Laboratory Scientists (MLS) by the American Society of Clinical Pathology (ASCP) and that is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)
- Certified Medical Laboratory Scientists** are in high demand and easily find employment in hospitals and medical centers throughout the country
- the MLS program is affiliated with Dartmouth Hitchcock Medical Center and NorDx/Maine Medical Center

#### Careers or post-baccalaureate education of previous Medical Laboratory Science graduates include:

- certified medical laboratory scientists (ASCP) in diagnostic testing laboratories in hospitals and industry**
- research scientists/laboratory technicians**
  - biotechnology and pharmaceutical companies
  - biomedical research facilities
  - forensic laboratories
  - hospital reference laboratories
  - government public health laboratories
- secondary school educators** (with additional coursework in education)
- diagnostic product development**

- sales and marketing**
- state and federal government agencies** (e.g., U.S. Food and Drug Administration).
- professional health programs**
  - medical school
  - allied health programs (physician assistant, pathologists' assistant, pharmacy)
- graduate programs**
  - microbiology
  - biomedical science
  - biochemistry
  - nursing
  - public health
  - business administration

### Requirements

The Medical Laboratory Sciences (MLS) program is NAACLS accredited and follows accreditation requirements. Students in this option take four Foundation courses, five Bioscience Core courses, six BMS:MLS core courses, and five Major Elective courses. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. In addition, all other University academic requirements must be completed, including those for Discovery Program and the University Writing Requirement.

A grade of C-minus or above is required in BMS:MLS Core Courses.

#### Foundation Courses

Code	Title	Credits
CHEM 403	General Chemistry I <sup>1</sup>	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory <sup>2</sup>	5
Select one of the following statistics courses: <sup>3</sup>		
BIOL 528	Applied Biostatistics I	4
or PSYC 402	Statistics in Psychology	
or SOC 402	Statistics	
or MATH 439	Statistical Discovery for Everyone	

#### Bioscience Core Courses

Code	Title	Credits
BMS 508	Human Anatomy and Physiology II	4
GEN 604	Principles of Genetics	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
Select one of the following:		
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	4-5
or BMS 501	Microbes in Human Disease	
Select one of the following:		
BMS 507	Human Anatomy and Physiology I	4
BIOL 411	Introductory Biology: Molecular and Cellular <sup>2, 4</sup>	0 or 4

<sup>1</sup> CHEM 403 fulfills the Physical Science Discovery requirement.

<sup>2</sup> Students applying to health profession schools need a full year of Organic Chemistry, a full year of Introductory Biology, and a full year of English. CHEM 651/CHEM 653 and CHEM 652/CHEM 654 should be taken in place of CHEM 545/CHEM 546; ENGL 502 or ENGL 503

is suggested in addition to ENGL 401. See [Pre-Professional Health Program Advising](#).

<sup>3</sup> Statistics fulfills the Quantitative Reasoning Discovery requirement.

<sup>4</sup> BIOL 411 fulfills the Biological Science Discovery requirement, Discovery Laboratory requirement, and the Discovery Inquiry requirement

### BMS-MLS Core Courses

Code	Title	Credits
BMS 401	Professional Perspectives in Biomedical Sciences	1
BMS 560 & BMS 561	Body Fluids and Body Fluids Laboratory	4
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 642 & BMS 643	Clinical Immunology and Serology and Clinical Serology Laboratory	4
BMS 650	Molecular Diagnostics	4
BMS 720	Mycology, Parasitology, and Virology <sup>5</sup>	3

<sup>5</sup> If BMS 721 is taken concurrently with BMS 720, it may count as one of the two required Laboratory Electives. However, BMS 721 is not a Major Elective course, so five Major Electives must still be completed, at least one of which includes a lab component, plus four additional Major Electives with or without lab.

### BMS-MLS Major Electives

A total of five **unique** Major Electives is required. Two courses must have a laboratory component.

Code	Title	Credits
Choose TWO Major Electives with a Laboratory		
BMS 623	Histology: Microscopic Cellular Structure and Function	4
BMS 644 & BMS 645	Clinical Hematology and Clinical Hematology Laboratory <sup>6</sup>	5
BMS 656 & BMS 657	Immunohematology and Blood Banking Laboratory <sup>6</sup>	4
BMS 658 & BMS 659	Medical Biochemistry and Clinical Chemistry Laboratory <sup>6</sup>	5
BMS 706 & BMS 708	Virology and Virology Laboratory	5
BMS 721	Mycology, Parasitology, and Virology Laboratory <sup>5,6</sup>	2
BMS 725	Cell Phenotyping and Tissue Engineering Laboratory	4
BMS 740	Human Microbiome	4
BMCB 753	Cell Culture	5

Code	Title	Credits
Choose THREE Major Electives from the list below (FOUR if BMS 721 is counted as a Laboratory course)		
BMS 610	Biomedical Lab Management <sup>6</sup>	4
BMS 623	Histology: Microscopic Cellular Structure and Function	4
BMS 635	Preceptorial in Prehospital Care	2
BMS 640	Phlebotomy Theory <sup>6</sup>	2
BMS 641	Phlebotomy Clinical Internship <sup>6</sup>	1-2
BMS 644	Clinical Hematology <sup>6</sup>	3
BMS 644 & BMS 645	Clinical Hematology and Clinical Hematology Laboratory <sup>6</sup>	5
BMS 644 & BMS 646	Clinical Hematology and Clinical Hemostasis <sup>6</sup>	4
BMS 656 & BMS 657	Immunohematology and Blood Banking Laboratory <sup>6</sup>	4
BMS 658 & BMS 659	Medical Biochemistry and Clinical Chemistry Laboratory <sup>6</sup>	5
BMS 702	Endocrinology	4
BMS 703	Infectious Disease and Health	4
BMS 704	Pathologic Basis of Disease	4
BMS 706 & BMS 708	Virology and Virology Laboratory	5
BMS 711	Toxicology	4

BMS 719	Host-Microbe Interactions	4
BMS 725	Cell Phenotyping and Tissue Engineering Laboratory	4
BMS 730	Ethical Issues in Biomedical Science	4
BMS 735	Molecular and Cellular Parasitology	4
BMS 740	Human Microbiome	4
BMS 749	Case Studies in Hematology and Immunology	2
BMS 750	Case Studies in Microbiology <sup>6</sup>	2
BMS 751	Advanced Clinical Microbiology Internship <sup>6</sup>	5
BMS 752	Advanced Hematology Internship <sup>6</sup>	5
BMS 753	Advanced Immunohematology Internship <sup>6</sup>	5
BMS 754	Advanced Clinical Chemistry Internship <sup>6</sup>	5
BMS 761	Clinical Microbiology Internship	20
BMS 790	Undergraduate Teaching Experience	1-4
BMS 795	Investigations in Biomedical Science	1-8
BMS 795W	Investigations in Biomedical Science	1-8
BMS 799	Senior Thesis (4-credit minimum)	1-4
BMS 799H	Senior Honors Thesis (4-credit minimum)	1-4
BMCB 605	Principles of Cell Biology	4
BMCB 753	Cell Culture	5
BMCB 760	Pharmacology	4
GEN 706	Human Genetics	4
GEN 721	Comparative Genomics	4
SOC 635W	Medical Sociology	4
Other Internships <sup>7</sup>		

<sup>6</sup> Required for students interested in MLS clinical generalist internship

<sup>7</sup> A 20 credit Clinical Hematology Internship covering advanced instruction in hematology and hemostasis at a local hospital or reference laboratory is also available. Please see your advisor for information.

### Approved BMS:MLS Capstone Courses

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). Students may take more than one capstone course. Capstone completion is never displayed on Degree Works; your advisor will certify capstone completion at the time of graduation. Students must have 90 credits or more when completing their capstone requirement. See your advisor for questions about capstones.

Code	Title	Credits
BMS 635	Preceptorial in Prehospital Care	2
BMS 656	Immunohematology	3
BMS 658	Medical Biochemistry	3
BMS 719	Host-Microbe Interactions	4
BMS 725	Cell Phenotyping and Tissue Engineering Laboratory	4
BMS 740	Human Microbiome	4
BMS 747	Case Studies in Bloodbanking	1
BMS 748	Case Studies in Medical Biochemistry	1
BMS 749	Case Studies in Hematology and Immunology	2
BMS 750	Case Studies in Microbiology	2
BMS 751	Advanced Clinical Microbiology Internship	5
BMS 752	Advanced Hematology Internship	5
BMS 753	Advanced Immunohematology Internship	5
BMS 754	Advanced Clinical Chemistry Internship	5
BMS 761	Clinical Microbiology Internship	20
BMS 790	Undergraduate Teaching Experience (2 semesters, including lab presentation or instruction)	1-4
BMS 795	Investigations in Biomedical Science	1-8
BMS 795W	Investigations in Biomedical Science	1-8
BMS 799	Senior Thesis (4-credit minimum)	1-4
BMS 799H	Senior Honors Thesis (4-credit minimum)	1-4
BMCB 753	Cell Culture	5

INCO 790	Advanced Research Experience (4-credit minimum)	1-4
Other Internships <sup>7</sup>		

For a Capstone experience not listed above, such as an internship, submit a [Capstone Experience Approval form](#) prior to beginning the experience.

## Degree Plan

### SAMPLE Course Sequence for Medical Laboratory Science

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
BMS 401	Professional Perspectives in Biomedical Sciences	1
ENGL 401	First-Year Writing	4
BMS 507 or BIOL 411	Human Anatomy and Physiology I or Introductory Biology: Molecular and Cellular	4
CHEM 403	General Chemistry I	4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
BMS 508	Human Anatomy and Physiology II	4
CHEM 404	General Chemistry II	4
Statistics		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 560 & BMS 561	Body Fluids and Body Fluids Laboratory	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
Major Elective		4
<b>Credits</b>		<b>18</b>
<b>Third Year</b>		
<b>Fall</b>		
Major Elective with lab		4-6
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BMS 650	Molecular Diagnostics	4
<b>Credits</b>		<b>13-15</b>

### Spring

BMS 642 & BMS 643	Clinical Immunology and Serology and Clinical Serology Laboratory	4
BMS 720	Mycology, Parasitology, and Virology	3
Major Elective with lab		4-5
Elective (any course)		4
<b>Credits</b>		<b>15-16</b>

### Fourth Year

<b>Fall</b>		
Major Elective (WI)		4
Major Elective (Capstone)		4
Discovery Course		4
Elective (any course)		4
<b>Credits</b>		<b>16</b>

### Spring

Four Electives (any courses) or BMS 751, BMS 752, BMS 753, and BMS 754		16-20
<b>Credits</b>		<b>16-20</b>
<b>Total Credits</b>		<b>128-135</b>

## Student Learning Outcomes

### SLO: Core Knowledge

Students will demonstrate an understanding of core knowledge in biochemistry, molecular biology, cell biology, genetics & biomedical sciences.

### Biomedical Science: Medical Laboratory Science option

- Students will be able to correlate patient history, symptoms and laboratory test results with the diagnosis and treatment of clinical disease state
- Students will be able to interpret, analyze, and identify clinical laboratory results.
- Students will be able to define the mechanisms that give rise to human diseases and/or organ system dysfunction, including hypersensitivity, renal disease, acid-base disorders, etc.
- Students will be able to recognize risk factors for the development of disease
- Students will be able to identify and explain the underlying principle(s) of appropriate testing methodologies and assays for diagnosis of clinical diseases and organ system dysfunction.

### SLO: Quantitative Literacy, Inquiry & Analysis

- Students will be able to apply the scientific method to examine experimental evidence and draw informed conclusions.
- Students will be able to use graphs to represent scientific data.
- Students will be able to apply statistical methods to interpret scientific data.

### SLO: Critical Thinking & Problem Solving

- Students will be able to use data to troubleshoot an unexpected outcome.
- Students will be able to apply core knowledge to critically interpret scientific data.



## SLO: Written Communication

- Students will demonstrate written skills to communicate scientific knowledge and experimental data.

## SLO: Oral Communication

- Students will be able to demonstrate oral presentation skills to communicate scientific knowledge and experimental data.

## Biomedical Science Major: Medical Microbiology Option (B.S.)

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/bs/biomedical-science-major-medical-microbiology-option>

### Description

The **Biomedical Science: Medical Microbiology (BMS:MM)** program explores the world of microorganisms and how they interact with both humans and animals. This major provides you with excellent academic training and laboratory experiences in the areas of microbiology, infectious disease, and public health. BMS:MM graduates are prepared for successful careers in biotechnology or public health, or entry into graduate school or health professional programs.

#### The BMS:MM program includes course work and laboratories in:

- infectious disease
- immunology
- epidemiology and community health
- molecular biology
- microbial ecology and evolution

#### Students in the BMS:MM program may participate in a variety of experiential learning activities including:

- independent research experiences in laboratories of UNH biomedical science faculty
- work at the NH Veterinary Diagnostic Laboratory located on the UNH campus
- internships at biotechnology companies in the Greater Boston area
- internships at the NH Department of Public Health Laboratories

#### BMS:MM graduates have been successful in attaining careers as:

- **research scientists/laboratory technicians**
  - biotechnology and pharmaceutical companies
  - academic biomedical research programs
  - brewing industry
- **primary and secondary school educators** (requires additional coursework in education)
- **state and federal government employees**
  - public health laboratories
  - regulatory agencies (e.g., U.S. Food and Drug Administration)

#### BMS:MM graduates are prepared for post-baccalaureate education in:

- **professional health programs**
  - medical school
  - dental school

- allied health programs (physician assistant, pharmacist, nursing, or pathologist's assistant programs)
- **graduate programs**
  - biomedical science
  - public health
  - forensic science

### Requirements

Students in the Medical Microbiology (MM) option take seven Foundation courses, six Bioscience Core courses, four BMS:MM Core courses, and five BMS:MM Major Elective courses. One capstone experience, supervised and approved within the major, is required of all seniors. In addition, all other University academic requirements must be completed, including those for the Discovery Program (p. 27) and the University Writing Requirement (p. 31).

A grade of C-minus or better is required in all Bioscience Core, BMS:MM Core, and Major Elective courses.

#### Foundation Courses

Code	Title	Credits
CHEM 403	General Chemistry I <sup>1</sup>	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory <sup>2</sup>	5
MATH 424B	Calculus for Life Sciences <sup>3</sup>	4
BIOL 528	Applied Biostatistics I <sup>4</sup>	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4

#### Bioscience Core Courses

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular <sup>5</sup>	4
BIOL 412 or BMS 508	Introductory Biology: Evolution, Biodiversity and Ecology <sup>2</sup> Human Anatomy and Physiology II	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
BMCB 605	Principles of Cell Biology	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5

<sup>1</sup> CHEM 403 fulfills the Physical Science Discovery requirement

<sup>2</sup> Students applying to health profession schools need a full year of Organic Chemistry, a full year of Introductory Biology, and a full year of English. CHEM 651/CHEM 653 and CHEM 652/CHEM 654 should be taken in place of CHEM 545/CHEM 546; ENGL 502 or ENGL 503 is suggested in addition to ENGL 401.

<sup>3</sup> MATH 424B fulfills the Quantitative Reasoning Discovery requirement.

<sup>4</sup> PSYC 402 and SOC 402 are acceptable alternatives.

<sup>5</sup> BIOL 411 fulfills the Biological Science Discovery requirement, Discovery Laboratory requirement, and the Discovery Inquiry requirement.

#### BMS:MM Core Courses

Code	Title	Credits
BMS 401	Professional Perspectives in Biomedical Sciences <sup>6</sup>	1
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 705 & BMS 715	Immunology and Immunology Laboratory	5

BMS 706 & BMS 708	Virology and Virology Laboratory	5
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<sup>6</sup> Required for first-year students only.

### BMS-MM Major Elective Courses

A total of five **unique** major elective courses is required. At least one course must be taken in each of the following subject areas: Host-Microbe Interaction Electives, Molecular Biology Electives, and Community Electives. Two additional courses are taken from any of the major elective subject areas.

#### Host-Microbe Interaction Electives

Code	Title	Credits
BMS 655	Human and Animal Parasites <sup>7</sup>	3
BMS 703	Infectious Disease and Health	4
BMS 704	Pathologic Basis of Disease	4
BMS 719	Host-Microbe Interactions <sup>7</sup>	4
BMS 720	Mycology, Parasitology, and Virology	3
BMS 735	Molecular and Cellular Parasitology <sup>7</sup>	4
BMS 740	Human Microbiome <sup>7</sup>	4

#### Molecular Biology Electives

Code	Title	Credits
BMS 623	Histology: Microscopic Cellular Structure and Function	4
BMS 650	Molecular Diagnostics	4
BMS 655	Human and Animal Parasites <sup>7</sup>	3
BMS 711	Toxicology	4
BMS 719	Host-Microbe Interactions <sup>7</sup>	4
BMS 725	Cell Phenotyping and Tissue Engineering Laboratory	4
BMS 735	Molecular and Cellular Parasitology <sup>7</sup>	4
BMS 740	Human Microbiome <sup>7</sup>	4
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
BMCB 763	Biochemistry of Cancer	4
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 705	Population Genetics <sup>8</sup>	3
GEN 713	Microbial Ecology and Evolution	4
GEN 717	Molecular Microbiology	5
GEN 721	Comparative Genomics	4

<sup>7</sup> Course may be used as either a Host-Microbe Interaction elective or Molecular Biology elective, but not both.

<sup>8</sup> Enrolling in GEN 725 concurrently is encouraged but not required

#### Community Electives

Code	Title	Credits
BMS #716	Public Health: Food- and Water-borne Diseases	4
BMS 730	Ethical Issues in Biomedical Science	4
ANSC 602	Animal Rights and Societal Issues	4
ANTH 685	Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa	4
BIOL 706	Data Science with R for the Life Sciences	4
HMP 501	Epidemiology and Community Medicine	4

#### Other Major Electives

Code	Title	Credits
BMS 795	Investigations in Biomedical Science (4-credit minimum)	1-8
BMS 795W	Investigations in Biomedical Science (4-credit minimum )	1-8
BMS 799	Senior Thesis (4-credit minimum)	1-4
BMS 799H	Senior Honors Thesis (4-credit minimum)	1-4
INCO 790	Advanced Research Experience (4-credit minimum)	1-4

### BMS-MM Capstone

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). Students may take more than one capstone course. Capstone completion is never displayed on Degree Works; your advisor will certify capstone completion at the time of graduation. Students must have 90 credits or more when completing their capstone requirement. See your advisor for questions about capstones.

#### Approved BMS-MM Capstone Courses

Code	Title	Credits
BMS 635	Preceptorial in Prehospital Care (4-credit minimum)	2
BMS #716	Public Health: Food- and Water-borne Diseases	4
BMS 719	Host-Microbe Interactions	4
BMS 730	Ethical Issues in Biomedical Science	4
BMS 740	Human Microbiome	4
BMS 795	Investigations in Biomedical Science (4-credit minimum)	1-8
BMS 795W	Investigations in Biomedical Science (4-credit minimum )	1-8
BMS 799	Senior Thesis (4-credit minimum)	1-4
BMS 799H	Senior Honors Thesis (4-credit minimum)	1-4
GEN 717	Molecular Microbiology	5
INCO 790	Advanced Research Experience (4-credit minimum)	1-4

For a Capstone experience not listed above, such as an internship, submit a [Capstone Experience Approval form](#) prior to beginning the experience.

## Degree Plan

### SAMPLE Course Sequence for Medical Microbiology

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
BMS 401	Professional Perspectives in Biomedical Sciences	1
BIOL 411	Introductory Biology: Molecular and Cellular	4
ENGL 401	First-Year Writing	4
CHEM 403	General Chemistry I	4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
MATH 424B	Calculus for Life Sciences	4
CHEM 404	General Chemistry II	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
Discovery Course		4
<b>Credits</b>		<b>18</b>

**Spring**

BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMCB 605	Principles of Cell Biology	4
BIOL 528	Applied Biostatistics I	4
Discovery Course		4

**Credits** 17

**Third Year****Fall**

BMS 705 & BMS 715	Immunology and Immunology Laboratory	5
PHYS 401	Introduction to Physics I	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
Discovery Course		4

**Credits** 18

**Spring**

BMS 706 & BMS 708	Virology and Virology Laboratory	5
PHYS 402	Introduction to Physics II	4
Major Elective		4
Discovery Course		4

**Credits** 17

**Fourth Year****Fall**

Major Elective (possible Capstone course)		4
Major Elective		4
Elective (any course)		3-4
Elective (any course)		3-4

**Credits** 14-16

**Spring**

Major Elective		4
Major Elective		4
Elective (any course)		3-5
Elective (any course)		3-5

**Credits** 14-18

**Total Credits** 131-137

- Students will be able to discuss basic metabolic pathways that allow microorganisms to grow, thrive, and survive in numerous environments
- Students will understand how genetic information is maintained and transferred, how mutation can affect viability and contribute to evolution, and how gene expression is regulated.
- Students will be able to discuss the role of microorganisms in human and animal health and explain, using specific examples, how microbes can be both harmful and beneficial.

SLO: Quantitative Literacy, Inquiry & Analysis

- Students will be able to apply the scientific method to examine experimental evidence and draw informed conclusions.
- Students will be able to use graphs to represent scientific data.
- Students will be able to apply statistical methods to interpret scientific data.

SLO: Critical Thinking & Problem Solving

- Students will be able to use data to troubleshoot an unexpected outcome.
- Students will be able to apply core knowledge to critically interpret scientific data.

SLO: Written Communication

- Students will demonstrate written skills to communicate scientific knowledge and experimental data.

SLO: Oral Communication

- Students will be able to demonstrate oral presentation skills to communicate scientific knowledge and experimental data.

## Biomedical Science Minor

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/minor/biomedical-science>

### Description

Students who wish to develop focused competencies in the broad area of the biomedical sciences can complement their major academic program with a minor in biomedical science (BMS).

### Requirements

The minor consists of a minimum of 20 credits, no more than 8 of which can also be used to fulfill major requirements. A grade of C-minus or better is required for all courses counted towards the minor.

A "C average" (2.00) is required in courses that the minor department approves. Pass/fail courses can not be used for the minor. It is the student's responsibility to file an Intent to Minor form with the BMS minor advisor by the end of the junior year and to complete a [Certification of Completion of Minor form](#) during their final semester at UNH.

#### Required Courses:

## Student Learning Outcomes

SLO: Core Knowledge

Students will demonstrate an understanding of core knowledge in biochemistry, molecular biology, cell biology, genetics & biomedical sciences.

Biomedical Science: Medical Microbiology option

- Students will be able to compare and contrast cellular and non-cellular microorganisms.
- Students will understand basic structure-function relationships of microorganism components, and explain how specific microbial components contribute to a microorganism's growth and survival.

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular	4
BMS 508	Human Anatomy and Physiology II	4
or ANSC 512	Anatomy and Physiology	

Choose courses from this list to reach a minimum of 20 credits (choice may be limited if student does not have the prereqs for certain courses):

Code	Title	Credits
BMS 501	Microbes in Human Disease	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMS 560 & BMS 561	Body Fluids and Body Fluids Laboratory	4
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS 610	Biomedical Lab Management	4
BMS 623	Histology: Microscopic Cellular Structure and Function	4
BMS 635	Preceptorial in Prehospital Care	2
BMS 640	Phlebotomy Theory	2
BMS 644	Clinical Hematology	3
BMS 650	Molecular Diagnostics	4
BMS 655	Human and Animal Parasites	3
BMS 656	Immunohematology	3
BMS 658	Medical Biochemistry	3
BMS 702	Endocrinology	4
BMS 703	Infectious Disease and Health	4
BMS 704	Pathologic Basis of Disease	4
BMS 705	Immunology	3
BMS 706	Virology	3
BMS 711	Toxicology	4
BMS 712	Experiences in Applied Veterinary Diagnostics	2
BMS #716	Public Health: Food- and Water-borne Diseases	4
BMS 718	Mammalian Physiology	4
BMS 719	Host-Microbe Interactions	4
BMS 720	Mycology, Parasitology, and Virology	3
BMS 730	Ethical Issues in Biomedical Science	4
BMS 740	Human Microbiome	4
BMCB 605	Principles of Cell Biology	4
BMCB 753	Cell Culture	5
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 717	Molecular Microbiology	5
HMP 501	Epidemiology and Community Medicine	4
NUTR 750	Nutritional Biochemistry	4

## Community and Environmental Planning (CEP)

Community and Environmental Planning students have an appreciation for communities designed for people to live, work and play. Our students study a diverse and interconnected number of topics including perspectives in community development, fundamentals of land use planning, community economics, and natural resource conservation issues. If you want to help communities deal with problems associated with the intersection of our built and natural environments, such as economic development, transportation, affordable housing, green space and local agriculture, than a degree in Community and Environmental Planning may be the right fit for you.

<https://colsa.unh.edu/natural-resources-environment>

## Programs

- [Community and Environmental Planning Major \(B.S.\)](#) (p. 297)
- [Community Planning Minor](#) (p. 299)

## Faculty

<https://colsa.unh.edu/natural-resources-environment/people>

## Community and Environmental Planning Major (B.S.)

<https://colsa.unh.edu/natural-resources-environment/program/bs/community-environmental-planning-major>

## Description

The Community and Environmental Planning (CEP) program is designed to provide students with the knowledge and skills to become effective community planners in the public or private sector. There are 16 courses required for the major. All of the courses are designed to give the student a diverse skill-set in planning for the sustainability of communities. CEP students are provided a solid planning background with planning courses covering local, state and regional planning topics and methods. CEP students also take foundational courses in natural resources, geographic information systems, economics, and statistics, as well as a political science course, and a social issues course. The internship requirement (CEP 794) allows the planning student to apply their knowledge in the real world for instrumental hands-on experience. Semester in the City is also an option for the internship experience. CEP students are encouraged to focus their remaining hours on skills that can enhance their CEP major such as a dual major, a minor, or study abroad.

Expected CEP Student Outcomes:

- The foundational education in planning, natural resources, economics and sustainability.
- The fundamental values of diversity, equity, justice, and protection of community and the environment.
- The ability to assess, discuss, and engage others in the problems and potential solutions associated with impacts of land use changes.
- The ability to work with community members and professionals in the design and implementation of community improvements in building and transportation while protecting natural and built resources.

Students may go on to work in the community development or community planning departments in local communities. They may also choose to work in regional planning agencies, or with a state or federal office. Other options include the private sector, such as architectural or development companies, or the non-profit sector, such as with community development corporations or conservation groups. The American Planning Association provides a certification process for the planning profession (American Institute of Certified Planners) after several years of planning experience. Students may also choose to go on to graduate studies in Community and Environmental Planning, Natural Resources Management, Public Administration, or a related field.

## Requirements

Courses with the prefix CEP must be completed with a C- or above (6 courses total). In addition to the CEP degree requirements (below), students must complete the University Discovery Program and the University Writing Requirements.

Code	Title	Credits
<b>Planning Courses:</b>		
CEP 415 or TOUR 510	Community Development Perspectives (Discovery Course) Tourism and Global Understanding	4
CEP 508	Applied Community Development	4
CEP 614	Fundamentals of Planning	4
CEP 673 or CEP 672	Green Real Estate Fundamentals of Real Estate	4
CEP 794 or INCO 505I	Community and Environmental Planning Internship <sup>1</sup> Semester in the City: Boston and SITC @ UNH Internship	4-12
CEP 777	Topics in Community Planning (Capstone for the major)	4
<b>Natural Resources Courses:</b>		
NR 435 or NR 502 or NR 507	Contemporary Conservation Issues and Environmental Awareness Forest Ecosystems and Environmental Change Introduction to our Energy System and Sustainable Energy	4
NR 602	Natural Resources and Environmental Policy	4
NR 658 or FORT 581	Introduction to Geographic Information Systems Applied Geospatial Techniques	4
NR 785 or NR 784	Systems Thinking for Sustainable Solutions Sustainable Living - Global Perspectives	4
TOUR 767 or NR 724	Social Impact Assessment Resolving Environmental Conflicts	4
<b>Economics and Statistics Courses:</b>		
EREC 411	Environmental and Resource Economics Perspectives	4
EREC 525 or BIOL 528	Statistical Methods and Applications Applied Biostatistics I	4
EREC 627	Community Economics	4
<b>Political Science Course:</b>		
POLT 502 or POLT 500 or POLT 523 or POLT 595	State and Local Government American Public Policy American Political Thought Smart Politics	4
<b>Social Issues Course:</b>		
SOC 450 or INCO 505B or SOC 565	Contemporary Social Problems Social Innovator's Toolbox Environment and Society	4
<b>Total Credits</b>		<b>64-72</b>

<sup>1</sup> INCO 505I Semester in the City: Boston and SITC @ UNH Internship and INCO 505A Semester in the City Becoming a Problem Solver are taken as a 12-credit internship along with INCO 505B Social Innovator's Toolbox, which fulfills the Social Issues course requirement.

CEP students are encouraged to have a study away/abroad experience, a dual degree, a minor, or focused area of study which add value to the CEP degree. Consider the following to complete the minimum of 128 credits:

- Semester in the City (if you have not done this in the CEP major)
- EcoQuest New Zealand (16 credits in electives - must qualify with EcoQuest)
- Study Away
- Study Abroad
- Minor as approved by the minor program
- Courses to round out a focus area. *It is recommended that you choose upper level courses in NR and EREC.*

## Degree Plan

### Sample Course Sequence for Community and Environmental Planning

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
CEP 415 or TOUR 510	Community Development Perspectives (Also counts as Discovery Social Science) or Tourism and Global Understanding	4
NR 435 or NR 502 or NR 507	Contemporary Conservation Issues and Environmental Awareness or Forest Ecosystems and Environmental Change or Introduction to our Energy System and Sustainable Energy	4
EREC 411	Environmental and Resource Economics Perspectives	4
ENGL 401	First-Year Writing (Counts as Discovery Writing)	4
<b>Credits</b>		<b>16</b>

### Spring

Choose any Discovery courses. Here are some suggestions:

Discovery Biological Science with Lab (Consider BIOL 430 or NR 433)	4
Discovery Historical Perspectives (Consider ARTS 574)	4
Discovery Humanities (Consider PHIL 430)	4
Inquiry Course (Choose any)	4
<b>Credits</b>	<b>16</b>

### Second Year

#### Fall

EREC 525	Statistical Methods and Applications (Also counts as Discovery Quantitative)	4
POLT 502 or POLT 500 or POLT 523 or POLT 595	State and Local Government or American Public Policy or American Political Thought or Smart Politics	4

Choose any Discovery course. Here are some suggestions:	4
Discovery Physical Science (Consider ESCI 409, ESCI 405, or NR 504)	
Discovery Fine and Performing Arts (Choose any)	4
<b>Credits</b>	<b>16</b>

### Spring

CEP 508	Applied Community Development	4
SOC 450 or SOC 565 or INCO 505B	Contemporary Social Problems or Environment and Society or Social Innovator's Toolbox	4
NR 602	Natural Resources and Environmental Policy	4
Discovery World Cultures (Choose any)		4
<b>Credits</b>		<b>16</b>

### Third Year

#### Fall

CEP 614	Fundamentals of Planning	4
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CEP 673 or CEP 672	Green Real Estate or Fundamentals of Real Estate	4
EREC 627	Community Economics	4
TOUR 767	Social Impact Assessment (Or NR 724 in Spring)	4

May consider CEP 794, Semester in the City, study away, or courses toward a minor.

**Credits** **16**

#### Spring

NR 658 or FORT 581	Introduction to Geographic Information Systems or Applied Geospatial Techniques	4
NR 724	Resolving Environmental Conflicts (or TOUR 767 in the fall)	4
Elective		4
Elective		4

May consider CEP 794, Semester in the City, study away, or courses toward a minor.

**Credits** **16**

#### Fourth Year

##### Fall

Elective		4
Elective		4
Elective		4
Elective		4

May consider CEP 794, Semester in the City, study away, or courses toward a minor.

**Credits** **16**

#### Spring

CEP 777	Topics in Community Planning	4
NR 785 or NR 784	Systems Thinking for Sustainable Solutions or Sustainable Living - Global Perspectives	4
CEP 794	Community and Environmental Planning Internship	4-12
Elective		4

**Credits** **16-24**

**Total Credits** **128-136**

## Student Learning Outcomes

- Functional fluency in the use of traditional and contemporary planning tools, methods, projects, programs, and regulatory tools.
- Analysis and articulation of social and environmental problems through the use of reliable and valid sources.
- Inventory, assessment, and documentation techniques of existing resources in the built and natural environment.
- Assessment methods of the consequences of proposed changes to the landscape at different scales, from local to regional.
- Communication strategies for a diverse population regarding social and environmental issues related to community planning and development.
- Engagement strategies for various stakeholders in the planning process through a variety of public engagement techniques.

- Development of the comprehensive master planning process and documentation with lay and professional planners.
- Skilled writing and public speaking in order to engage all stakeholders in the planning process.
- Creative thinking and scenario design development and use regarding possible futures.
- Networking with a variety of stakeholders for building a strong social network within and between communities and organizations.
- Ability to work with the various scales of planning – federal, state, regional, local, neighborhood, and site levels.
- Awareness of the opportunities for planning work in government, non-government, non-profit, Cooperative Extension, and the private sector in planning, environmental conservation, architecture, construction, and others.
- Advocacy focus for all residents, businesses, organizations and visitors regardless of income, gender, race, ethnicity, religion or other stratifications within society.
- Applied application of planning education and tangible experience through a community planning internship.

## Community Planning Minor

<https://colsa.unh.edu/nren/cep/community-planning-minor>

### Description

Planning is a multidisciplinary profession that requires an understanding of social, economic, and environmental connections to land use change. Students may supplement their major with the minor in community planning to enhance their skills to work with communities for improved sustainability.

### Requirements

- Required: 20 hours of credit
- A grade of C- or better in each of the 5 courses.
- No more than 8 credits used to satisfy major requirements may be used for the minor
- Credit/fail courses may not be used for the minor.

Code	Title	Credits
<b>Group I: Theory and Practice of Planning</b>		
All or equivalent of the following three courses:		
CEP 415	Community Development Perspectives	4
CEP 508	Applied Community Development	4
CEP 614	Fundamentals of Planning	4
<b>Group II: Tools and Applications in Planning</b>		
Select two of the following:		
CEP 673 or CEP 672	Green Real Estate Fundamentals of Real Estate	
CEP 777	Topics in Community Planning	
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes	
EREC 627	Community Economics	
EREC 756	Rural and Regional Economic Development	
NR 658	Introduction to Geographic Information Systems	
NR 724	Resolving Environmental Conflicts	
NR 785	Systems Thinking for Sustainable Solutions	
TOUR 767	Social Impact Assessment	
<b>Total Credits</b>		<b>20</b>

## Ecogastronomy

The Peter T. Paul College of Business and Economics and the College of Life Sciences and Agriculture offer undergraduate students the opportunity to pursue a dual major in EcoGastronomy. The dual major requires completion of the EcoGastronomy program and any other major.

The EcoGastronomy program prepares students for professions within our rapidly evolving food community—from farm to fork to nutrition and health outcomes—where ever-greater integration of agriculture, food, and nutrition requires a broad perspective and a specific blend of skills and knowledge. The dual major in EcoGastronomy is international by providing a context for studying "gastronomy" in Ascoli-Piceno, Italy.

## International Experience

All students who declare the dual major in EcoGastronomy spend a full semester abroad, most likely during their junior year. Students will study in Ascoli Piceno, Italy, (spring, summer or fall semester).

Dual majors will complete a series of upper-level core courses such as history of cuisine and gastronomy, history of food, aesthetics, food law, food technology processes, cross-cultural comparisons, and language.

The study abroad credit requirement is 12 credits.

## Portfolio

Students will be required to submit a portfolio annually to the director, and a cumulative portfolio to the instructor of their capstone course for final assessment.

The courses in the dual major program are multidisciplinary, taught by faculty from different departments in the University. They are designed to integrate UNH strengths in sustainable agriculture, hospitality management, and nutrition to offer a unique academic program emphasizing the interdisciplinary, international, and experiential knowledge that connects all three fields. The program is experiential by requiring students to work in the field growing food, in the kitchen preparing food, and developing the skills associated with both. They will also experience the local food cultures and get firsthand experience on the issues of food security locally, regionally, and globally.

Students who wish to declare a dual major in EcoGastronomy must have a cumulative grade-point average of 2.5; have declared, or be prepared to declare, a disciplinary major; and complete the Introduction to EcoGastronomy course (ECOG 401 Introduction to Ecogastronomy) with a grade of C or better.

ECOG 401 Introduction to Ecogastronomy is prerequisite for study abroad. All required classes and the elective are a pre/corequisite for the senior EcoGastronomy capstone course, ECOG 701 EcoGastronomy Capstone. Exceptions are possible with a late declaration of the dual major. All foreign experiences must be pre-approved by the EcoGastronomy director.

The completion of the dual major requires no additional credits for graduation beyond the 128 required of all UNH students. All coursework required for EcoGastronomy must be completed with a grade C or better. For information, contact the dual major in EcoGastronomy, PCBE 370Z, (603) 862-3327, [ecog.info@unh.edu](mailto:ecog.info@unh.edu).

<https://www.unh.edu/ecogastronomy/>

## Programs

- [Ecogastronomy Dual Major](#) (p. 300)

## Faculty

<https://www.unh.edu/ecogastronomy/faculty>

## Ecogastronomy Dual Major

<https://www.unh.edu/ecogastronomy/curriculum>

## Description

**The Dual Major in EcoGastronomy** integrates UNH strengths in sustainable agriculture, hospitality management, and nutrition. EcoGastronomy offers a unique academic program emphasizing the interdisciplinary, international, and experiential knowledge that connects all three fields.

The EcoGastronomy Dual Major is a collaboration with the University of New Hampshire's College of Life Sciences and Agriculture, Peter T. Paul College of Business and Economics, and the Sustainability Institute.

## Requirements

Code	Title	Credits
<b>Required Courses:</b>		
ECOG 401	Introduction to Ecogastronomy	4
SAFS 405	Sustainable Agriculture and Food Production	4
HMG1 #403	Introduction to Food Management	0 or 4
NUTR 400	Nutrition in Health and Well Being	4
ECOG 685	EcoGastronomy Study Abroad <sup>1</sup>	0-20
ECOG 701	EcoGastronomy Capstone <sup>2</sup>	2-4
<b>Select one elective from the following courses:</b>		<b>4</b>
ANSC 602	Animal Rights and Societal Issues	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	
EREC 680	Agricultural and Food Policy	
HIST 618	American Environmental History	
HMG1 771	International Wine and Beverage	
HMG1 570	International Food and Culture	
MGT 662	Exploration in Entrepreneurial Management	
NR 602	Natural Resources and Environmental Policy	
NR #701	Ecological Sustainability and Values	
NR 720	International Environmental Politics and Policies for the 21st Century	
NR 784	Sustainable Living - Global Perspectives	
NR 785	Systems Thinking for Sustainable Solutions	
NUTR 720	Community Nutrition	
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	
SAFS 679	Food Production Field Experience I	
SOC 665	Environmental Sociology	
ZOOL 610	Principles of Aquaculture	
MEFB 772	Fisheries Biology: Conservation and Management	
<b>Total Credits</b>		<b>18-44</b>

<sup>1</sup> ECOG 685 EcoGastronomy Study Abroad is a variable credit course. ECOG students must complete at least 12 credits of study abroad.

<sup>2</sup> Satisfies the capstone requirement of the Discovery Program for the EcoGastronomy major.

## Student Learning Outcomes

- Students will understand and be able to communicate the interconnected nature of the food system, taking into account the social, political, ethical, environmental, economic, and social justice issues that are intertwined in the system.
- Students will gain practical understanding of food system sustainability by engaging in experiential education opportunities.
- Students will be able to speak fluently in the language of sustainable food systems.
- Students will effectively analyze and evaluate the full lifecycle of a food, or food product, by identifying and applying reliable information.
- Students will demonstrate effective oral communication skills.
- Students will demonstrate effective written communication skills.
- Students will demonstrate effective presentation skills.

## Environmental and Resource Economics (EREC)

The Environmental and Resource Economics program offers training in areas that include public resource policy, resource management, natural resource and environmental economics, and community economics and finance. The curriculum emphasizes applied economics in the context of public policy. Training is also available in agricultural economics, including agribusiness, small business management, food marketing, agricultural policy, and world food supplies.

<https://colsa.unh.edu/natural-resources-environment>

## Programs

- [Environmental and Resource Economics Major \(B.S.\)](#) (p. 301)
- [Environmental and Resource Economics Minor](#) (p. 302)

## Faculty

<https://colsa.unh.edu/natural-resources-environment/people>

## Environmental and Resource Economics Major (B.S.)

<https://colsa.unh.edu/natural-resources-environment/program/bs/environmental-resource-economics-major>

## Description

Students majoring in environmental and resource economics will normally concentrate in one of the following three areas: environmental and natural resource economics, agricultural economics, or community economics. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student activity). In addition, students

must satisfy University requirements, including those for the Discovery Program.

Upon graduation, students are qualified for a wide variety of opportunities. Private business, public institutions, and government agencies currently have a strong demand for specialists trained in natural resource development; land and water use policy; natural resource and small business management; agricultural, fisheries, and forestry marketing; and community development. In many cases, students may wish to improve their qualifications by pursuing more specialized graduate studies.

## Requirements

Code	Title	Credits
<b>Required Courses</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 605	Intermediate Microeconomic Analysis	4
ECON 611 or ECON 635	Intermediate Macroeconomic Analysis Money and Banking	4
EREC 411	Environmental and Resource Economics Perspectives (or equivalent) <sup>1</sup>	4
EREC 525	Statistical Methods and Applications	4
MATH 420 or MATH 424B	Finite Mathematics Calculus for Life Sciences	4
<b>Select at least five of the following, two must be 700 level:</b>		
EREC 572	Introduction to Natural Resource Economics	4
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes	4
EREC 627	Community Economics	4
EREC 708	Environmental Economics	4
EREC 756	Rural and Regional Economic Development	4
ANSC 548	Agricultural Business Management	4
NR 602	Natural Resources and Environmental Policy	4
NR 643	Economics of Forestry	4
CEP 614	Fundamentals of Planning	4
CEP 777	Topics in Community Planning	4
TOUR 767	Social Impact Assessment	4
<b>Capstone</b>		

The capstone can be fulfilled through a course (EREC 708, EREC 756, EREC 760, CEP 777 or TOUR 767), or a created work or product, or some form of experiential learning (e.g., honors theses, mentored research projects in EREC 795, EREC 799, and other special student activities)

<sup>1</sup> EREC 411 cannot be used to satisfy the Social Science Discovery program requirement; or taken for credit if credit has been earned for ECON 402.

Students are encouraged to consider adding additional courses from the economics (ECON) department to their program. In special cases, students may petition to have these courses, particularly ECON 706 and ECON 726, substitute for major EREC electives.

## Degree Plan

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ENGL 401	First-Year Writing	4
Discovery: Biological Science with Lab <sup>1</sup>		4
ECON 401	Principles of Economics (Macro)	4
NR 435	Contemporary Conservation Issues and Environmental Awareness (or another Discovery ETS course)	4

**Credits**

**16**

<b>Spring</b>		
EREC 411	Environmental and Resource Economics Perspectives	4
Discovery: Physical Science		4
MATH 420	Finite Mathematics	4
Discovery: Fine and Performing Arts		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
EREC 525	Statistical Methods and Applications	4
Elective or Course for Minor		4
Discovery: Historical Perspectives		4
Discovery: World Cultures		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
EREC 572	Introduction to Natural Resource Economics	4
Discovery: Humanities		4
Elective or Course for Minor		4
Elective or Course for Minor		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
EREC 627 or CEP 614 or NR 602	Community Economics or Fundamentals of Planning or Natural Resources and Environmental Policy	4
ECON 611 or ECON 635	Intermediate Macroeconomic Analysis or Money and Banking	4
Elective or Course for Minor		4
Elective or Course for Minor		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ECON 605	Intermediate Microeconomic Analysis	4
EREC 606 or NR 643	Land Economics Perspectives: Uses, Policies, and Taxes or Economics of Forestry	4
Elective or Course for Minor		4
Elective or Course for Minor		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
EREC 708 or TOUR 767	Environmental Economics <sup>2</sup> or Social Impact Assessment	4
Elective or Course for Minor		4
Elective or Course for Minor		4
Elective or Course for Minor		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
EREC 756 or CEP 777	Rural and Regional Economic Development <sup>3</sup> or Topics in Community Planning	4
Elective or Course for Minor		4
Elective or Course for Minor		4

Elective or Course for Minor	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>128</b>

<sup>1</sup> At least one Discovery course must have the Inquiry attribute.

<sup>2</sup> The student must take at least 2 Writing-Intensive courses in addition to any of the following: EREC 708 Environmental Economics, EREC 756 Rural and Regional Economic Development, and CEP 777 Topics in Community Planning.

<sup>3</sup> EREC 708 Environmental Economics, EREC 756 Rural and Regional Economic Development, EREC 760 Ecological-Economic Modeling for Decision Making, CEP 777 Topics in Community Planning, and TOUR 767 Social Impact Assessment satisfy the capstone requirement for the major.

## Student Learning Outcomes

Students will be able to:

- Evaluate the validity and limitations of scientific theories and claims about the environment;
- Describe and explain the interactions among physical, biological, chemical, and human components of the environment;
- Formulate tests of environmental questions, acquire data, and apply scientific methods to answer these questions;
- Characterize the various social drivers of environmental problems and the relative attributes of policy instrument solutions;
- Locate, evaluate, and summarize print and electronic media including peer-reviewed literature and then compose and deliver informed positions on current environmental problems to the public.
- Describe and explain the ecological and societal value of biodiversity, sustainability, and environmental stewardship;
- Master mathematical, statistical, and study design knowledge and skills, and use state-of-the-art software, hardware, and analytical techniques relevant to environmental conservation and sustainability;
- Use principles of ecology, economics, sustainability, and policy science to solve real-world environmental problems;
- Communicate effectively to peers within the environmental community and with audiences outside of the discipline.

## Environmental and Resource Economics Minor

<https://colsa.unh.edu/natural-resources-environment/program/minor/environmental-resource-economics>

### Description

The Environmental and Resource Economics minor aims to provide students majoring in other disciplines with an understanding of environmental and resource economics, and their uses in personal, social, business and government decision-making. Students learn how to apply economic analyses in evaluating environmental and resource problems, identifying their causes and examining alternative solutions. The minor also offers courses that teach techniques useful for decision making

by local and regional communities. Students also obtain skills in the management of agricultural and natural-resource business firms.

## Requirements

### Minor Requirements

- Complete 5 Courses with a minimum of 20 credits from the courses listed below, with a grade of C- or better.
- No more than 8 credits used to satisfy major requirements may be used for the minor.
- Pass/Fail courses may not be used for the minor

Code	Title	Credits
Select at least 5 courses from the following:		20
EREC 411	Environmental and Resource Economics Perspectives <sup>1</sup>	
EREC 444	The New Pirates of the Caribbean	
EREC 525	Statistical Methods and Applications	
ANSC 548	Agricultural Business Management	
EREC 572	Introduction to Natural Resource Economics	
EREC #600	Field Experience	
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes	
EREC 627	Community Economics	
EREC 708	Environmental Economics	
EREC 756	Rural and Regional Economic Development	
EREC 795	Investigations	
EREC 795W	Investigations	
Total Credits		20

<sup>1</sup> EREC 411 cannot be taken for credit if credit has been earned for ECON 402.

## Environmental Conservation and Sustainability

### Mission of the ECS Major

Graduates of the environmental conservation and sustainability major understand the complexity of social-ecological systems and meet environmental challenges in innovative ways. ECS students understand ecological principles and comprehend the connections between natural resource and social systems (history, economics, law, policy, international perspectives). They integrate scientific information and human values and articulate problems in ways that point to solutions leading to a sustainable future.

ECS graduates have the theoretical, methodological, technical, and practical skills necessary to solve complex problems. They work collaboratively and across disciplinary boundaries and at all scales from the local to the international. Their critical thinking and communication skills allow them to serve as liaisons among diverse interest groups and to design, implement, and facilitate policy and action toward a sustainable future.

ECS graduates are environmental citizens, sustainability advocates, and leaders for constructive change. They typically serve as policy analysts, sustainability officers, resource managers, journalists, scientists, and teachers in business, non-profit organizations, and government agencies, including the Peace Corps and Ameri-Corps. Many ECS graduates attend graduate or professional programs following graduation.

<https://colsa.unh.edu/natural-resources-environment>

## Programs

- [Environmental Conservation and Sustainability Major \(B.S.\)](#) (p. 303)
- [Environmental Conservation and Sustainability Minor](#) (p. 306)

## Faculty

<https://colsa.unh.edu/natural-resources-environment/people>

## Environmental Conservation and Sustainability Major (B.S.)

<https://colsa.unh.edu/natural-resources-environment/program/bs/environmental-conservation-sustainability-major>

## Description

### ECS Major Curriculum

The ECS major is comprised of 14 core requirements providing integrative courses in both environmental conservation and sustainability, along with a foundation in biology, ecology, physical and social science, and the basic tools and skills applied to problem solving. These core requirements are typically fulfilled in the first two years. Beginning in their junior year, ECS students, in consultation with their advisers, create a seven course focus area based on an ecological system or natural resource of their choosing. The focus area provides advanced study in ecology and natural resources; social sciences; tools, skills, and/or natural history and should reflect the student's interests and future goals. Additionally, each ECS student completes a practicum experience and a capstone option.

The ECS major provides the opportunity for students to gain a common foundation of knowledge and skills emphasizing integration and critical thinking, while allowing for sufficient flexibility to pursue their interests and passions within a large and complex field of study. The design of the curriculum will allow each student at least four, and as many as six, free electives, which they may fulfill as they choose. Many students pursue international experiences, such as the UNH EcoQuest program in New Zealand, add a minor or dual degree (such as the dual degree in international studies), and/or pursue research opportunities with our faculty or through another of UNH's undergraduate research opportunity programs.

## Requirements

### ECS Major Requirements

Code	Title	Credits
Degree Core Requirements		
Foundational Courses:		
NR 435	Contemporary Conservation Issues and Environmental Awareness	
NR 437	Principles of Sustainability	
Natural Science:		
Biology:		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	
NR 439	Environmental Biology	
Ecological Principles: Select one of the following		



BIOL 541	Ecology	
NR 527	Forest Ecology	
SAFS 502	Agroecology	
Physical Science: Select one of the following		4
NR 403	Introduction to Environmental Science	
NR #458	The Science of Where	
CHEM 403	General Chemistry I	
CHE 410	Energy and Environment	
ESCI 409	Geology and the Environment	
CEE 520	Environmental Pollution and Protection: A Global Context	
PHYS 401	Introduction to Physics I	
<b>Social Science:</b>		
Resource Economics:		
EREC 411	Environmental and Resource Economics Perspectives	
Environmental Ethics and Values: Select one of the following		4
NR 784	Sustainable Living - Global Perspectives	
SOC 565	Environment and Society	
Natural Resources Policy: Select one of the following		4
NR 602	Natural Resources and Environmental Policy	
NR 662	Environmental Policy, Planning and Sustainability in New Zealand	
<b>Essential Tools and Skills:</b>		
Field Methods:		
NR 415	Natural Resources Field Methods	
Statistics: Select one of the following		4
BIOL 528	Applied Biostatistics I	
EREC 525	Statistical Methods and Applications	
Geospatial Analysis:		
NR 658	Introduction to Geographic Information Systems	
Writing Skills: Select one of the following		4
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
ENGL 521	Nature Writers	
Presentation Skills: Select one of the following		4
CMN 500	Public Speaking	
NR 508	Communicating Science	
THDA #520	Creative Drama	
THDA 583	Introduction to Puppetry	
THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	
THDA 624	Theatre for Young Audiences	
<b>Focus Area</b>		
Select seven total courses to create a focus area addressing an environmental issue, ecological system, or natural resource (see below) <sup>1</sup>		28
<b>Ecology and Natural Resources:</b>		
Select one to four courses: no more than one course may be at the 400 or 500 level. Additional courses must be at the 600 or 700 levels.		
ESCI 405	Global Environmental Change	
MEFB 755	Biological Oceanography	
NR 433	Wildlife Ecology	
NR 501	Studio Soils	
NR 502	Forest Ecosystems and Environmental Change	
NR 504	Freshwater Resources	
NR 603	Landscape Ecology	
NR #625	Physiological Ecology	
NR 640	Wildlife Population Ecology	
NR 642	Introduction to Biogeography	
NR 650	Principles of Conservation Biology	
NR 660	Ecology and Biogeography of New Zealand	
NR 661	Restoration Ecology and Ecosystem Management in New Zealand	
NR 663	Applied Directed Research in New Zealand	
NR 664	Conservation Genetics	
NR 706	Soil Ecology	
NR 730	Terrestrial Ecosystems	
NR 734	Tropical Ecology	
NR 743	Ecology and Society in a Changing Arctic	
NR 744	Biogeochemistry	
NR 751	Aquatic Ecosystems	
NR 761	Environmental Soil Chemistry	
NR 765	Community Ecology	

NR 782	Forest Health in a Changing World	
MEFB 725	Marine Ecology	
MEFB 747	Aquatic Plants in Restoration/Management	
SAFS 760	Insect Pest Management	
MEFB 628	Marine Invertebrate Evolution and Ecology	
MEFB 674	Ecology and Marine Environment	
MEFB 702	Sustainable Marine Fisheries	
MEFB 772	Fisheries Biology: Conservation and Management	
<b>Social Sciences</b>		
Select two to five courses: no more than one course may be at the 400 or 500 level. Additional courses must be at the 600 or 700 levels.		
CEP 415	Community Development Perspectives	
CEP 508	Applied Community Development	
NR 507	Introduction to our Energy System and Sustainable Energy	
NR 606	International Energy Topics	
NR 643	Economics of Forestry	
NR 662	Environmental Policy, Planning and Sustainability in New Zealand	
NR 720	International Environmental Politics and Policies for the 21st Century	
NR 724	Resolving Environmental Conflicts	
NR 784	Sustainable Living - Global Perspectives	
NR 787	Advanced Topics in Sustainable Energy	
ANTH 695	Globalization and Global Population Health	
CEP 614	Fundamentals of Planning	
CEP 673	Green Real Estate	
ECON 605	Intermediate Microeconomic Analysis	
ECON 645	International Economics	
ECON 668	Economic Development	
ECON 706	Economics of Climate Change	
EREC 572	Introduction to Natural Resource Economics	
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes	
EREC 627	Community Economics	
EREC 680	Agricultural and Food Policy	
EREC 708	Environmental Economics	
EREC 756	Rural and Regional Economic Development	
GEOG 673	Political Ecology	
HIST 618	American Environmental History	
POLT 751	Comparative Environmental Politics and Policy	
SOC 665	Environmental Sociology	
SOC 730	Communities and the Environment	
TOUR 400	Introduction to Tourism	
<b>Advanced Tools &amp; Skills and Natural History</b>		
Select at least one course		
NR 425	Field Dendrology	
NR #655	Vertebrate Biology	
NR 703	Watershed Water Quality Management	
NR 707	Environmental Modeling	
NR 712	Mammalogy	
NR 713	Quantitative Ecology	
NR 729	Silviculture	
NR 745	Forest Management	
NR 749	Forest Inventory and Modeling	
NR 757	Remote Sensing of the Environment	
NR 759	Digital Image Processing for Natural Resources	
NR 760	Geographic Information Systems in Natural Resources	
NR 785	Systems Thinking for Sustainable Solutions	
SOC 601	Methods of Social Research	
BIOL 752	New England Mushrooms: a Field and Lab Exploration	
CEP 777	Topics in Community Planning	
TOUR 767	Social Impact Assessment	
MEFB 719	Field Studies in Lake Ecology	
MEFB #732	Lake Management	
ZOOL 542	Ornithology	
<b>Senior Capstone Options</b>		
The ECS major capstone experience may be filled by any one (1) of the following options:		4
Option 1:		
NR 786	Leadership for Sustainability	
Option 2: Both seminars must be scheduled. At least one must be taken in the senior year.		

NR 753 & NR 754	Critical Issues in Sustainability: Sustainability as an Abundance Paradigm and Critical Issues in Sustainability: Sense of Place
Option 3:	
NR 663	Applied Directed Research in New Zealand (NZ Directed projects, if taken in the senior year) <sup>2</sup>
Option 4:	
Directed projects fulfilling one of the following: McNair Research Theses, Hamel Center Programs (IROP, SURF USA, SURF Abroad, etc.) may be applied in consultation with the adviser and ECS program coordinator.	
<b>Work Experience</b>	
NR 600	Work Experience <sup>3</sup>
<b>Total Credits</b>	<b>60</b>

<sup>1</sup> The focus area is based upon at least one course in the ecology and natural resources category, along with a combination of courses in the social sciences; tools, skills, and natural history categories; and any additional courses from the ecology and natural resources category reflecting the student's interests and future direction. Focus areas should be designed in close consultation with the adviser. Courses used to fulfill core requirements may not be used in the focus area.

<sup>2</sup> If NR 663 Applied Directed Research in New Zealand is taken in the junior year or earlier, then one Critical Issues seminar (2cr) or Leadership for Sustainability must be taken in the senior year to fulfill the capstone requirement.

<sup>3</sup> Each ECS major will engage in a practical experience reflecting their interests and goals. The choice of the experience will be made in conjunction with the adviser and may occur any time beginning with the sophomore year.

## Degree Plan

**Sample** Course Sequence for Environmental Conservation and Sustainability

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology (Inquiry, Disc BS)	4
NR 435	Contemporary Conservation Issues and Environmental Awareness (Disc ETS)	4
EREC 411	Environmental and Resource Economics Perspectives (or Discovery Course, not SS or ETS)	4
ENGL 401 or Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
NR 437	Principles of Sustainability	4
NR 439	Environmental Biology	4
EREC 411	Environmental and Resource Economics Perspectives (or Discovery Course, not SS or ETS)	4
ENGL 401 or Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
NR 415	Natural Resources Field Methods	2
Ecological Principles <sup>1</sup>		4
Physical Science (Disc PS) <sup>2</sup>		4

Presentation Skills (possible Disc FPA) <sup>2</sup>	4
Practicum <sup>3</sup>	0
Elective	4
<b>Credits</b>	<b>18</b>

### Spring

Statistics (Disc QR) <sup>2</sup>	4
Writing Skills (Univ. writing req.) <sup>2</sup>	4
NR 658 Introduction to Geographic Information Systems	4
NR 602 or Discovery Course	4
<b>Credits</b>	<b>16</b>

### Third Year

#### Fall

NR 602 or Discovery Course	4
Ethics/Values Requirement	4
Focus Area Courses	8
OR Electives	
OR any remaining Discovery or WI requirement	
OR Capstone <sup>4</sup>	
<b>Credits</b>	<b>16</b>

#### Spring

Focus Area Courses <sup>5</sup>	16
OR Electives	
OR any remaining Discovery or WI requirements	
OR Capstone <sup>4</sup>	
<b>Credits</b>	<b>16</b>

### Fourth Year

#### Fall

Capstone Requirement <sup>5</sup>	2-4
Focus Area Courses	12
OR Electives	
OR any remaining Discovery of WI requirements	
<b>Credits</b>	<b>14-16</b>

#### Spring

Capstone Requirement <sup>5</sup>	2-4
Focus Area Courses	12
OR Electives	
OR any remaining Discovery of WI requirements	
<b>Credits</b>	<b>14-16</b>
<b>Total Credits</b>	<b>126-130</b>

<sup>1</sup> All choices for the Ecological Principles requirement **except** for SAFS 502 are fall courses.

<sup>2</sup> The Statistics, Physical Science, Writing Skills and Presentation Skills requirements may be taken in either the Fall or Spring Semester of the second year.

<sup>3</sup> Work experience, internship, etc may be scheduled any time beginning in the second year.

<sup>4</sup> One of the 2 credit capstone seminars may be taken in either the fall or spring of the junior year.

<sup>5</sup> One 2 credit seminar may be taken in each of the Fall and Spring semesters of the Senior Year OR NR 786 may be taken in the Fall semester of the Senior Year.

# Student Learning Outcomes

- Students will be able to:
- Describe and explain the interactions among physical, biological, chemical, and human components of the environment;
  - Formulate tests of environmental questions, acquire data, and apply scientific methods to answer these questions;
  - Describe and explain the ecological and societal value of biodiversity, sustainability, and environmental stewardship;
  - Use principles of ecology, economics, sustainability, and policy science to solve real-world environmental problems;
  - Communicate effectively to peers within the environmental community and with audiences outside of the discipline.

## Environmental Conservation and Sustainability Minor

<https://colsa.unh.edu/natural-resources-environment/program/minor/environmental-conservation-sustainability>

### Description

The minor in Environmental Conservation and Sustainability allows students from diverse majors across all UNH colleges to incorporate the theory and practice of sustainable resource use into their 4-year baccalaureate studies. Students take required introductory courses in both conservation and sustainability and then can fill out their minor with choices from ecology, social science and management, and a range of advanced topics. As well, students who participate in the EcoQuest Study Abroad Program can apply their courses to the minor.

### Requirements

- 20 credits total required**
- A grade of C or better in each of the 5 courses.
  - No more than 8 credits used to satisfy major requirements may be used for the minor
  - Credit/fail courses may not be used for the minor.

Code	Title	Credits
<b>Required Courses</b>		
NR 435	Contemporary Conservation Issues and Environmental Awareness	4
NR 437	Principles of Sustainability	4
<b>Select one course from each of the following categories:</b>		
<b>Ecology (choose one):</b>		<b>4</b>
BIOL 541	Ecology	
NR 433	Wildlife Ecology	
NR 502	Forest Ecosystems and Environmental Change	
NR 527	Forest Ecology	
NR 660	Ecology and Biogeography of New Zealand	
SAFS 502	Agroecology	
<b>Social Science and Management (choose one):</b>		<b>4</b>
NR 507	Introduction to our Energy System and Sustainable Energy	
NR 602	Natural Resources and Environmental Policy	
NR 662	Environmental Policy, Planning and Sustainability in New Zealand	
NR 786	Leadership for Sustainability	
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes	
EREC 627	Community Economics	

<b>Advanced Topics in Conservation and Sustainability (choose one):</b>		<b>4</b>
NR 603	Landscape Ecology	
NR 606	International Energy Topics	
NR 650	Principles of Conservation Biology	
NR 661	Restoration Ecology and Ecosystem Management in New Zealand	
NR 720	International Environmental Politics and Policies for the 21st Century	
NR 724	Resolving Environmental Conflicts	
NR 784	Sustainable Living - Global Perspectives	
NR 785	Systems Thinking for Sustainable Solutions	
NR 787	Advanced Topics in Sustainable Energy	
NR 795	Investigations <sup>1</sup>	
MEFB 702	Sustainable Marine Fisheries	
EREC 708	Environmental Economics	
TOUR 767	Social Impact Assessment	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> NR 795 Investigations requires working with an individual ECS faculty member on a special problem/issue.

## Environmental Sciences

The College of Engineering and Physical Sciences (CEPS) and the College of Life Sciences and Agriculture (COLSA) jointly offer a bachelor of science degree in environmental sciences. Environmental sciences, an interdisciplinary field, focuses on the interaction of biological, chemical, and physical processes that shape our natural environment. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, the ability to communicate effectively with both scientific and lay audiences, competency in field methods appropriate for entry-level environmental science positions, competency in the use and application of Geographic Information Systems (GIS), a basic understanding of environmental policy, and the ability to contribute to multidisciplinary teams. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. The full-time faculty members comprising this program have major teaching and research emphases in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, geospatial science, global change, hydrology, plant ecology, soil science, and water resource management.

Employment opportunities include environmental consulting firms, educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants; the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment. Students should consult with their adviser early if their goals include further study.

The Program has four options, and specific course requirements for the major vary by option. The geosystems and hydrology options are both managed by the Department of Earth Sciences in CEPS, and the ecosystems and soil and watershed management options are both managed by the Department of Natural Resources and the Environment in COLSA.

<https://colsa.unh.edu/natural-resources-environment>

## Programs

- [Environmental Sciences Major: Ecosystems Option \(B.S.\)](#) (p. 307)
- [Environmental Sciences Major: Geosystems Option \(B.S.\)](#) (p. 194)
- [Environmental Sciences Major: Hydrology Option \(B.S.\)](#) (p. 197)
- [Environmental Sciences Major: Soil and Watersheds Option \(B.S.\)](#) (p. 308)

## Faculty

COLSA faculty: <https://colsa.unh.edu/directory/all>

CEPS faculty: <https://ceps.unh.edu/directory/all>

## Environmental Sciences Major: Ecosystems Option (B.S.)

<https://colsa.unh.edu/natural-resources-environment/program/bs/environmental-sciences-major-ecosystems-option>

## Description

The College of Life Sciences and Agriculture (COLSA) and the College of Engineering and Physical Sciences (CEPS) jointly offer a bachelor of science degree in environmental sciences. Environmental science is an interdisciplinary field concerned with the interaction of biological, chemical, and physical processes that shape the environment, and control the response of natural systems to human activities. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, experience working in interdisciplinary teams to apply this understanding, and the ability to communicate effectively with both scientific and lay audiences. While in this program, students will acquire significant experience with field, laboratory and analytical methods appropriate for employment in professional environmental science positions as well as a basic understanding of environmental policy. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. Program faculty emphasize teaching and research in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, global change, hydrology, plant ecology, soil science, and water resource management among many other fields.

Employment opportunities include environmental consulting firms; educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants, the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment.

The Program has four options, and specific course requirements for the major vary by option. The ecosystems and soils and watersheds options are both managed by the Department of Natural Resources and the Environment in COLSA, and the geosystems and hydrology options are both managed by Earth Sciences in CEPS.

## Requirements

Code	Title	Credits
<b>Scope of the Major (Introduction - 3 Courses)</b>		<b>9</b>
NR 400	Professional Perspectives in Natural Resources	
NR 403	Introduction to Environmental Science	
NR 435 or NR 437	Contemporary Conservation Issues and Environmental Awareness Principles of Sustainability	
<b>The Scientific Basis (Foundation - 7 Courses)</b>		<b>28</b>
<b>Biology I:</b>		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	
<b>Biology II:</b>		
BIOL 411 or NR 439	Introductory Biology: Molecular and Cellular Environmental Biology	
<b>Chemistry I:</b>		
CHEM 403 or CHEM 405 or CHEM 411	General Chemistry I Chemical Principles for Engineers Introductory Chemistry for Life Sciences	
<b>Chemistry II:</b>		
NR 561 or CHEM 404	Chemistry of the Environment General Chemistry II	
<b>Physics:</b>		
PHYS 401 or PHYS 407	Introduction to Physics I General Physics I	
<b>Calculus:</b>		
MATH 424B or MATH 425	Calculus for Life Sciences Calculus I	
<b>Statistics:</b>		
BIOL 528 or EREC 525	Applied Biostatistics I Statistical Methods and Applications	
<b>Earth and its Systems (Core - 6 Courses)</b>		<b>24</b>
<b>Earth Science:</b>		
ESCI 401 or ESCI 402 or ESCI 409	Dynamic Earth Earth History Geology and the Environment	
<b>Aquatic Science:</b>		
NR 504	Freshwater Resources	
<b>Soils:</b>		
NR 501	Studio Soils	
<b>Climate/Weather:</b>		
ESCI 514 or GEOG 473 or GEOG 670	Introduction to Climate Elements of Weather Climate and Society	
<b>Ecology:</b>		
NR 527 or NR 660 or BIOL 541 or MEFB 530 or MEFB 674	Forest Ecology Ecology and Biogeography of New Zealand Ecology Evolution and Marine Diversity Ecology and Marine Environment	
<b>Human Dimensions:</b>		
NR 602 or NR 662 or NR 507 or NR 784 or MEFB 702	Natural Resources and Environmental Policy Environmental Policy, Planning and Sustainability in New Zealand Introduction to our Energy System and Sustainable Energy Sustainable Living - Global Perspectives Sustainable Marine Fisheries	
<b>Environmental Toolkit (Methods - 2 Courses)</b>		<b>7-8</b>
Select two courses from the following:		
ESCI 534	Techniques in Environmental Sciences	
NR 658 or ESCI 777 or FORT 581	Introduction to Geographic Information Systems GIS for Earth & Environmental Sciences Applied Geospatial Techniques	
NR 757 or ESCI 778	Remote Sensing of the Environment Remote Sensing Earth & Environmental Sciences	
NR 713	Quantitative Ecology	
MEFB 500	Coastal Habitat Field Research Methods	
<b>Ecosystem Integration (Advanced Topics - 4 Courses)</b>		<b>16</b>
Population and Community Ecology:		

NR 765	Community Ecology
or NR 734	Tropical Ecology
or NR 706	Soil Ecology
or NR 660	Ecology and Biogeography of New Zealand
or NR 640	Wildlife Population Ecology
or NR 642	Introduction to Biogeography
or NR 603	Landscape Ecology
or BIOL 720	Plant-Animal Interactions
Ecosystems:	
NR 730	Terrestrial Ecosystems
or NR 751	Aquatic Ecosystems
or NR 661	Restoration Ecology and Ecosystem Management in New Zealand
or MEFB 508	Marine Ecosystem Research and Management
Biogeochemistry:	
NR 744	Biogeochemistry
or NR 761	Environmental Soil Chemistry
or NR 703	Watershed Water Quality Management
or ESCI 642	Biogeosciences in the Earth System
Environmental Problem Solving:	
ESCI 654	Fate and Transport in the Environment
or NR 707	Environmental Modeling
or EREC 760	Ecological-Economic Modeling for Decision Making
or NR 749	Forest Inventory and Modeling
or NR 743	Ecology and Society in a Changing Arctic
Integration and Research (The Capstone Experience) 1-2	
Capstone:	
NR 663	Applied Directed Research in New Zealand
or NR 786	Leadership for Sustainability
or NR 795	Investigations
or NR 799	Honors Senior Thesis

Capstone: NR 663 (EcoQuestif Senior Year)(WI), or NR 786, or NR 795, or NR 799, or approved research experience, or approved internship. Every student must complete a capstone experience senior year, or during the summer before senior year,if at least 90 credit hours have been completed.

NR791 –Preparation for Capstone (1 credit, pass/no credit) is offered every spring. While not required for graduation, it is recommended for second semester juniors who need guidance in terms of developing a capstone project and completing the Capstone Contract.

- a. A Contract form provided by the Program must be completed and signed by the student, the adviser, the program coordinator, and the capstone mentor (faculty or off-campus) before the capstone experience,by the end of Junior Year.
- b. A signed Capstone Experience Evaluation form must be handed in to your advisor by the end of Senior year in order to graduate.

Individualizing Your Education (Electives)

One goal of this program is to allow students the opportunity to pursue minors, dual majors, research and study abroad opportunities, while still completing the degree in four years of full-time enrollment. To this end, the program requires a total of 85 credit hours. The University Discovery program includes 5 areas (20 credit hours) not covered by this major. These include English 401, Fine and Performing Arts, Humanities, Historical Perspectives, World Cultures (NOTE: The World Cultures category can be met by certain study abroad programs, including EcoQuest). Combined, Major and Discovery requirements total 105 credit hours. With a total of 128 credit hours required by the University for graduation, this leaves 23 credit hours that can be put towards minors, dual majors, study abroad, Directed Research, etc.

- <sup>1</sup> Many students enroll in the EcoQuest program (a study abroad opportunity in New Zealand), which satisfies the policy requirement, and capstone requirement if taken senior year.
- <sup>2</sup> NR 791 Preparation for Capstone - is offered every spring. While not required for graduation, it is recommended for second semester juniors who need guidance in terms of developing a capstone project and completing the Capstone Contract.

Student Learning Outcomes

Key Learning Objectives: The primary Learning Outcome for the Environmental Science Program will be that students will master the content offered in the courses specified in the curriculum as assessed by performance on exams, labs and written assignments. This will include an understanding of the physical, chemical and biological processes

central to the function of environmental systems, the mathematical concepts required to understand, explain and predict those processes, and the ability to determine the significance of results, both in terms of statistical probability and impact on the larger world.

The learning process leading to this mastery will require that students will have:

- Knowledge of how physical, chemical, and biological factors interact with human activities to shape the environment;
- Proficiency with environmental techniques including field, lab, GIS, or modeling;
- The ability to solve environmental problems;
- The ability to communicate orally or in writing about environmental dynamics.

Environmental Sciences Major: Soil and Watersheds Option (B.S.)

<https://colsa.unh.edu/natural-resources-environment/program/bs/environmental-sciences-major-soil-watersheds-option>

Description

The College of Life Sciences and Agriculture (COLSA) and the College of Engineering and Physical Sciences (CEPS) jointly offer a bachelor of science degree in environmental sciences. Environmental science is an interdisciplinary field concerned with the interaction of biological, chemical, and physical processes that shape the environment, and control the response of natural systems to human activities. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, experience working in interdisciplinary teams to apply this understanding, and the ability to communicate effectively with both scientific and lay audiences. While in this program, students will acquire significant experience with field, laboratory and analytical methods appropriate for employment in professional environmental science positions as well as a basic understanding of environmental policy. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. Program faculty emphasize teaching and research in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, global change, hydrology, plant ecology, soil science, and water resource management among many other fields.

Employment opportunities include environmental consulting firms; educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants, the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernment environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment.

The Program has four options, and specific course requirements for the major vary by option. The ecosystems and soils and watersheds options are both managed by the Department of Natural Resources and the Environment in COLSA, and the geosystems and hydrology options are both managed by Earth Sciences in CEPS.



# Requirements

Code	Title	Credits
<b>Scope of the Major (Introduction - 3 Courses)</b>		<b>9</b>
NR 400	Professional Perspectives in Natural Resources	
NR 403	Introduction to Environmental Science	
NR 435 or NR 437	Contemporary Conservation Issues and Environmental Awareness Principles of Sustainability	
<b>The Scientific Basis (Foundation - 7 Courses)</b>		<b>28</b>
Biology I:		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	
Chemistry I:		
CHEM 403 or CHEM 405 or CHEM 411	General Chemistry I Chemical Principles for Engineers Introductory Chemistry for Life Sciences	
Chemistry II:		
NR 561 or CHEM 404	Chemistry of the Environment General Chemistry II	
Physics:		
PHYS 401 or PHYS 407	Introduction to Physics I General Physics I	
Biology/Physics II:		
BIOL 411 or PHYS 402 or PHYS 408	Introductory Biology: Molecular and Cellular Introduction to Physics II General Physics II	4
Calculus:		
MATH 424B or MATH 425	Calculus for Life Sciences Calculus I	
Statistics:		
BIOL 528 or EREC 525	Applied Biostatistics I Statistical Methods and Applications	
<b>Earth and its Systems (Core - 6 Courses)</b>		<b>24</b>
Earth Science:		
ESCI 401 or ESCI 402 or ESCI 409	Dynamic Earth Earth History Geology and the Environment	
Aquatic Science:		
NR 504	Freshwater Resources	
Soils:		
NR 501	Studio Soils	
Climate/Weather:		
ESCI 514 or GEOG 473 or GEOG 670	Introduction to Climate Elements of Weather Climate and Society	
Ecology:		
BIOL 541 or NR 660 or NR 527 or MEFB 530 or MEFB 674	Ecology Ecology and Biogeography of New Zealand Forest Ecology Evolution and Marine Diversity Ecology and Marine Environment	
Human Dimensions:		
NR 602 or NR 662 or NR 507 or NR 784 or MEFB 702	Natural Resources and Environmental Policy Environmental Policy, Planning and Sustainability in New Zealand Introduction to our Energy System and Sustainable Energy Sustainable Living - Global Perspectives Sustainable Marine Fisheries	
<b>Environmental Toolkit (Methods - 2 Courses)</b>		<b>7-8</b>
Select two courses from the following:		
ESCI 534	Techniques in Environmental Sciences	
NR 658 or ESCI 777 or FORT 581	Introduction to Geographic Information Systems GIS for Earth & Environmental Sciences Applied Geospatial Techniques	
NR 757 or ESCI 778	Remote Sensing of the Environment Remote Sensing Earth & Environmental Sciences	
NR 707	Environmental Modeling	
NR 713	Quantitative Ecology	
MEFB 500	Coastal Habitat Field Research Methods	

<b>Soil and Watershed Systems (Advanced Topics –5 courses –20 credits)</b>		<b>16</b>
Advanced Soils:		
NR 761 or NR 706	Environmental Soil Chemistry Soil Ecology	
Watersheds:		
NR 703	Watershed Water Quality Management	
Ecosystems:		
NR 730 or NR 751 or NR 661 or MEFB 508	Terrestrial Ecosystems Aquatic Ecosystems Restoration Ecology and Ecosystem Management in New Zealand Marine Ecosystem Research and Management	
Biogeochemistry:		
NR 744 or ESCI 642	Biogeochemistry Biogeosciences in the Earth System	
Advanced Soils and Watersheds:		
NR 743 or ESCI 654 or ESCI 705 or ESCI 710 or ESCI 747 or CEE 796 or CEE 754	Ecology and Society in a Changing Arctic <sup>1</sup> Fate and Transport in the Environment Principles of Hydrology Groundwater Hydrology Aqueous Geochemistry Special Topics Engineering Hydrology	
<b>Integration and Research (The Capstone Experience) 2-3</b>		
Capstone:		
NR 663 or NR 786 or NR 795 or NR 799	Applied Directed Research in New Zealand Leadership for Sustainability Investigations Honors Senior Thesis	4
Capstone: NR 663 (EcoQuestif Senior Year)(WI), or NR 786, or NR 795, or NR 799, or approved research experience, or approved internship. Every student must complete a capstone experience senior year, or during the summer before senior year,if at least 90 credit hours have been completed.		
NR791 –Preparation for Capstone (1 credit, pass/no credit) is offered every spring. While not required for graduation, it is recommended for second semester juniors who need guidance in terms of developing a capstone project and completing the Capstone Contract.		
a. A Contract form provided by the Program must be completed and signed by the student, the adviser, the program coordinator, and the capstone mentor (faculty or off-campus) before the capstone experience,by the end of Junior Year.		
b. A signed Capstone Experience Evaluation form must be handed in to your advisor by the end of Senior year in order to graduate.		
<b>Individualization Your Education (19 Credits)</b>		
Program Advisors will help students select additional coursesfrom across the campus that relate to that student's areas of intellectual interest, and assist with the completion of minors, dual majors, study abroad programs, research projects, internships, etc.		
<b>Total Credits</b>		<b>92-93</b>

- <sup>1</sup> NR706 or NR761 if not already taken.
- <sup>2</sup> Many students enroll in the EcoQuest program (a study abroad opportunity in New Zealand), which satisfies the policy requirement, and capstone requirement if taken senior year.
- <sup>3</sup> NR 791 Preparation for Capstone - is offered every spring. While not required for graduation, it is recommended for second semester juniors who need guidance in terms of developing a capstone project and completing the Capstone Contract.

## Student Learning Outcomes

**Key Learning Objectives:** The primary Learning Outcome for the Environmental Science Program will be that students will master the content offered in the courses specified in the curriculum as assessed by performance on exams, labs and written assignments. This will include an understanding of the physical, chemical and biological processes central to the function of environmental systems, the mathematical concepts required to understand, explain and predict those processes, and the ability to determine the significance of results, both in terms of statistical probability and impact on the larger world.

The learning process leading to this mastery will require that students will have:

- Knowledge of how physical, chemical, and biological factors interact with human activities to shape the environment;
- Proficiency with environmental techniques including field, lab, GIS, or modeling;
- The ability to solve environmental problems;
- The ability to communicate orally or in writing about environmental dynamics.

## Equine Studies

### Mission Statement

The mission of the UNH Equine Program is to produce highly sought-after and employable graduates for the diverse equine industry; to provide students with a comprehensive, well-rounded, science-based, hands-on curriculum; and to honor our land grant heritage through offering outreach programs for the state and regional equine community.

### B.S. in Equine Studies

The equine studies degree program at UNH offers a unique and well-rounded program of study to students pursuing a career in the horse industry. All students receive a background in science and business, as well as a common core of equine-specific courses that incorporate outstanding opportunities for experiential learning. Students then choose a specialization in one of three options: Equine Industry and Management, Equine Assisted Activities and Therapies, and Equine Science. This allows each student to focus on the courses most relevant to their individual educational and professional goals. Students in each option have a shared core of courses, and each student chooses 20 credits of approved electives, which allows them to further customize their studies to meet their individual needs and prepare for their personal career goals.

### Equine Industry and Management

This option is designed for:

- Students interested in a traditional equine career, such as riding instruction, training, or stable management
- Students interested in a career in equine business, such as competition management, sales, marketing, or equine business management

Courses for this option include business classes and hands-on equine classes, such as teaching, training, stable management, and facility management

### Equine-Assisted Activities & Therapies

This option is designed for:

- Students interested in teaching therapeutic riding or other equine-assisted activities and therapies
- Students interested in an administrative career at a center conducting equine-assisted activities and therapies, such as fundraising, volunteer coordination, or management for a therapeutic riding center

This option includes classes in equine studies, equine-assisted activities and therapies, non-profit organizations, and topics related to human

development and special needs. Students also prepare and test for PATH International instructor certification, which allows them to teach therapeutic riding at any PATH International operating center.

## Equine Science

This option is designed for:

- Students interested in a career in the scientific or technical fields within the equine industry, including nutrition, rehabilitation, reproduction, and research
- Students interested in pursuing graduate studies, including veterinary school

This option combines equine classes with a more intensive science curriculum, including animal behavior, reproduction, and nutrition.

## GPA Requirements for All Students in Equine Studies

All students enrolled in the equine studies major will be required to receive a minimum grade of C- in all classes required for the major. Students failing to do this will need to retake the course in order to receive credit.

<https://colsa.unh.edu/agriculture-nutrition-food-systems>

### Programs

- [Equine Studies Major: Equine Assisted Activities & Therapies Option \(B.S.\)](#) (p. 310)
- [Equine Studies Major: Equine Industry and Management Option \(B.S.\)](#) (p. 312)
- [Equine Studies Major: Equine Science Option \(B.S.\)](#) (p. 314)
- [Equine Assisted Activities and Therapies Minor](#) (p. 317)
- [Equine Studies Minor](#) (p. 317)

### Faculty

<https://colsa.unh.edu/agriculture-nutrition-food-systems/faculty-staff-directory>

## Equine Studies Major: Equine Assisted Activities & Therapies Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/equine-studies-major-therapeutic-riding-option>

### Description

*Beginning in the 2022/23 academic year (Spring 2023), the Equine Studies Major: Equine Assisted Activities & Therapies option will no longer be accepting new students. Current students will continue to have access to the same high-quality education and resources until they graduate.*

This option is designed for:

- Students interested in a teaching therapeutic riding or other equine-assisted activities and therapies.
- Students interested in an administrative career at a center conducting equine-assisted activities and therapies, such as fundraising, volunteer coordination, or management for a therapeutic riding center.

This option includes classes in equine studies, equine-assisted activities and therapies, non-profit organizations, and topics related to human development and special needs. Students also prepare and test for PATH International instructor certification, which allows them to teach therapeutic riding at any PATH International operating center.

In addition to the standard core courses for all Equine Studies majors, students in Equine Management take courses in human anatomy and physiology, agricultural business management and non-profit management, equine-assisted activities, therapeutic riding instruction, equine management, and equine conformation. Students then select 20 approved credits to allow them to focus in the areas most relevant to their desired career. Those courses may include classes in equine training, riding instruction, sign language, human development, and education.

## Requirements

A minimum grade of C-minus or better must be earned in all Equine Studies courses required by the major.

Code	Title	Credits
<b>Core Equine Studies Requirements</b>		
ANSC 411	Freshman Seminar in Equine Science	1
ANSC 437	Equine Husbandry Techniques	4
ANSC 504	Equine Physiology	4
ANSC 522	Intermediate Horsemanship Theory	3
or ANSC 405	Theory of Horsemanship	
ANSC 547	Equine Stable Management	3
ANSC 600	Field Experience <sup>1</sup>	1-4
ANSC 612	Genetics of Animals	4
or GEN 604	Principles of Genetics	
ANSC 665	Principles of Horse Trials Management <sup>1</sup>	2
ANSC 725	Equine Sports Medicine	4
ANSC 796	Equine Senior Seminar	2
ANSC 797	Equine Capstone Experience	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
ENGL 501	Introduction to Creative Nonfiction	4
or ENGL 419	How to Read Anything	
or ENGL 502	Professional and Technical Writing	
or ENGL 503	Persuasive Writing	
or ANSC 543	Technical Writing in Animal Sciences	
EREC 411	Environmental and Resource Economics Perspectives	4
or ECON 402	Principles of Economics (Micro)	
<b>Equine-Assisted Activities and Therapies Requirements</b>		
ANSC 426	Equine Conformation and Lameness	4
ANSC 500	Equine Assisted Activities and Therapies	4
ANSC 546	Animal Business Applications	4
ANSC 635	Nonprofit Management for Agriculture Business	4
ANSC 643	Principles of Therapeutic Riding Instruction	4
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
<b>Therapeutic Riding Electives: Choose 20 credits from the following:</b>		
ANSC 507	Survey of Equine Training Techniques	3
ANSC 536	Preparation and Competition Techniques for the Modern Sport Horse	4
ANSC 538	Equine Handling/Longeing	1
ANSC 602	Animal Rights and Societal Issues	4

ANSC 640	Principles of Riding Instruction	4
ANSC 641	Principles of Dressage Instruction	2
ANSC 642	Principles of Jumping Instruction	2
ANSC 695	Supervised Teaching Experience	1-2
ANSC 744	Advanced Concepts in Therapeutic Riding Instruction	4
COMM 401	American Sign Language I	4
COMM 420	Survey of Communication Disorders	4
COMM 502	American Sign Language II	4
EDUC 500	Exploring Teaching	4
EDUC 650	Introduction to Disability in Inclusive Schools and Communities	4
EDUC 701	Human Development & Learning: Cultural Perspectives	4
EDUC 751A	Inclusive Elementary Education: Literacies and Learning for Diverse Learners	4
EDUC 751B	Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions	4
EDUC 760	Introduction to Young Children with Special Needs	4
MGT 535	Organizational Behavior	4
OT 500	Behavior and Development of Children	4
or HDFS 525	Human Development	
OT 510	Exploring Occupational Therapy and Occupation	4
PSYC 561	Abnormal Behavior	4
PSYC 581	Child Development	4
RMP 501	Recreation Services for Individuals with Disabilities	4
SW 424	Introduction to Social Work	4
SW 797	Special Topics in Social Welfare	4
ZOOL 613	Animal Behavior	5

<sup>1</sup> Waived for TSAS equine management graduates

## Degree Plan

### Sample Student Schedule by Semester - Therapeutic Riding

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ANSC 402	Horsemanship Lab	1
ANSC 411	Freshman Seminar in Equine Science	1
ANSC 422	Introduction to Horsemanship Theory	3
ANSC 437	Equine Husbandry Techniques	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
ANSC 426	Equine Conformation and Lameness	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
ANSC 546	Animal Business Applications	4
ANSC 500	Equine Assisted Activities and Therapies	4
BMS 507	Human Anatomy and Physiology I	4
Choice of Major Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ANSC 402	Horsemanship Lab	1
ANSC 522	Intermediate Horsemanship Theory	3

ANSC 643	Principles of Therapeutic Riding Instruction	4
BMS 508	Human Anatomy and Physiology II	4
ENGL 501	Introduction to Creative Nonfiction	4
EREC 411	Environmental and Resource Economics Perspectives	4
<b>Credits</b>		<b>20</b>
<b>Third Year</b>		
<b>Fall</b>		
ANSC 504	Equine Physiology	4
ANSC 547	Equine Stable Management	3
ZOOL 613	Animal Behavior	5
or ANSC 640	or Principles of Riding Instruction	
or ANSC 795W	or Investigations	
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ANSC 635	Nonprofit Management for Agriculture Business	4
ANSC 643	Principles of Therapeutic Riding Instruction	4
ANSC 665	Principles of Horse Trials Management	2
Discovery Course		4
<b>Credits</b>		<b>14</b>
<b>Summer</b>		
ANSC 600	Field Experience	1-4
<b>Credits</b>		<b>1-4</b>
<b>Fourth Year</b>		
<b>Fall</b>		
ANSC 612	Genetics of Animals	4
or GEN 604	or Principles of Genetics	
ANSC 725	Equine Sports Medicine	4
ANSC 744	Advanced Concepts in Therapeutic Riding Instruction	4
ANSC 796	Equine Senior Seminar	2
<b>Credits</b>		<b>14</b>
<b>Spring</b>		
ANSC 797	Equine Capstone Experience	4
Discovery Course		4
Major Elective		4
Major Elective		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>130-133</b>

<sup>1</sup> 2+ cr above/Horsemanship Theory

- Explain guidelines for equine nutrition, feeding, and parasite management.
- Demonstrate technical proficiency with English tack, boots, bandages, and blankets.
- Demonstrate safe, competent longeing technique using a trained horse.
- Demonstrate an understanding of the principles of riding practices in equestrian sport.
- Communicate effectively, in written and verbal form, about professional topics in the equine industry.

Therapeutic Riding option:

- Demonstrate an applied understanding of equine assisted activities & therapies (EAAT) teaching techniques for a broad spectrum of disorders and disabilities.
- Provide documentation of successful completion of the PATH Intl. registered instructor certification program.
- Identify ideal conformation and movement faults as they relates to equine form and function and the therapeutic needs of clients with disabilities.
- Demonstrate proficiency with adaptive equipment, tack, and procedures used in an equine assisted activities & therapies (EAAT) setting.
- Demonstrate working knowledge of key elements of business planning, management, and development, as they relate to an equine assisted activities & therapies (EAAT) setting.

## Equine Studies Major: Equine Industry and Management Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/equine-studies-major-equine-industry-management-option>

### Description

*Beginning in the 2022/23 academic year (Spring 2023), the Equine Studies Major: Equine Industry and Management option will no longer be accepting new students. Current students will continue to have access to the same high-quality education and resources until they graduate.*

This option is designed for:

- Students interested in a traditional equine career, such as riding instruction, training, or stable management.
- Students interested in a career in equine business, such as competition management, sales, marketing, or equine business management.

Courses for this option include business classes and hands-on equine classes, such as teaching, training, stable management, and facility management.

In addition to the standard core courses for all Equine Studies majors, students in Equine Management take courses in anatomy and physiology, agricultural business management, nutrition, and forages. Students then select 20 approved credits to allow them to focus in the areas most relevant to their desired career. Those courses may include classes in

## Student Learning Outcomes

All students who graduate from the B.S. in Equine Studies program will be able to:

- Identify, explain, and demonstrate safe, effective, and humane equine handling and stable management skills.
- Identify, explain, and demonstrate equine health management practices and basic equine first aid.

equipment and facility management, equine training, riding instruction, equine conformation, animal behavior, accounting, and marketing.

## Requirements

A minimum grade of C-minus or better must be earned in all Equine Studies courses required by the major.

Code	Title	Credits
<b>Core Equine Studies Requirements</b>		
ANSC 411	Freshman Seminar in Equine Science	1
ANSC 437	Equine Husbandry Techniques	4
ANSC 504	Equine Physiology	4
ANSC 522	Intermediate Horsemanship Theory	3
or ANSC 405	Theory of Horsemanship	
ANSC 547	Equine Stable Management	3
ANSC 665	Principles of Horse Trials Management <sup>1</sup>	2
ANSC 600	Field Experience <sup>1</sup>	1-4
ANSC 612	Genetics of Animals	4
or GEN 604	Principles of Genetics	
ANSC 796	Equine Senior Seminar	2
ANSC 725	Equine Sports Medicine	4
ANSC 797	Equine Capstone Experience	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
ENGL 501	Introduction to Creative Nonfiction	4
or ENGL 419	How to Read Anything	
or ENGL 502	Professional and Technical Writing	
or ENGL 503	Persuasive Writing	
or ANSC 543	Technical Writing in Animal Sciences	
EREC 411	Environmental and Resource Economics Perspectives	4
or ECON 402	Principles of Economics (Micro)	
<b>Industry and Management Requirements</b>		
AAS 432	Introduction to Forage and Grassland Management	3
ANSC 511	Anatomy and Physiology	8
& ANSC 512	and Anatomy and Physiology <sup>1</sup>	
ANSC 546	Animal Business Applications	4
ANSC 548	Agricultural Business Management	4
or ANSC 635	Nonprofit Management for Agriculture Business	
ANSC 609	Principles of Animal Nutrition <sup>1</sup>	4
ANSC 724	Reproductive Management and Artificial Insemination	4
or ANSC 701	Physiology of Reproduction	
or ANSC 750	Collaborative Farm Design and Development	
or BMS 718	Mammalian Physiology	
<b>Industry and Management Electives: Choose 20 credits from the following:</b>		
AAS 434	Equipment and Facilities Management	3
ADMN 502	Financial Accounting	4
ANSC 426	Equine Conformation and Lameness	4
ANSC 500	Equine Assisted Activities and Therapies	4
ANSC 507	Survey of Equine Training Techniques	3
ANSC 536	Preparation and Competition Techniques for the Modern Sport Horse	4
ANSC 538	Equine Handling/Longeing	1
ANSC 602	Animal Rights and Societal Issues	4
ANSC 640	Principles of Riding Instruction	4
ANSC 641	Principles of Dressage Instruction	2
ANSC 642	Principles of Jumping Instruction	2
ANSC 643	Principles of Therapeutic Riding Instruction	4
ANSC 695	Supervised Teaching Experience	1-2
ANSC 701	Physiology of Reproduction	4
ANSC 750	Collaborative Farm Design and Development	4
EDUC 500	Exploring Teaching	4
MGT 535	Organizational Behavior	4
MKTG 530	Survey of Marketing	4
PSYC 720	Animal Cognition	4
SML 560	Sport Psychology	4

SML 565	Principles of Coaching	4
ZOOL 613	Animal Behavior	5

<sup>1</sup> Waived for TSAS equine management graduates

## Degree Plan

Sample Student Schedule by Semester - Equine Industry and Management

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ANSC 402	Horsemanship Lab	1
ANSC 411	Freshman Seminar in Equine Science	1
ANSC 437	Equine Husbandry Techniques	4
ANSC 522	Intermediate Horsemanship Theory	3
BIOL 411	Introductory Biology: Molecular and Cellular	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
ANSC 426	Equine Conformation and Lameness	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
AAS 432	Introduction to Forage and Grassland Management	3
ANSC 511	Anatomy and Physiology	4
ANSC 546	Animal Business Applications	4
ANSC 547	Equine Stable Management	3
<b>Credits</b>		<b>14</b>
<b>Spring</b>		
AAS 434	Equipment and Facilities Management (Elective)	3
ANSC 512	Anatomy and Physiology	4
ANSC 536	Preparation and Competition Techniques for the Modern Sport Horse	4
ANSC 548	Agricultural Business Management	4
EREC 411	Environmental and Resource Economics Perspectives	4
<b>Credits</b>		<b>19</b>
<b>Third Year</b>		
<b>Fall</b>		
ANSC 504	Equine Physiology	4
ANSC 612	Genetics of Animals	4
ANSC 640	Principles of Riding Instruction (Elective)	4
ANSC 665	Principles of Horse Trials Management	2
Discovery Course		4
<b>Credits</b>		<b>18</b>



**Spring**

ANSC 641 & ANSC 642	Principles of Dressage Instruction and Principles of Jumping Instruction	4
ENGL 501	Introduction to Creative Nonfiction	4
Discovery Course		4
ANSC Writing Intensive		4

**Credits** 16

**Summer**

ANSC 600 or ANSC 795W	Field Experience or Investigations	1-4
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**Credits** 1-4

**Fourth Year****Fall**

ANSC 507	Survey of Equine Training Techniques	3
ANSC 538	Equine Handling/Longeing	1
ANSC 609	Principles of Animal Nutrition	4
ANSC 725	Equine Sports Medicine	4
ANSC 796	Equine Senior Seminar	2
Discovery Course		4

**Credits** 18

**Spring**

ANSC 724	Reproductive Management and Artificial Insemination	4
ANSC 797	Equine Capstone Experience	4
Discovery Course		4
Elective		4

**Credits** 16

**Total Credits** 135-138

## Student Learning Outcomes

All students who graduate from the B.S. in Equine Studies program will be able to:

- Identify, explain, and demonstrate safe, effective, and humane equine handling and stable management skills.
- Identify, explain, and demonstrate equine health management practices and basic equine first aid.
- Explain guidelines for equine nutrition, feeding, and parasite management.
- Demonstrate technical proficiency with English tack, boots, bandages, and blankets.
- Demonstrate safe, competent longeing technique using a trained horse.
- Demonstrate an understanding of the principles of riding practices in equestrian sport.
- Communicate effectively, in written and verbal form, about professional topics in the equine industry.

### Equine Industry & Management option:

- Analyze and identify both ideal conformation and movement faults as related to equine form and function.
- Demonstrate advanced handling, grooming, and longeing skills, beyond those required of all equine studies majors.

- Demonstrate knowledge of veterinary care beyond the basic level required of all equine studies majors, and demonstrate application of this knowledge to real-world emergency and management situations.
- Demonstrate knowledge of management practices for riding arenas, horse trailers, and large equipment.
- Demonstrate working knowledge of key elements in equine business planning, management, and development.

## Equine Studies Major: Equine Science Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/equine-studies-major-equine-science-option>

### Description

*Beginning in the 2022/23 academic year (Spring 2023), the Equine Studies Major: Equine Science option will no longer be accepting new students. Current students will continue to have access to the same high-quality education and resources until they graduate.*

This option is designed for:

- Students interested in a career in the scientific or technical fields within the equine industry, including nutrition, rehabilitation, reproduction, and research.
- Students interested in pursuing graduate studies, including veterinary school.

This option combines equine classes with a more intensive science curriculum, which includes animal behavior, reproduction, and nutrition.

In addition to the standard core courses for all Equine Studies majors, students in Equine Management take courses in anatomy and physiology, chemistry, nutrition, reproduction, and statistics. Students then select 20 approved credits to allow them to focus in the areas most relevant to their desired career. Those courses may include classes in forages, equine training, animal behavior, animal rights, animal cognition, and infectious diseases. Students in this option may also use these 20 credits to take courses required to apply to veterinary school, including organic chemistry, microbiology, biochemistry, physics, and calculus.

### Requirements

A minimum grade of C-minus or better must be earned in all Equine Studies courses required by the major.

Code	Title	Credits
<b>Core Equine Studies Requirements</b>		
ANSC 411	Freshman Seminar in Equine Science	1
ANSC 437	Equine Husbandry Techniques	4
ANSC 504	Equine Physiology	4
ANSC 522 or ANSC 405	Intermediate Horsemanship Theory Theory of Horsemanship	3
ANSC 547	Equine Stable Management	3
ANSC 600	Field Experience <sup>1</sup>	1-4
ANSC 612 or GEN 604	Genetics of Animals Principles of Genetics	4
ANSC 665	Principles of Horse Trials Management <sup>1</sup>	2
ANSC 725	Equine Sports Medicine	4
ANSC 796	Equine Senior Seminar	2
ANSC 797	Equine Capstone Experience	4

BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
ENGL 501	Introduction to Creative Nonfiction	4
or ENGL 419	How to Read Anything	
or ENGL 502	Professional and Technical Writing	
or ENGL 503	Persuasive Writing	
or ANSC 543	Technical Writing in Animal Sciences	
EREC 411	Environmental and Resource Economics Perspectives	4
or ECON 402	Principles of Economics (Micro)	
<b>Equine Science Requirements</b>		
ANSC 511 & ANSC 512	Anatomy and Physiology and Anatomy and Physiology <sup>1</sup>	8
ANSC 609	Principles of Animal Nutrition <sup>1</sup>	4
or NUTR 750	Nutritional Biochemistry	
ANSC 724	Reproductive Management and Artificial Insemination	4
or ANSC 701	Physiology of Reproduction	
BIOL 528	Applied Biostatistics I	4
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	8
<b>Equine Science Electives: Choose 20 credits from the following:</b>		
AAS 432	Introduction to Forage and Grassland Management	3
ANSC 426	Equine Conformation and Lameness	4
ANSC 500	Equine Assisted Activities and Therapies	4
ANSC 507	Survey of Equine Training Techniques	3
ANSC 538	Equine Handling/Longeing	1
ANSC 602	Animal Rights and Societal Issues	4
ANSC 695	Supervised Teaching Experience	1-2
ANSC 701	Physiology of Reproduction	4
ANSC 724	Reproductive Management and Artificial Insemination	4
ANSC 750	Collaborative Farm Design and Development	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMS 623	Histology: Microscopic Cellular Structure and Function	4
BMS 703	Infectious Disease and Health	4
BMS 704	Pathologic Basis of Disease	4
BMS 712	Experiences in Applied Veterinary Diagnostics	2
BMS 718	Mammalian Physiology	4
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
EDUC 500	Exploring Teaching	4
MATH 424B	Calculus for Life Sciences	4
NSB 727	Animal Communication	4
NUTR 750	Nutritional Biochemistry	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4
PSYC 720	Animal Cognition	4
ZOOL 613	Animal Behavior	5
ZOOL 736	Genes and Behavior	4

<sup>1</sup> Waived for TSAS equine management graduates

## Degree Plan

### Sample Student Schedule by Semester - Equine Science - Pre-Vet Intent

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ANSC 402	Horsemanship Lab	1
ANSC 411	Freshman Seminar in Equine Science	1
ANSC 437	Equine Husbandry Techniques	4

ANSC 522	Intermediate Horsemanship Theory	3
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 403	General Chemistry I	4
<b>Credits</b>		<b>17</b>

#### Spring

BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 404	General Chemistry II	4
ENGL 401	First-Year Writing	4
MATH 424B	Calculus for Life Sciences	4

**Credits** **16**

#### Second Year

##### Fall

ANSC 511	Anatomy and Physiology	4
ANSC 538	Equine Handling/Longeing	1
BIOL 528	Applied Biostatistics I	4
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
EREC 411	Environmental and Resource Economics Perspectives	4

**Credits** **18**

##### Spring

ANSC 512	Anatomy and Physiology	4
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
ENGL 501	Introduction to Creative Nonfiction	4
Discovery Course		4

**Credits** **17**

#### Third Year

##### Fall

ANSC 504	Equine Physiology	4
ANSC 547	Equine Stable Management	3
ANSC 612	Genetics of Animals	4
ANSC 665	Principles of Horse Trials Management	2
PHYS 401	Introduction to Physics I	4

**Credits** **17**

##### Spring

BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
PHYS 402	Introduction to Physics II	4
Discovery Course		4

**Credits** **18**

##### Summer

ANSC 600 or ANSC 795W	Field Experience or Investigations	1-4
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**Credits** **1-4**

#### Fourth Year

##### Fall

ANSC 609	Principles of Animal Nutrition	4
ANSC 725	Equine Sports Medicine	4
ANSC 796	Equine Senior Seminar	2

ZOOL 613 or BMS 718	Animal Behavior (Elective) or Mammalian Physiology	5
Discovery Course		4
<b>Credits</b>		<b>19</b>
<b>Spring</b>		
ANSC 602	Animal Rights and Societal Issues (Elective)	4
ANSC 724	Reproductive Management and Artificial Insemination	4
ANSC 797	Equine Capstone Experience	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>139-142</b>

### Dairy Program Courses

Some students pursuing veterinary school admission are interested in enrolling in courses with the UNH Dairy Program. In particular, the Cooperative Real Education in Agricultural Management (CREAM) program is a popular enrichment course. CREAM is highly competitive to get into, and equine students must take it before their senior year due to conflicts with required equine courses.

It is suggested that interested students apply to the CREAM program in their freshman year, and that they plan to take AAS 425 Introduction to Dairy Herd Management, in the fall of their sophomore year. While it is unlikely that a freshman applicant to CREAM will be selected, priority in future semesters is given to students who have both previously applied and who have taken dairy courses. Students should then apply again to CREAM in their sophomore year to hopefully gain admission in their junior year. Advisors will work with effected students to modify the timeline for other courses in order to accommodate CREAM in the schedule.

### Sample Student Schedule by Semester - Equine Science - (Non Pre-Vet Intent)

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ANSC 402	Horsemanship Lab	1
ANSC 411	Freshman Seminar in Equine Science	1
ANSC 437	Equine Husbandry Techniques	4
ANSC 522	Intermediate Horsemanship Theory	3
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 403	General Chemistry I	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
ANSC 426	Equine Conformation and Lameness	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 404	General Chemistry II	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>16</b>

### Second Year

#### Fall

AAS 432	Introduction to Forage and Grassland Management	3
ANSC 511	Anatomy and Physiology	4
ANSC 538	Equine Handling/Longeing	1
ANSC 547	Equine Stable Management	3
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory (Elective)	5
Discovery Course		4
<b>Credits</b>		<b>20</b>

#### Spring

ANSC 512	Anatomy and Physiology	4
ENGL 501	Introduction to Creative Nonfiction	4
EREC 411	Environmental and Resource Economics Perspectives	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

### Third Year

#### Fall

ANSC 504	Equine Physiology	4
ANSC 612	Genetics of Animals	4
ANSC 665	Principles of Horse Trials Management	2
ZOOL 613	Animal Behavior (Elective)	5
Discovery Course		4
<b>Credits</b>		<b>19</b>

#### Spring

BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
Discovery Course		4
Major Elective		4
Major Elective		4
<b>Credits</b>		<b>17</b>

### Summer

ANSC 600 or ANSC 795W	Field Experience or Investigations	1-4
<b>Credits</b>		<b>1-4</b>

### Fourth Year

#### Fall

ANSC 609	Principles of Animal Nutrition	4
ANSC 725	Equine Sports Medicine	4
ANSC 796	Equine Senior Seminar	2
BMS 718	Mammalian Physiology (Elective)	4
Elective		4
<b>Credits</b>		<b>18</b>

#### Spring

ANSC 602	Animal Rights and Societal Issues (Elective)	4
ANSC 724	Reproductive Management and Artificial Insemination	4
ANSC 797	Equine Capstone Experience	4

Choice of Major Requirement	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>140-143</b>

## Student Learning Outcomes

All students who graduate from the B.S. in Equine Studies program will be able to:

- Identify, explain, and demonstrate safe, effective, and humane equine handling and stable management skills.
- Identify, explain, and demonstrate equine health management practices and basic equine first aid.
- Explain guidelines for equine nutrition, feeding, and parasite management.
- Demonstrate technical proficiency with English tack, boots, bandages, and blankets.
- Demonstrate safe, competent longeing technique using a trained horse.
- Demonstrate an understanding of the principles of riding practices in equestrian sport.
- Communicate effectively, in written and verbal form, about professional topics in the equine industry.

Equine Science option:

- Demonstrate practical application of equine anatomy and an understanding of the equine limb beyond the requirements for all equine majors.
- Demonstrate knowledge of veterinary care beyond the basic level required of all equine studies majors, and demonstrate the ability to apply this knowledge to real-world emergency and management situations.
- Demonstrate proficiency with basic equine health procedures and equipment.
- Demonstrate knowledge of equine nutrition, feeding, and parasite management beyond the basic level required of all equine studies majors, and demonstrate the ability to apply this knowledge to real-world management situations.
- Demonstrate knowledge of equine dental care.
- Demonstrate knowledge of equine genetics and reproduction.

## Equine Assisted Activities and Therapies Minor

### Description

The minor in Equine-Assisted Activities and Therapies (EAAT) provides students with exposure to several disciplines within this diverse field. The required courses introduce students to key concepts in equine handling and EAAT, including equine skills and the opportunity to test for PATH International CTRI instructor certification in therapeutic riding.

The elective courses list for the proposed EAAT minor are designed to provide students with supporting knowledge of equine-specific topics and non-profit challenges necessary for professionals working in the EAAT field. Students in the EAAT minor will take a total of 20 credit hours. Students must receive a minimum grade of C- in any course used for the

minor. Students failing to do this will need to retake the course in order to receive credit. In accordance with University policy, up to 8 credit hours may count for both the minor as well as for the major, second major, or dual major. Students pursuing a degree in Equine Studies will NOT be eligible to complete the minor.

For more information, please contact [Cynthia Burke](mailto:Cynthia.Burke@unh.edu) (Cindy.Burke@unh.edu), Clinical Assistant Professor.

## Requirements

### Required Courses (12 credits)

Code	Title	Credits
ANSC 437	Equine Husbandry Techniques	4
or ANSC 426	Equine Conformation and Lameness	
ANSC 500	Equine Assisted Activities and Therapies	4
ANSC 643	Principles of Therapeutic Riding Instruction	4

### Electives (Choose at least 8 credits)

Code	Title	Credits
Choose 1:		2-4
ANSC 405	Theory of Horsemanship	2
or ANSC 422 & ANSC 402	Introduction to Horsemanship Theory and Horsemanship Lab	
or ANSC 522 & ANSC 402	Intermediate Horsemanship Theory and Horsemanship Lab	
ANSC 426	Equine Conformation and Lameness	4
ANSC 437	Equine Husbandry Techniques	4
ANSC 635	Nonprofit Management for Agriculture Business	4
ANSC 640	Principles of Riding Instruction (W)	4
ANSC 641	Principles of Dressage Instruction	2
ANSC 744	Advanced Concepts in Therapeutic Riding Instruction	4
ANSC 795W	Investigations	1-4
OT 510	Exploring Occupational Therapy and Occupation	4
PSYC 561	Abnormal Behavior	4
RMP 501	Recreation Services for Individuals with Disabilities	4

## Equine Studies Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/equine-studies>

### Description

A minor in equine studies consists of a minimum of 20 credits of equine-related animal science courses. ANSC 402 may be counted only once for minor credit. Students MUST take either ANSC 504 Equine Physiology or ANSC 437 Equine Husbandry Techniques. Students may count either ANSC 422 or ANSC 522 for minor credit, but they may not count both. Students may count either ANSC 548 or ANSC 635 for minor credit, but they may not count both. Students must receive a minimum grade of C- in any course used for the minor. Students failing to do this will need to retake the course in order to receive credit. No courses taken on a pass(credit)/fail basis may count toward the minor. No more than 12 credits at the 400-level may be used for the minor. See listing below for a list of courses approved for use towards the minor in equine studies. Students may petition equine faculty in their **junior year** to include a course that is not listed. Students must take at least one course at the 600- or 700-level. Students who transfer from other institutions may petition the equine program faculty for course approval. Students who choose both ANSC 500 and ANSC 643 as two of their courses toward the

minor in equine studies will be eligible for PATH International therapeutic riding instructor certification.

Students interested in the minor in equine studies should contact [Sarah Rigg](mailto:Sarah.Rigg@unh.edu) (Sarah.Rigg@unh.edu).

## Requirements

Code	Title	Credits
ANSC 437	Equine Husbandry Techniques	4
Select a minimum of 16 credits from the following electives:		16
AAS 434	Equipment and Facilities Management	
ANSC 402	Horsemanship Lab	
ANSC 405	Theory of Horsemanship	
ANSC 419	Horse Power	
ANSC 422 or ANSC 522	Introduction to Horsemanship Theory Intermediate Horsemanship Theory	
ANSC 426	Equine Conformation and Lameness	
ANSC 500	Equine Assisted Activities and Therapies	
ANSC 504	Equine Physiology	
ANSC 507	Survey of Equine Training Techniques	
ANSC 536	Preparation and Competition Techniques for the Modern Sport Horse	
ANSC 538	Equine Handling/Longeing	
ANSC 546	Animal Business Applications	
ANSC 547	Equine Stable Management	
ANSC 548 or ANSC 635	Agricultural Business Management Nonprofit Management for Agriculture Business	
ANSC 640	Principles of Riding Instruction	
ANSC 641	Principles of Dressage Instruction	
ANSC 642	Principles of Jumping Instruction	
ANSC 643	Principles of Therapeutic Riding Instruction	
ANSC 665	Principles of Horse Trials Management	
ANSC 695	Supervised Teaching Experience <sup>1</sup>	
ANSC 724	Reproductive Management and Artificial Insemination	
ANSC 725	Equine Sports Medicine	
ANSC 744	Advanced Concepts in Therapeutic Riding Instruction	
ANSC 795	Investigations <sup>1</sup>	
ANSC 795W	Investigations <sup>1</sup>	
ANSC 799	Honors Senior Thesis <sup>1</sup>	
Total Credits		20

<sup>1</sup> Subject to approval. Must be equine-related.

## Forestry

Forests are central to meeting today's challenges of climate change, biodiversity, and the sustainability of rural communities and economies. The forestry program at the University of New Hampshire prepares its graduates with the scientific and managerial knowledge and skills to address these environmental and resource management problems at local, regional, and global scales.

Forestry is the art and science of managing and understanding forests, their use, and their conservation. It embraces both natural and human dimensions of sustainability. Forestry education at UNH focuses on sustainable management of forests for biodiversity, productivity, and health, based on a multidisciplinary approach. The program's goal is to provide a sound professional preparation, a broad general education, and the flexibility to cultivate special abilities and interests. Students are encouraged to develop an area of concentration or to complete a minor in consultation with their academic adviser. The Bachelor of Science in Forestry degree (B.S.F.) at UNH is accredited by the Society of American Foresters (SAF). The SAF is recognized by the Council on Postsecondary

Accreditation and the U.S. Department of Education as the accrediting body for forestry in the United States.

A UNH forestry degree can be the gateway to a rewarding profession. UNH forestry graduates manage forests to provide wildlife habitat and recreation opportunities, care for soil and water resources, protect and restore forest ecosystems, and assure a sustainable supply of forest products. They are employed by private industry, public agencies, public interest groups, education institutions, research organizations, and consulting firms. Many students enter graduate school for advanced study in forest biology or management while others have found exciting international opportunities

<https://colsa.unh.edu/natural-resources-environment>

## Programs

- [Forestry Major \(B.S.F.\)](#) (p. 318)
- [Forestry Minor](#) (p. 320)

## Faculty

<https://colsa.unh.edu/natural-resources-environment/people>

## Forestry Major (B.S.F.)

<https://colsa.unh.edu/natural-resources-environment/program/bsf/forestry-major>

## Description

Forestry is an interdisciplinary profession, embracing the sustainable management of forest ecosystems for productivity, biodiversity, and health. The Forestry program's goals are to provide a solid professional preparation with a strong field component, founded in a broad general education, and with the flexibility to allow students to pursue special abilities and interests. The Bachelor of Science in Forestry (B.S.F.) degree is accredited by the **Society of American Foresters**.

Forestry graduates help manage and conserve public and private forests, addressing major environmental challenges including climate change, biodiversity protection, and sustainable resource management. They use science, planning, and geospatial technology to protect and restore forest ecosystems, ensure a sustainable forest product industry, provide wildlife habitat and recreational opportunities, and conserve soils and watersheds.

### ***Program Mission, Goals and Objectives***

The **mission** of UNH's Department of Natural Resources and the Environment, of which the Forestry Program is an integral part, is to serve as an educational center for the scholarly study of environmental and social sciences, and their application to the policy and management of natural resources from local to global scales. This is accomplished through education, research and outreach. This mission reflects UNH's larger mission to provide comprehensive, high-quality undergraduate programs and graduate programs of distinction, including a strong commitment to serving the public good and promoting the excitement of discovery among faculty and students.



The **goal** of the Forestry Program is to train natural resource professionals to sustainably manage forested landscapes for diverse objectives and in ways that balance changing social, cultural, economic, and environmental interests and priorities.

Our **educational objectives** are to:

1. Develop a strong knowledge base about the ecology and dynamics of forest ecosystems, including interactions between trees, wildlife, insects, soils, water, humans, and other ecosystem components.
2. Understand how different policies and management decisions affect forest dynamics over short to long time scales, and on different spatial scales.
3. Cultivate the necessary skills to manage forests for diverse objectives and to assess, respect, and balance the interests of different groups to achieve societal benefits.
4. Be able to critically evaluate scientific information and integrate this with professional experience and changing societal values to support adaptive management of forest resources.

## Requirements

Code	Title	Credits
<b>Requirements</b>		
BIOL 528	Applied Biostatistics I	4
Select one of the following:		4
MATH 424B	Calculus for Life Sciences	
MATH 420	Finite Mathematics	
MATH 425	Calculus I	
NR 415	Natural Resources Field Methods	2
NR 425	Field Dendrology	4
NR 433	Wildlife Ecology	0 or 4
BIOL 409 or BIOL 412	Green Life: Introducing the Botanical Sciences Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 403 or CHEM 411 or PHYS 401	General Chemistry I Introductory Chemistry for Life Sciences Introduction to Physics I	0-4
EREC 411 or ECON 402	Environmental and Resource Economics Perspectives Principles of Economics (Micro)	4
NR 501	Studio Soils	4
NR 504	Freshwater Resources	4
NR 506	Forest Entomology	4
NR 527	Forest Ecology	4
NR 600	Work Experience	0
CMN 500 or THDA 522	Public Speaking Storytelling, Story Theatre, and Involvement Dramatics	4
NR 602	Natural Resources and Environmental Policy	4
NR 643	Economics of Forestry	4
NR 658	Introduction to Geographic Information Systems	4
FORT 579	Wildland Fire Ecology and Management	4
NR 729	Silviculture	4
NR 757	Remote Sensing of the Environment	4
NR 782 or SAFS 651	Forest Health in a Changing World Plant Pathology	4
NR 745	Forest Management <sup>1</sup>	4
NR 749	Forest Inventory and Modeling	4
Select one of the following:		4
RMP 711	Recreation Resource Management	
TOUR 767	Social Impact Assessment	
RMP 511	Issues of Wilderness and Nature in American Society	
<b>Total Credits</b>		<b>82-90</b>

created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student activity). Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors.

## Degree Plan

### Sample Course Sequence for Forestry

Course	Title	Credits
<b>First Year</b>		
BIOL 528	Applied Biostatistics I	4
ENGL 401	First-Year Writing	4
Select one of the following:		4
MATH 424B	Calculus for Life Sciences	
MATH 420	Finite Mathematics	
MATH 425	Calculus I	
NR 415	Natural Resources Field Methods	2
NR 425	Field Dendrology	4
NR 433	Wildlife Ecology	4
BIOL 409 or BIOL 412	Green Life: Introducing the Botanical Sciences or Introductory Biology: Evolution, Biodiversity and Ecology	4
Discovery Elective (FPA, HP, ETS, HUM, or WC)		4
Discovery Elective (FPA, HP, ETS, HUM, or WC)		4
<b>Credits</b>		<b>34</b>
<b>Second Year</b>		
CHEM 403 or CHEM 411 or PHYS 401	General Chemistry I or Introductory Chemistry for Life Sciences or Introduction to Physics I	4
EREC 411 or ECON 402	Environmental and Resource Economics Perspectives or Principles of Economics (Micro)	4
NR 501	Studio Soils	4
NR 504	Freshwater Resources	4
NR 506	Forest Entomology	4
NR 527	Forest Ecology	4
NR 600	Work Experience	0
Oral Communications Skills Course		4
Discovery Elective (FPA, HP, HUM, ETS, or WC)		4
<b>Credits</b>		<b>32</b>
<b>Third Year</b>		
NR 602	Natural Resources and Environmental Policy	4
NR 643	Economics of Forestry	4
NR 658	Introduction to Geographic Information Systems	4
FORT 579	Wildland Fire Ecology and Management	4
NR 729	Silviculture	4
NR 757	Remote Sensing of the Environment	4
NR 782 or SAFS 651	Forest Health in a Changing World or Plant Pathology	4

<sup>1</sup> NR 745 Forest Management may be used to satisfy the University's Capstone requirement. The Capstone may also be satisfied through

Discovery elective (FPA, HP, HUM, ETS, or WC)	4
<b>Credits</b>	<b>32</b>
<b>Fourth Year</b>	
NR 745 Forest Management	4
NR 749 Forest Inventory and Modeling	4
Select one of the following:	4
RMP 711 Recreation Resource Management	
TOUR 767 Social Impact Assessment	
RMP 511 Issues of Wilderness and Nature in American Society	
Discovery elective (FPA, HP, HUM, ETS, or WC)	4
Elective	4
Elective	4
Elective	4
Elective	4
<b>Credits</b>	<b>32</b>
<b>Total Credits</b>	<b>130</b>

All forestry majors must satisfy the B.S.F. requirements and all Discovery Program requirements. Students must satisfy the Inquiry requirement of the Discovery Program by completing an Inquiry or Inquiry-attribute course. Seniors must also satisfy the capstone experience requirement of the Discovery Program. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course (NR 745 Forest Management), created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, and other special student activity). Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors.

## Student Learning Outcomes

### Program Mission, Goals and Objectives

The mission of UNH's Department of Natural Resources and the Environment, of which the Forestry Program is an integral part, is to serve as an educational center for the scholarly study of environmental and social sciences, and their application to the policy and management of natural resources from local to global scales. This is accomplished through education, research and outreach. This mission reflects UNH's larger mission to provide comprehensive, high-quality undergraduate programs and graduate programs of distinction, including a strong commitment to serving the public good and promoting the excitement of discovery among faculty and students.

The goal of the Forestry Program is to train natural resource professionals to sustainably manage forested landscapes for diverse objectives and in ways that balance changing social, cultural, economic, and environmental interests and priorities.

Our educational objectives are to:

- Identify the major species of plants and wildlife and their distribution and habitat requirements.
- Understand the ecological concepts related to the structure, composition, and dynamics of forest ecosystems, including succession, competition, productivity, nutrient cycling, stand development, and wildlife populations.

- Understand soil properties, hydrology, water resources, and watershed functions.
- Understand how forest health and dynamics are impacted by different human and natural disturbances, including pests and diseases, climate change, pollutants, extreme climate events, management interventions.
- Design and conduct forest inventories using appropriate sampling methods and units of measurement.
- Analyze and interpret forest inventory data, and to use the information to project future forest stand development processes and tree conditions.
- Ability to use a variety of spatial analysis tools to assess landscape scale characteristics and produce maps of forest resources distribution.
- Explain forest development trajectories in both written and oral form and apply appropriate computer models and assessment techniques.
- Understand forest policy and the processes that influence policy development.
- Understand and apply economic principles to assessing the financial opportunities and risks of forestry operations.
- Understand how federal, state, and local laws and regulations govern the practice of forestry.
- Understand the administration, ownership, and organization of forest management enterprises.
- Integrate and effectively communicate the technical, financial, human resources, and legal aspects of administering public and private enterprises.
- Develop management plans that effectively integrate and balance multiple landowner (or stakeholder/societal) objectives and the ecological conditions and constraints of the biophysical system.
- Analyze the economic, environmental and social consequences of forest resource management strategies and decisions, and to evaluate their tradeoffs.
- Apply appropriate decision-making tools and techniques to evaluate alternative forest management practices and plans.
- Demonstrate effective problem-solving and teamwork skills, professional and ethical conduct, and respect for diverse values and interests.
- Describe and explain to different audiences in both written and oral form alternative options for managing forest resources to achieve multiple objectives.

## Forestry Minor

<https://colsa.unh.edu/natural-resources-environment/program/minor/forestry>

### Description

The minor in Forestry serves as a concentrated study, beyond a student's primary major, that allows students to explore their interest in forest ecology and management, and to build skills that can help launch a career in forest conservation.

Students interested in a minor in Forestry must complete a minimum of 5 courses and 20 credits with a grade of C- or better. Pass/Fail courses may not be used for the minor. Up to 8 credits can be used to satisfy both major and minor requirements.

## Requirements

Code	Title	Credits
<b>Required Courses</b>		
NR 425	Field Dendrology	4
NR 527	Forest Ecology	4
Choose one of the following:		4
NR 749	Forest Inventory and Modeling	
NR 757	Remote Sensing of the Environment	
Choose one of the following:		4
NR 729	Silviculture	
NR 745	Forest Management	
Electives - Choose one of the following or one of the alternative courses from above:		4
NR 506	Forest Entomology	
NR 603	Landscape Ecology	
NR 643	Economics of Forestry	
NR 658	Introduction to Geographic Information Systems	
NR 703	Watershed Water Quality Management	
NR 734	Tropical Ecology	
NR 765	Community Ecology	
NR 782	Forest Health in a Changing World	
<b>Total Credits</b>		<b>20</b>

## Genetics (GEN)

Genetics and genomics are central to all aspects of the life sciences. Genetics is the branch of biology that deals with heredity, variation of genes among individuals in a population, and the expression and regulation of genes. Genomics focuses on determining the structure and function of genomes and includes the mapping of genes, high-throughput DNA sequencing, and investigating the molecular mechanisms by which genetic and environmental factors contribute to phenotypes. Every day, scientists are using the tools of genetics and genomics to make exciting discoveries in fields such as molecular medicine, cancer research, biodiversity, and sustainability.

Within the Genetics (GEN) major, students may choose the Genomics option (Genetics:Genomics). Genetics provides a solid foundation in biology, biochemistry, microbiology, chemistry, physics, math, and cell biology. Students also take advanced courses in molecular genetics, bioinformatics, molecular evolution, and genomics. Genetics students receive additional training in wet lab techniques. The Genetics:Genomics option provides additional training in genomics, evolutionary genetics, and computer programming for bioinformatics.

There are many opportunities for interested students to gain research experience through formal or informal research projects in faculty members' laboratories. The genetics faculty conduct research on diverse topics such as evolution, gene structure and function, host-microbe interactions, genome sequencing and analysis, heredity, and diversity in populations. Faculty research areas encompass microbial, plant, and animal genetics. Genetics faculty are committed to mentoring undergraduate students in independent research experiences in their laboratories, which provide students with exposure to and training in cutting-edge research technologies.

Students with degrees in genetics or genomics are well prepared to apply to graduate schools (e.g., for training as genetic counselors or researchers) or professional schools, or to pursue careers in biotechnology companies, forensics labs, hospitals, university research laboratories, or government agencies. Two additional courses are needed for application to professional programs (e.g., medical or dental school). Graduates may also be employed in fields such as management, sales,

marketing, regulatory affairs, technical writing, or science journalism. With supplementary courses in education, graduates with a bachelor's degree in genetics or genomics can teach at the elementary, middle, or high school level.

## Pre-Professional Health Programs

Students interested in postgraduate careers in the health care professions should visit the [Pre-Professional Health Programs Advising](#) website or visit the office in person. Requirements for specific types of professional schools (e.g., medical, dental, physician assistant, pharmacy, etc.) are available from [Pre-Health Advising](#). Students interested in veterinary medicine should consult the [Pre-Veterinary Medicine Program](#). Many of the prerequisite courses required by professional schools are also requirements of the genetics major, but students should consult with their faculty adviser to create a plan of study that best prepares them for pursuing a career in one of these health professions.

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences>

## Programs

- [Genetics Major \(B.S.\)](#) (p. 321)
- [Genetics Major: Genomics Option \(B.S.\)](#) (p. 324)
- [Genetics Minor](#) (p. 327)

## Faculty

[Genetics affiliated faculty.](#)

## Genetics Major (B.S.)

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/bs/genetics-major>

## Description

The **Genetics program (GEN)** explores the world of genetics and genomics in plants, animals, and microbes. Genetics majors are interested in understanding how DNA, along with the environment, specifies simple traits like hair color to more complex traits like high blood pressure, diabetes, and mental illness. The Genetics faculty strongly value hands-on learning and many GEN students conduct undergraduate research under the supervision of our faculty. GEN graduates are prepared for successful careers in the biotechnology fields or for entry into a variety of graduate school, genetic counseling, or health professional programs.

**The Genetics program offers course work and laboratories in:**

- molecular genetics
- bioinformatics
- human genetics
- comparative genomics
- plant genetics
- microbial genetics and evolution
- population and evolutionary genetics

**Students in the Genetics program may participate in a variety of experiential learning activities including:**

- independent research experiences in laboratories of UNH faculty
- work at the [Hubbard Center for Genome Studies](#) or [Research Computing Center](#)
- internships at biotechnology companies in the Greater Boston area
- internships with genetics counselors at area medical centers

**GEN graduates have been successful in attaining careers as:**

- research scientists and laboratory technicians in
  - biotechnology and pharmaceutical companies
  - academic research programs
  - forensics
  - biomedical research centers & medical schools
  - government agencies
- genetic counselors
- educators
- technical support associates

**GEN graduates are prepared for further education in:**

- professional health programs
  - genetic counseling
  - [medical school](#)
  - dental school
- allied health programs ([physician assistant](#), [pharmacist](#), [nursing](#) or [pathologist's assistant](#) programs)
- [veterinary school](#)
- graduate programs such as
  - Genetics and Genomics
  - Integrative Biology
  - Neurogenomics
  - Molecular Biology
  - Microbiology
  - Environmental Sciences
  - Public Health
  - Computer Science

## Requirements

Students majoring in genetics take seven Foundation courses, six Bioscience Core courses, four Genetics Core courses and four Major Elective courses. One capstone experience, supervised and approved within the major, is required of all seniors. In addition, all other University requirements must be completed, including those for the [Discovery Program](#) (p. 27) and the [University Writing Requirement](#) (p. 31).

A grade of C-minus or better is required in Statistics and all Bioscience Core, Genetics Core, and Major Elective courses.

### Foundation Courses

Code	Title	Credits
CHEM 403	General Chemistry I <sup>1</sup>	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory <sup>2</sup>	5
MATH 424B	Calculus for Life Sciences <sup>3</sup>	4

BIOL 528	Applied Biostatistics I	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4

- <sup>1</sup> Fulfills Physical Science Discovery requirement
- <sup>2</sup> Students applying to health profession schools need a full year of Organic Chemistry, a full year of Introductory Biology, as well as a full year of English. CHEM 651/CHEM 653 and CHEM 652/CHEM 654 should be taken in place of CHEM 545/CHEM 546; ENGL 502 or ENGL 503 in suggested in addition to ENGL 401. See [Pre-Professional Health Program Advising](#).
- <sup>3</sup> Fulfills Quantitative Reasoning Discovery requirement

### Bioscience Core Courses

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular <sup>4</sup>	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
GEN 604	Principles of Genetics	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMCB 605	Principles of Cell Biology	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5

- <sup>4</sup> Fulfills Biological Science Discovery requirement, Discovery Inquiry requirement, and Discovery laboratory requirement

### Genetics Core Courses

Code	Title	Credits
GEN 401	Professional Perspectives in Genetics	1
GEN 606	Genetics Lab	4
GEN 711	Genomics and Bioinformatics	4
<b>Select one of the following:</b>		
GEN 704	Genetics of Prokaryotic Microbes <sup>5</sup>	5
GEN 771	Molecular Genetics	4

## Major Electives

A total of four **unique** major electives is required: **one** course from the Laboratory-Based Major Elective group, **one** course from the Population Genetics or Evolutionary Genetics major elective group, and **two** courses from the Bioscience Major Electives group.

### Laboratory-Based Major Electives (Select One)

Code	Title	Credits
GEN 704	Genetics of Prokaryotic Microbes <sup>5</sup>	5
GEN 705 & GEN 725	Population Genetics and Population Genetics Lab <sup>5</sup>	5
GEN 717	Molecular Microbiology	5
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4
GEN 795	Investigations in Genetics (4-credit minimum) <sup>6</sup>	1-4
GEN 795W	Investigations in Genetics (4-credit minimum) <sup>6</sup>	1-4
GEN 799	Senior Thesis (4-credit minimum) <sup>6</sup>	1-4
GEN 799H	Honors Senior Thesis (4-credit minimum) <sup>6</sup>	1-4
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
INCO 790	Advanced Research Experience (4-credit minimum) <sup>6</sup>	1-4

### Population or Evolutionary Genetics Major Electives (Select One)

Code	Title	Credits
GEN 705 & GEN 725	Population Genetics and Population Genetics Lab <sup>5</sup>	5

GEN 715	Molecular Evolution	4
GEN 772	Evolutionary Genetics of Plants	4

<sup>5</sup> Where listed, this course may fulfill another category (Genetics Core, Laboratory-Based Major Elective, or Population/Evolutionary Genetics Major Elective), IF students take one additional Bioscience Major Elective.

<sup>6</sup> Must be a research project with a genetics focus.

### Bioscience Major Electives (Select Two)

Code	Title	Credits
GEN 704	Genetics of Prokaryotic Microbes <sup>5</sup>	5
GEN 705 & GEN 725	Population Genetics and Population Genetics Lab <sup>5</sup>	5
GEN 706	Human Genetics	4
GEN 712	Programming for Bioinformatics	5
GEN 713	Microbial Ecology and Evolution	4
GEN 715	Molecular Evolution	4
GEN 717	Molecular Microbiology	5
GEN 721	Comparative Genomics	4
GEN 771	Molecular Genetics	4
GEN 772	Evolutionary Genetics of Plants	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4
GEN 795	Investigations in Genetics (4-credit minimum) <sup>6</sup>	1-4
GEN 795W	Investigations in Genetics (4-credit minimum) <sup>6</sup>	1-4
GEN 799	Senior Thesis (4-credit minimum) <sup>6</sup>	1-4
GEN 799H	Honors Senior Thesis (4-credit minimum) <sup>6</sup>	1-4
ANSC 602	Animal Rights and Societal Issues	4
ANSC 701	Physiology of Reproduction	4
BIOL #702	Lab Techniques in Plant Physiology and Biochemistry	4
BIOL 704	Plant-Microbe Interactions	3
BIOL 706	Data Science with R for the Life Sciences	4
BIOL 711	Experimental Design & Analysis	4
BMCB 750	Physical Biochemistry	3
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
BMCB 760	Pharmacology	4
BMCB 763	Biochemistry of Cancer	4
BMCB 794	Protein Structure and Function	4
BMS 650	Molecular Diagnostics	4
BMS 702	Endocrinology	4
BMS 705	Immunology	3
BMS 706	Virology	3
BMS 718	Mammalian Physiology	4
BMS 719	Host-Microbe Interactions	4
BMS 735	Molecular and Cellular Parasitology	4
BMS 740	Human Microbiome	4
INCO 790	Advanced Research Experience (4-credit minimum)	1-4
MEFB #750	Marine Ecological Genomics	4
NR 706	Soil Ecology	4
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory	5
ZOOL 690	Evolution	4
ZOOL 736	Genes and Behavior	4
ZOOL 777	Neuroethology	4

### Approved GEN Capstone Courses

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). Students may take more than one capstone course. Capstone completion is never displayed on Degree Works; your advisor will certify capstone completion at the time of graduation. Students must have 90

credits or more when completing their capstone requirement. See your advisor for questions about capstones.

Code	Title	Credits
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 705 & GEN 725	Population Genetics and Population Genetics Lab	5
GEN 715	Molecular Evolution	4
GEN 717	Molecular Microbiology	5
GEN 790	Undergraduate Teaching Experience (4 credit minimum; classroom presentation required)	1-4
GEN 795	Investigations in Genetics (4-credit minimum) <sup>6</sup>	1-4
GEN 795W	Investigations in Genetics (4-credit minimum) <sup>6</sup>	1-4
GEN 799	Senior Thesis (4-credit minimum) <sup>6</sup>	1-4
GEN 799H	Honors Senior Thesis (4-credit minimum) <sup>6</sup>	1-4
INCO 790	Advanced Research Experience (4-credit minimum) <sup>6</sup>	1-4

<sup>6</sup> Must be a research project with a genetics focus.

## Degree Plan

### SAMPLE Course Sequence for Genetics

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
GEN 401	Professional Perspectives in Genetics	1
BIOL 411	Introductory Biology: Molecular and Cellular	4
ENGL 401	First-Year Writing	4
CHEM 403	General Chemistry I	4
Discovery course		4
<b>Credits</b>		<b>17</b>

<b>Spring</b>		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
MATH 424B	Calculus for Life Sciences	4
CHEM 404	General Chemistry II	4
Discovery course		4
<b>Credits</b>		<b>16</b>

<b>Second Year</b>		
<b>Fall</b>		
GEN 604	Principles of Genetics	4
BMCB 605	Principles of Cell Biology	4
BIOL 528	Applied Biostatistics I	4
Discovery course		4
<b>Credits</b>		<b>16</b>

<b>Spring</b>		
GEN 606	Genetics Lab	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
Discovery course		4
<b>Credits</b>		<b>18</b>



**Third Year****Fall**

BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
PHYS 401	Introduction to Physics I	4
Discovery course		4
Elective (any course)		4
<b>Credits</b>		<b>17</b>

**Spring**

GEN 711	Genomics and Bioinformatics	4
PHYS 402	Introduction to Physics II	4
Major Elective (Population or Evolutionary Genetics)		4
Discovery course		4
<b>Credits</b>		<b>16</b>

**Fourth Year****Fall**

Genetics Core course		4
Major Elective (Laboratory based)		4-5
Major Elective (Bioscience/possible Capstone)		4-5
Elective (any course)		4
<b>Credits</b>		<b>16-18</b>

**Spring**

Major Elective (Bioscience)		4
Elective (any course)		4
Elective (any course)		4
<b>Credits</b>		<b>12</b>
<b>Total Credits</b>		<b>128-130</b>

- Students will be able to describe ethical issues related to modern genomics and implications for health care and insurance, interpersonal relationships, family planning, etc.
- Students will be able to describe high-throughput sequencing, and how it has changed the practice of modern genetics.

SLO: Quantitative Literacy, Inquiry &amp; Analysis

- Students will be able to apply the scientific method to examine experimental evidence and draw informed conclusions.
- Students will be able to use graphs to represent scientific data.
- Students will be able to apply statistical methods to interpret scientific data.

SLO: Critical Thinking &amp; Problem Solving

- Students will be able to use data to troubleshoot an unexpected outcome.
- Students will be able to apply core knowledge to critically interpret scientific data.

SLO: Written Communication

- Students will demonstrate written skills to communicate scientific knowledge and experimental data.

SLO: Oral Communication

- Students will be able to demonstrate oral presentation skills to communicate scientific knowledge and experimental data.

## Genetics Major: Genomics Option (B.S.)

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/bs/genetics-major-genomics-option>

### Student Learning Outcomes

SLO: Core Knowledge in Genetics

- Students will be able to describe DNA, its role, structure, how DNA is packaged in the chromosomes in terms of histones, nucleosomes, and chromatin, including its discovery, how has modern genomics influenced, and differences between prokaryotes and eukaryotes.
- Students will be able to describe the central dogma of molecular biology, including specific details related to replication, transcription, and translation.
- Students will be able to define and describe evolution, how drift, gene flow, mutation, natural selection, recombination, within a population genetic framework, may result in evolution.
- Students will be able to describe the differences between mitosis and meiosis and how errors in these processes may effect phenotype, cause disease, etc.
- Students will be able to evaluate how genes and the environment can interact to produce a phenotype, including allelic differences and changes in gene regulation.
- Students will be able to describe the concept of deep time, and how comparing genes and genomes allows us to understand evolution and relatedness between species.
- Students will be able to use pedigrees to determine mode of inheritance of a trait.

### Description

The **Genetics:Genomics program (GEN)** explores the world of genetics and genomics in plants, animals, and microbes. Genomics is the study of genomes and includes topics like DNA structure and function, high-throughput sequencing, and computational comparison of the genomes of different organisms. The Genetics faculty strongly value hands-on learning and many GEN students conduct undergraduate research under the supervision of our faculty. GEN graduates are prepared for successful careers in biotechnology fields or for entry into a variety of graduate school or health professional programs.

**The Genetics program offers course work and laboratories in:**

- molecular genetics
- bioinformatics
- human genetics
- comparative genomics
- plant genetics
- microbial genetics
- population and evolutionary genetics

**Students in the Genetics program may participate in a variety of experiential learning activities including:**

- independent research experiences in laboratories of UNH faculty
- work at the [Hubbard Center for Genome Studies](#) or [Research Computing Center](#)
- internships at biotechnology companies in the Greater Boston area
- internships with genetics counselors at area medical centers

#### GEN graduates have been successful in attaining careers as:

- research scientists and laboratory technicians in
  - biotechnology and pharmaceutical companies
  - academic research programs
  - forensics
  - biomedical research centers & medical schools
  - government agencies
- genetic counselors
- educators
- technical support associates

#### GEN graduates are prepared for further education in:

- professional health programs
  - genetic counseling
  - [medical school](#)
  - dental school
  - allied health programs ([physician assistant](#), [pharmacist](#), [nursing](#) or [pathologist's assistant](#))
  - [vet school](#)
- graduate programs such as
  - Genetics and Genomics
  - Integrative Biology
  - Neurogenomics
  - Molecular Biology
  - Microbiology
  - Environmental Sciences
  - Public Health
  - Computer Science

BIOL 528	Applied Biostatistics I	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4

<sup>1</sup> Fulfills Physical Science Discovery requirement

<sup>2</sup> Students applying to health profession schools need a full year of Organic Chemistry, a full year of introductory Biology, and a full year of English. CHEM 651/CHEM 653 and CHEM 652/CHEM 654 should be taken in place of CHEM 545/CHEM 546; ENGL 502 or ENGL 503 is suggested in addition to ENGL 401. See [Pre-Professional Health Program](#) advising.

<sup>3</sup> Fulfills Quantitative Reasoning Discovery requirement

#### Bioscience Core Courses

Code	Title	Credits
BIOL 411	Introductory Biology: Molecular and Cellular <sup>4</sup>	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
GEN 604	Principles of Genetics	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMCB 605	Principles of Cell Biology	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5

<sup>4</sup> Fulfills Biological Science Discovery requirement, Discovery Inquiry requirement, and Discovery laboratory requirement

#### Genetics Core Courses

Code	Title	Credits
GEN 401	Professional Perspectives in Genetics	1
GEN 606	Genetics Lab	4
GEN 711	Genomics and Bioinformatics	4
Select one of the following:		
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 771	Molecular Genetics	4

#### Major Electives

A total of five **unique** major electives is required: GEN 712, GEN 721, two courses from the population or evolutionary genetics elective group, and one course from the bioscience major elective group.

#### Required

Code	Title	Credits
GEN 712	Programming for Bioinformatics	5
GEN 721	Comparative Genomics	4

#### Population or Evolutionary Genetics Major Electives (Select Two)

Code	Title	Credits
GEN 705 & GEN 725	Population Genetics and Population Genetics Lab <sup>5</sup>	5
GEN 713	Microbial Ecology and Evolution	4
GEN 715	Molecular Evolution	4
GEN 772	Evolutionary Genetics of Plants	4

#### Bioscience Major Electives (Select One)

Code	Title	Credits
GEN 704	Genetics of Prokaryotic Microbes <sup>5</sup>	5
GEN 705 & GEN 725	Population Genetics and Population Genetics Lab <sup>5</sup>	5
GEN 706	Human Genetics	4
GEN 713	Microbial Ecology and Evolution	4
GEN 715	Molecular Evolution	4

## Requirements

Students majoring in Genetics with the Genomics option take seven Foundation courses, six Bioscience Core courses, four Genetics Core courses and five Major Elective courses. One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. In addition, all other University requirements must be completed, including those for the [Discovery Program](#) and the [University Writing Requirement](#).

A grade of C-minus or better is required in statistics and all Bioscience Core, Genetics Core, and Major Elective courses.

#### Foundation Courses

Code	Title	Credits
CHEM 403	General Chemistry I <sup>1</sup>	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory <sup>2</sup>	5
MATH 424B	Calculus for Life Sciences <sup>3</sup>	4

GEN 717	Molecular Microbiology	5
GEN 771	Molecular Genetics	4
GEN 772	Evolutionary Genetics of Plants	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4
GEN 795	Investigations in Genetics (4 credit minimum) <sup>6</sup>	1-4
GEN 795W	Investigations in Genetics (4 credit minimum) <sup>6</sup>	1-4
GEN 799	Senior Thesis (4 credit minimum) <sup>6</sup>	1-4
GEN 799H	Honors Senior Thesis (4-credit minimum) <sup>6</sup>	1-4
ANSC 602	Animal Rights and Societal Issues	4
ANSC 701	Physiology of Reproduction	4
BIOL #702	Lab Techniques in Plant Physiology and Biochemistry	4
BIOL 704	Plant-Microbe Interactions	3
BIOL 706	Data Science with R for the Life Sciences	4
BIOL 711	Experimental Design & Analysis	4
BIOL 752	New England Mushrooms: a Field and Lab Exploration	4
BMCB 750	Physical Biochemistry	3
BMCB 753	Cell Culture	5
BMCB 754	Molecular Biology Research Methods	5
BMCB 760	Pharmacology	4
BMCB 763	Biochemistry of Cancer	4
BMCB 794	Protein Structure and Function	4
BMS 650	Molecular Diagnostics	4
BMS 702	Endocrinology	4
BMS 705	Immunology	3
BMS 706	Virology	3
BMS 718	Mammalian Physiology	4
BMS 719	Host-Microbe Interactions	4
BMS 735	Molecular and Cellular Parasitology	4
BMS 740	Human Microbiome	4
INCO 790	Advanced Research Experience (4-credit minimum) <sup>6</sup>	1-4
MEFB #750	Marine Ecological Genomics	4
NR 706	Soil Ecology	4
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory	5
ZOOL 690	Evolution	4
ZOOL 736	Genes and Behavior	4
ZOOL 777	Neuroethology	4

<sup>5</sup> This course can count as both a Bioscience Major Elective AND a Population or Evolutionary Genetics Major Elective IF students take one additional Bioscience Major Elective.

<sup>6</sup> Must be a research project with a genetics focus

### Approved GEN Capstone Courses

The capstone explores areas of interest based on the integration of prior learning. The capstone requirement may be satisfied through a course, created work or product, or some form of experiential learning (e.g., honors thesis, mentored research project, or other special student activity). Students may take more than one capstone course. Capstone completion is never displayed on Degree Works; your advisor will certify capstone completion at the time of graduation. Students must have 90 credits or more when completing their capstone requirement. See your advisor for questions about capstones.

Code	Title	Credits
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 705 & GEN 725	Population Genetics and Population Genetics Lab	5
GEN 715	Molecular Evolution	4
GEN 717	Molecular Microbiology	5
GEN 790	Undergraduate Teaching Experience (4 credit minimum; classroom presentation required)	1-4
GEN 795	Investigations in Genetics (4-credit minimum) <sup>6</sup>	1-4
GEN 795W	Investigations in Genetics (4-credit minimum) <sup>6</sup>	1-4
GEN 799	Senior Thesis (4-credit minimum) <sup>6</sup>	1-4

GEN 799H	Honors Senior Thesis (4-credit minimum) <sup>6</sup>	1-4
INCO 790	Advanced Research Experience (4-credit minimum) <sup>6</sup>	1-4

<sup>6</sup> Must be a research project with a genetics focus

## Degree Plan

### SAMPLE Course Sequence for Genomics

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
GEN 401	Professional Perspectives in Genetics	1
BIOL 411	Introductory Biology: Molecular and Cellular	4
ENGL 401	First-Year Writing	4
CHEM 403	General Chemistry I	4
Discovery course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
MATH 424B	Calculus for Life Sciences	4
CHEM 404	General Chemistry II	4
Discovery course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
GEN 604	Principles of Genetics	4
BMCB 605	Principles of Cell Biology	4
BIOL 528	Applied Biostatistics I	4
Discovery course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
GEN 606	Genetics Lab	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
Discovery course		4
<b>Credits</b>		<b>18</b>
<b>Third Year</b>		
<b>Fall</b>		
GEN 712	Programming for Bioinformatics	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
PHYS 401	Introduction to Physics I	4
Discovery course		4
<b>Credits</b>		<b>18</b>
<b>Spring</b>		
GEN 711	Genomics and Bioinformatics	4
GEN 721	Comparative Genomics	4
PHYS 402	Introduction to Physics II	4
Discovery course		4
<b>Credits</b>		<b>16</b>

**Fourth Year****Fall**

Genetics Core course	4
Major Elective (Pop/Evol Genetics; possible Capstone)	4
Elective (any course)	4
Elective (any course)	4

**Credits** **16**

**Spring**

Major Elective (Bioscience)	
Major Elective (Pop/Evol Genetics)	4
Elective (any course)	4
Elective (any course)	3-5

**Credits** **11-13**

**Total Credits** **128-130**

## Student Learning Outcomes

## SLO: Core Knowledge in Genetics

- Students will be able to describe DNA, its role, structure, how DNA is packaged in the chromosomes in terms of histones, nucleosomes, and chromatin, including its discovery, how has modern genomics influenced, and differences between prokaryotes and eukaryotes.
- Students will be able to describe the central dogma of molecular biology, including specific details related to replication, transcription, and translation.
- Students will be able to define and describe evolution, how drift, gene flow, mutation, natural selection, recombination, within a population genetic framework, may result in evolution.
- Students will be able to describe the differences between mitosis and meiosis and how errors in these processes may effect phenotype, cause disease, etc.
- Students will be able to evaluate how genes and the environment can interact to produce a phenotype, including allelic differences and changes in gene regulation.
- Students will be able to describe the concept of deep time, and how comparing genes and genomes allows us to understand evolution and relatedness between species.
- Students will be able to use pedigrees to determine mode of inheritance of a trait.
- Students will be able to describe ethical issues related to modern genomics and implications for health care and insurance, interpersonal relationships, family planning, etc.
- Students will be able to describe high-throughput sequencing, and how it has changed the practice of modern genetics.

## SLO: Quantitative Literacy, Inquiry &amp; Analysis

- Students will be able to apply the scientific method to examine experimental evidence and draw informed conclusions.
- Students will be able to use graphs to represent scientific data.
- Students will be able to apply statistical methods to interpret scientific data.

## SLO: Critical Thinking &amp; Problem Solving

- Students will be able to use data to troubleshoot an unexpected outcome .

- Students will be able to apply core knowledge to critically interpret scientific data.

## SLO: Written Communication

- Students will demonstrate written skills to communicate scientific knowledge and experimental data.

## SLO: Oral Communication

- Students will be able to demonstrate oral presentation skills to communicate scientific knowledge and experimental data.

## Genetics Minor

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/minor/genetics>

### Description

Students in other majors who wish to develop a focus in the area of genetics and genomics can complement their major academic program with a minor in genetics.

### Requirements

The minor consists of a minimum of 20 credits, completed with a grade of C-minus or better.

No more than 8 credits used to fulfill major requirements may be used for the minor.

A C average (2.00) is required in courses that the minor department approves.

A maximum of 4 credits of GEN 795 Investigations in Genetics may be used to fulfill minor requirements.

Pass/fail courses cannot be used for the minor.

It is the student's responsibility to file an [Intent to Minor](#) form with the GEN minor advisor by the end of the junior year and to complete a [Certification of Completion of Minor](#) form during their final semester at UNH.

### Required Course

Code	Title	Credits
GEN 604	Principles of Genetics	4

Choose at least **one** Transmission/Population Genetics course and **one** Molecular Genetics course. To reach the minimum of 20 credits for the minor, 4 credits of GEN 795 Investigations in Genetics may be used.

### Transmission/Population Genetics Courses (Choose at least One)

Code	Title	Credits
GEN 705	Population Genetics	3
GEN 725	Population Genetics Lab	2
GEN 706	Human Genetics	4
GEN 713	Microbial Ecology and Evolution	4
GEN 715	Molecular Evolution	4
GEN 772	Evolutionary Genetics of Plants	4
NR 664	Conservation Genetics	4

Molecular Genetics Courses (Choose at least One)

Code	Title	Credits
GEN 704	Genetics of Prokaryotic Microbes	5
GEN 711	Genomics and Bioinformatics	4
GEN 712	Programming for Bioinformatics	5
GEN 717	Molecular Microbiology	5
GEN 721	Comparative Genomics	4
GEN 771	Molecular Genetics	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4
BMCB 754	Molecular Biology Research Methods	5

GeoSpatial Analysis

Programs

- [Geospatial Analysis Minor](#) (p. 328)

Geospatial Analysis Minor

<https://colsa.unh.edu/natural-resources-environment/program/minor/geospatial-analysis>

Description

The geospatial analysis minor is designed for students who wish to have more learning and experience using the tools of geospatial analysis such as statistics, aerial photography, satellite imagery, and geographic information systems (GIS) as they relate to their chosen field of study. Students interested in completing the geospatial analysis minor must complete a total of 20 credits. A grade of C- or better is required in each minor course and no course can be taken pass/fail. A total of not more than 8 credits from the student's major requirements can be counted toward the minor.

Requirements

Code	Title	Credits
<b>Basic Statistics</b>		
Select one of the following:		4
BIOL 528	Applied Biostatistics I	
PSYC 402	Statistics in Psychology	
SOC 402	Statistics	
Other basic statistics course as approved by minor advisor		
<b>Introductory/Field/or Overview</b>		
Select one of the following:		4
NR #458	The Science of Where	
CEE 404	Surveying and Mapping	
NR 415	Natural Resources Field Methods	
NR 603	Landscape Ecology	
GEOG 590	Field Research	
NR/GEOG 757	Remote Sensing of the Environment	
ANTH 674	Archaeological Survey and Mapping in Belize	
NR 795	Investigations (Field Methods in GIS)	
<b>GIS</b>		
Select one of the following:		4
NR/GEOG 658	Introduction to Geographic Information Systems	
NR/GEOG 760	Geographic Information Systems in Natural Resources	
CEE 796	Special Topics (GIS in Water Resources)	
FORT 581	Applied Geospatial Techniques	
ESCI 777	GIS for Earth & Environmental Sciences	
<b>Remote Sensing</b>		
Select one of the following:		4

NR/GEOG 757	Remote Sensing of the Environment	
NR/GEOG 759	Digital Image Processing for Natural Resources	
ESCI 778	Remote Sensing Earth & Environmental Sciences	
Advanced Analysis		
Select one of the following:		4
NR 707	Environmental Modeling	
NR 713	Quantitative Ecology	
NR 740	Inventory and Monitoring of Ecological Communities	
NR 749	Forest Inventory and Modeling	
NR 782	Forest Health in a Changing World	
EREC 760	Ecological-Economic Modeling for Decision Making	
Total Credits		20

Students with questions about the minor or who would like more information should contact [Dr. Russell G. Congalton](#) ([russ.congalton@unh.edu](mailto:russ.congalton@unh.edu)) in the Department of Natural Resources and the Environment, (603) 862-4644.

Green Real Estate

Programs

- [Green Real Estate Minor](#) (p. 328)

Green Real Estate Minor

<https://colsa.unh.edu/natural-resources-environment/program/minor/green-real-estate>

Description

The green real estate minor will include the basic fundamentals of real estate (a class which is accredited by the New Hampshire Real Estate Commission). Students will learn about local and regional planning, environmental economics and market forces, and environmental issues as they pertain to real estate. In addition, students may choose complementary classes, such as architecture, surveying, land design, soils, wetland delineation, law, etc. Students must complete five courses (18 to 20 credits), get a C- or better in each course, and maintain a 2.0 average or better.

Requirements

Code	Title	Credits
<b>Required Courses</b>		
CEP 672	Fundamentals of Real Estate	4
CEP 673	Green Real Estate	4
CEP 508	Applied Community Development	4
<b>Electives</b>		
Select two from one of the following groups:		8-9
Green Design and Building		
Land Conservation		
Finance and Law		
<b>Total Credits</b>		20-21

Green Design and Building

(Pick two 4-credit courses, or three 3-credit courses)  
Ideal for future architects and builders.

Code	Title	Credits
ARTS 455	Architectural Design Studio	4
CHE 410	Energy and Environment	4



CEE 404	Surveying and Mapping	4
CEE #444	Housing - Everyone Needs a Place to Live	4
CEE 703	Site Design and Project Development	3
CEE 706	Environmental Life Cycle Assessment	3
CEE 719	Green Building Design	3
NR 787	Advanced Topics in Sustainable Energy	4

## Land Conservation

Ideal for future conservation commission members, planners, and environmental advocates in general.

Code	Title	Credits
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes	4
NR 437	Principles of Sustainability	4
NR 507	Introduction to our Energy System and Sustainable Energy	4
NR 753 & NR 754	Critical Issues in Sustainability: Sustainability as an Abundance Paradigm and Critical Issues in Sustainability: Sense of Place	4
NR 785	Systems Thinking for Sustainable Solutions	4

## Finance and Law

Ideal for future green mortgage lenders and social choice investment portfolio managers.

NOTE: Business majors only

Code	Title	Credits
MGT 720	Topics in Management II	4
FIN 701	Financial Policy	4
FIN 702	Investments Analysis	4
FIN 708	Real Estate Finance	4

## Marine, Estuarine, and Freshwater Biology (MEFB)

The marine, estuarine, and freshwater biology (MEFB) B.S. program is designed to provide a broad background for undergraduates interested in marine, estuarine, and freshwater biology, aquaculture, and fisheries. The program integrates theoretical and practical (hands-on laboratory and field) courses. Students are encouraged to become involved in one or more of the numerous undergraduate research opportunities available in the marine, estuarine, and freshwater sciences.

UNH is located on a seacoast that provides an extraordinary diversity of marine and estuarine habitats. It is also only a short distance from mountain streams, rivers, marshes, bogs, ponds, and lakes. All of the habitats provide outstanding resources for field courses and research. The marine, estuarine, and freshwater faculty are spread across all four departments of the College of Life Sciences and Agriculture. UNH is a Sea Grant university and has an international reputation for teaching and research in aquatic sciences. UNH has aquaculture facilities, and coastal and estuarine research laboratories. In collaboration with Cornell, UNH jointly administers the summer undergraduate programs at the Shoals Marine Laboratory on Appledore Island, seven miles off the coast of New Hampshire and Maine.

<https://colsa.unh.edu/biological-sciences>

## Programs

- [Marine, Estuarine and Freshwater Biology Major \(B.S.\)](#) (p. 329)
- [Marine Biology Minor](#) (p. 332)

## Faculty

<https://colsa.unh.edu/biological-sciences/people>

## Marine, Estuarine and Freshwater Biology Major (B.S.)

<https://colsa.unh.edu/biological-sciences/program/bs/marine-estuarine-and-freshwater-biology>

## Description

The Major in Marine, Estuarine, and Freshwater Biology is intended to give students interested in the fields of marine and freshwater biology the background and direct hands-on experience needed to pursue productive careers, including potential advanced study. This strategically cross-disciplinary major builds on a broad set of science courses in high-impact areas of study for today's world, represented by a core curriculum in math, chemistry, physics, and biology. The core background is strengthened by a series of required and elective courses in a diverse range of aquatic sciences spanning watersheds to oceans, providing opportunities for study from organismal to ecosystem scales. Designed to provide a solid foundation of knowledge in freshwater, estuarine, and marine biology, the MEFB Major allows flexibility and encourages students to focus on particular areas of interest from molecular biology to ecosystem and policy studies. Students will have the opportunity to specialize in areas of their own interest, such as aquaculture and fisheries, animal behavior, ecological restoration, or management. While MEFB students must complete rigorous course requirements, our students are encouraged to tailor their elective courses within and across departments and colleges as needed to build their own, unique cross-disciplinary path.

The University of New Hampshire is uniquely located for the study of aquatic organisms and their habitats. We are centered between the Great Bay Estuary and the Gulf of Maine, with easy access to diverse marine environments as well as the freshwater habitats of New Hampshire's Lakes Region and the White Mountain National Forest. We boast three Marine Laboratories that provide exceptional opportunities for our student's research and educational needs, including Jackson Estuarine Laboratory (JEL), the Coastal Marine Lab (CML; part of the larger Judd Gregg Marine Research Center), and the Shoals Marine Laboratory (SML), as well as strong affiliations with the Great Bay National Estuarine Research Reserve. While JEL is located on Great Bay in Durham, CML is in nearby New Castle at the Seacoast, and SML is located seven miles off the coast. SML provides summer undergraduate programming with field-based marine courses that fulfill major electives, as well as internships and research opportunities for advanced study. In addition, UNH's campus maintains two fish aquaculture facilities, a world-class genomics laboratory, and the State Veterinary Diagnostic Laboratory, which provide hands-on opportunities for undergraduates. There is also an active diving program with courses at both beginner and advanced levels. A major strength of the MEFB program is the hands-on approach to learning combined with an emphasis on involving undergraduate students in mentored research opportunities.

## Requirements

Code	Title	Credits
<b>Biological Sciences Core</b>		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 541	Ecology	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
MATH 424B or BIOL #633 or BIOL 711	Calculus for Life Sciences Data Analysis for Life Science Experimental Design & Analysis	4
BIOL 528	Applied Biostatistics I	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4
<b>MEFB Required Courses</b>		
MEFB 401	Marine Estuarine and Freshwater Biology: Freshmen Seminar	1
MEFB 503	Introduction to Marine Biology	4
Choose one Plant Survey course:		4-5
MEFB 625 or MEFB 747	Introduction to Marine Botany Aquatic Plants in Restoration/Management	5
Choose one Freshwater course:		4
MEFB 717	Lake Ecology	4
MEFB 719	Field Studies in Lake Ecology	4
ZOOL 708	Stream Ecology	4
Choose one Physiology/Function course:		4-5
ZOOL 625 & ZOOL 626 or MEFB 773	Principles of Animal Physiology and Animal Physiology Laboratory Physiology of Fishes	
Choose one Marine or Estuarine course:		4
MEFB 725 or MEFB 755	Marine Ecology Biological Oceanography	
Choose one Animal Survey course:		
ZOOL 542 or MEFB 628 or ZOOL 710	Ornithology Marine Invertebrate Evolution and Ecology Sharks and Bony Fishes	4
Capstone:		
BIOL 780	Capstone Companion Course	1
<b>MEFB Electives: Choose 3<sup>1</sup></b>		
Evolution, Systematics and Biodiversity		
BIOL 566	Systematic Botany	4
GEN 713	Microbial Ecology and Evolution	4
MEFB 500	Coastal Habitat Field Research Methods (SML)	4
MEFB 510	Field Ornithology (SML)	4
MEFB 530	Evolution and Marine Diversity (SML)	4
MEFB 535	Marine Mammal Biology (SML)	4
MEFB 625 or MEFB 747	Introduction to Marine Botany Aquatic Plants in Restoration/Management	5
MEFB 628	Marine Invertebrate Evolution and Ecology	5
MEFB #630	Biodiversity and Biology of Marine Invertebrates (SML)	4
MEFB 741	Sharks: Biology and Conservation (SML)	4
MEFB 754	Anatomy and Function of Marine Vertebrates (SML)	4
MEFB 747	Aquatic Plants in Restoration/Management (C)	4
NR 504	Freshwater Resources	4
NR 712	Mammalogy	4
ZOOL 518	Comparative Morphology and Biology of Vertebrates	4
ZOOL 542	Ornithology	4
ZOOL 690	Evolution	4
ZOOL 710	Sharks and Bony Fishes	4
Fisheries and Aquaculture		

MEFB 702	Sustainable Marine Fisheries (SML)	4
MEFB 755	Biological Oceanography (C)	3
MEFB 772	Fisheries Biology: Conservation and Management	4
MEFB 773	Physiology of Fishes	4
ZOOL 610	Principles of Aquaculture	4
ZOOL 710	Sharks and Bony Fishes	0 or 4
Marine, Estuarine and Freshwater Ecology		
BIOL 720	Plant-Animal Interactions	4
ESCI 501	Introduction to Oceanography	4
GEN 713	Microbial Ecology and Evolution	4
MEFB 500	Coastal Habitat Field Research Methods (SML)	4
MEFB 508	Marine Ecosystem Research and Management (SML)	4
MEFB 625	Introduction to Marine Botany	5
MEFB 628	Marine Invertebrate Evolution and Ecology	5
MEFB 674	Ecology and Marine Environment (SML)	4
MEFB 714	Field Animal Behavior (SML)	4
MEFB 717	Lake Ecology	4
MEFB 719	Field Studies in Lake Ecology	4
MEFB 721	Aquatic Invasive Species	4
MEFB 725	Marine Ecology	4
MEFB #732	Lake Management	4
MEFB 741	Sharks: Biology and Conservation (SML)	4
MEFB 747	Aquatic Plants in Restoration/Management (C)	4
MEFB 751	Research in Marine Biology (SML)	4
MEFB 755	Biological Oceanography (C)	3
NR 703	Watershed Water Quality Management	4
NR 744	Biogeochemistry	4
ZOOL 708	Stream Ecology	4
ZOOL 733	Behavioral Ecology (C)	4
Physiology, Behavior and Cell Biology		
ANSC 701	Physiology of Reproduction	4
BIOL 701	Plant Physiology	4
BMCB 605	Principles of Cell Biology	4
BMS #716	Public Health: Food- and Water-borne Diseases	4
MEFB 504	Field Wildlife Forensics (SML)	2
MEFB 506	Marine Parasitology and Disease (SML)	4
MEFB 714	Field Animal Behavior (SML)	4
MEFB 773	Physiology of Fishes	4
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory	5
ZOOL 733	Behavioral Ecology (C)	4
ZOOL 736	Genes and Behavior (C)	4
ZOOL 777	Neuroethology	4
Restoration Management and Policy		
MARI 405	Introduction to Marine Mammal Science and Policy	3
MARI 705	Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy	3
MEFB #505	Introduction to Applied Science Communication (SML)	4
MEFB 702	Sustainable Marine Fisheries	4
MEFB 747	Aquatic Plants in Restoration/Management (C)	4
MEFB 772	Fisheries Biology: Conservation and Management	4
ZOOL 610	Principles of Aquaculture	4
Research and Special Projects <sup>2</sup>		
BIOL 795	Independent Investigations in Biology	1-4
BMS 795	Investigations in Biomedical Science	1-8
BIOL 799	Honors Senior Thesis	2-8
MEFB 403	Investigative Marine Biology Laboratory (SML)	2-4
MEFB 500	Coastal Habitat Field Research Methods (SML)	4
MEFB 600	Field Experience in Marine, Estuarine, and Freshwater Biology	1-4
MEFB #732	Lake Management	4
MEFB 730	Underwater Research (SML)	4
MEFB 751	Research in Marine Biology (SML)	4
MEFB 770	Senior Seminar in Marine, Freshwater, and Estuarine Biology (C)	2
MEFB 795	Independent Investigations in Marine, Estuarine, and Freshwater Biology	1-4
TECH 797	Undergraduate Ocean Research Project (C) <sup>3</sup>	2
MEFB 799H	Honors Senior Thesis in Marine, Estuarine, and Freshwater Biology	2-4

- <sup>1</sup> A single course cannot be used for both a core requirement and an elective (e.g., ZOOL 542 cannot be used to fulfill the animal survey requirement and as an elective).
- <sup>2</sup> Primary focus of the project must be Marine, Estuarine and/or Freshwater. A 600, 695, 795, or 799 experience may substitute for one elective with academic advisor approval, but only if taken for at least four credits. These four credits may be spread over multiple semesters if they are consecutive and with the same faculty mentor.
- <sup>3</sup> This class requires enrollment in both fall and spring sections, 2 credits/semester for a total of 4 credits.

A minimum grade of C- is required in all biological science courses that are counted toward the requirements for a degree in MEFB. Students who expect to compete successfully for post-baccalaureate programs should attain a cumulative GPA of 3.0 or higher by the end of the sophomore year and maintain it at that level.

## Capstone Experience

As part of the University of New Hampshire's Discovery Program requirements, all students must complete a capstone experience during their senior year (after earning at least 90 credits). The capstone experience for students majoring in MEFB consists of BOTH (1) an approved individual experience AND (2) the successful completion of the BIOL 780 Capstone Companion Course. Students will not be approved for graduation until capstone certification has been granted.

### 1) The individual experience

The individual experience may be satisfied through various forms of experiential learning (e.g., Honors thesis, mentored research project, internship) or a course denoted with a "(C)" in the courses listed above. The individual experience must fulfill at least one of the University's capstone criteria:

- synthesizes and applies disciplinary knowledge and skills
- fosters reflection on undergraduate learning and experience
- demonstrates emerging professional competencies
- applies, analyzes, and/or interprets research, data, or artistic expression
- explores areas of interest based on the integration of the prior learning

**Before beginning *any* capstone individual experience, students must submit a completed capstone approval form to their Program Coordinator.**

Students can obtain this form on the Department's Capstone page or from their Program Coordinator. Here they will describe their proposed individual experience and how it fulfills at least one of the University's capstone criteria listed above. If the student is selecting a "C" course for their individual experience, they should obtain the course syllabus from the instructor for information about the course's content and learning objectives.

### 2) Enrollment in BIOL 780 Capstone Companion Course

Students will also be required to enroll in BIOL 780 (1 cr.) during the semester of their individual experience. BIOL 780 is offered every Fall and Spring semester.

- If the individual experience is a two-semester thesis, BIOL 780 should be taken during the second semester.

- If the individual experience occurs during the summer (e.g., internship), BIOL 780 should be taken during the Fall semester that immediately follows.
- Note: Because BIOL 780 is not offered during the summer, students cannot complete their individual experience during the summer *and graduate during that same August*. Summer experiences could only be used as individual capstone experiences if completed the summer before the student's senior year.

## Off Campus Coursework and Study Abroad Opportunities

It is strongly recommended that students consider participating in a summer, semester, or year-long study abroad program. UNH's Shoals Marine Laboratory (<https://www.shoalsmarinelaboratory.org/>), in conjunction with Cornell University, offers a host of marine biology-related college level courses that meet many degree requirements of the MEFB major over the summer on our island campus in the Isles of Shoals. SML offers both Merit and Need-based Scholarships, multi-course discounts, as well as competitive Research Internships offering summer stipends. UNH Global is the definitive resource for Study Abroad opportunities for undergraduates (<https://www.unh.edu/global/education-abroad>). UNH Global can provide information on programs of study, while students' academic advisors can assist in course selection options that provide equivalencies to requirements in MEFB so progress toward degree is not compromised. In addition, Ecoquest, run by the Department of Natural Resources, offers summer and semester programs of environmentally oriented courses in New Zealand (<https://ecoquest.unh.edu/>). These are just some of the many opportunities available for MEFB students and we encourage you to explore more.

## Pre-health Professional Program

MEFB majors who wish to pursue postgraduate degrees in the health care professions should visit the premed advising website (<http://www.unh.edu/premed-advising>).

## Student Learning Outcomes

- Show the ability to synthesize diverse sources of information and communicate it effectively.
- Demonstrate a broad understanding of the unique characteristics, as well as the similarities, governing freshwater, estuarine and marine systems.
- Have a broad understanding of biology from the molecular to the ecosystem with a particular appreciation for the abiotic and biotic factors relating to diverse aquatic ecosystems.
- Demonstrate the ability to describe basic principles of scientific inquiry and the importance of scientific study for understanding the natural world.
- Demonstrate the ability to design and experiment, collect data, analyze and graph it appropriately, and summarize the significant findings.
- Demonstrate an ability to critically and objectively evaluate data, develop hypotheses, plus interpret biological experiments and studies.
- Demonstrate an ability to communicate clearly and explicitly, both orally and in writing, following conventional scientific formats.

- Demonstrate a broad understanding of major groups of prokaryotic and eukaryotic aquatic life.

## Marine Biology Minor

<https://colsa.unh.edu/biological-sciences/program/minor/marine-biology>

### Description

The Marine Biology minor is designed to provide a foundation in marine biology and related sciences to any UNH undergraduate student, with the exception of students majoring in marine, estuarine, and freshwater biology. It is offered through the Department of Biological Sciences. The minor consists of 20 credits with grades of C- or better and no pass/fail courses. No more than eight major requirement credits may be used to complete the minor. The minor consists of an introductory Marine Science course and 4 courses selected in consultation with the minor advisor.

### Requirements

#### Required

Five courses (20 credits); two of the five courses (eight credits) can count toward the student's major.

Code	Title	Credits
Select one of the following introductory courses in marine science:		4
MEFB 503	Introduction to Marine Biology	
ESCI 501	Introduction to Oceanography	
Four additional courses selected in consultation with the minor adviser		16
<b>Total Credits</b>		<b>20</b>

In addition, students are encouraged to become involved in a research project, either by working in a professor's laboratory or by participating in the Undergraduate Ocean Research Project (TECH 797 Undergraduate Ocean Research Project).

## Neuroscience and Behavior (NSB)

Neuroscience is one of the fastest-growing scientific fields, and the discoveries that are being made today are having an immediate and significant impact on our society. The importance of understanding animal behavior is likewise increasing, particularly in the face of a rapidly-changing environment. The B.S. in Neuroscience and Behavior is a great way for students to combine interests in neurobiology and animal behavior. The curriculum prepares students for various post-graduate degrees, including medical, veterinary, and graduate school, and we offer students a variety of opportunities to get hands-on research experience.

<https://colsa.unh.edu/biological-sciences>

### Programs

- [Animal Behavior Minor](#) (p. 332)
- [Neuroscience and Behavior Major \(B.S.\)](#) (p. 332)

### Faculty

**College of Liberal Arts Faculty**  
<https://cola.unh.edu/psychology/faculty-staff-directory>

**College of Life Sciences & Agriculture Faculty**  
<https://colsa.unh.edu/biological-sciences/people>

## Animal Behavior Minor

<https://colsa.unh.edu/biological-sciences/program/minor/animal-behavior>

### Description

This minor is designed for students who are interested in learning more about animal behavior, including the mechanisms that underlie behaviors and the evolutionary forces that may have shaped them. Students will also gain practical skills in the methods used to study animal behavior in laboratory and field settings.

### Requirements

Students must earn a grade of C- or better in all courses taken for the minor. No more than 8 credits taken for the minor may be used toward a student's major.

Code	Title	Credits
<b>Required</b>		
ZOOL 613	Animal Behavior	5
<b>Electives</b>		
Minimum of 15 additional credits; At least two of the four electives must come from the Category I list below; the remaining courses may be from either Category I or Category II.		
Category I:		
NSB 727	Animal Communication	4
PSYC 720	Animal Cognition	4
ZOOL 726	Conservation Behavior	4
ZOOL 733	Behavioral Ecology	4
ZOOL 736	Genes and Behavior	4
ZOOL 777	Neuroethology	4
ZOOL 795	Independent Investigations in Zoology	1-4
MEFB 714	Field Animal Behavior	4
Category II:		
AAS 421	Large Animal Behavior and Handling Techniques	2
BIOL 720	Plant-Animal Interactions	4
BMS 718	Mammalian Physiology	4
PSYC 512	Psychology of Primates	4
ZOOL 625	Principles of Animal Physiology	3
ZOOL 690	Evolution	4

## Neuroscience and Behavior Major (B.S.)

<https://colsa.unh.edu/biological-sciences/program/bs/neuroscience-and-behavior-major>

### Description

The major in neuroscience and behavior (NSB) offers an interdisciplinary approach to human and non-human behavior, focusing on the evolution and adaptiveness of certain behaviors, as well as their underlying neural

mechanisms. Students who have always been fascinated by how the brain functions will be well served by this major, as will those who love wild animals and wish to better understand their behavior. The B.S. in neuroscience and behavior is based on a solid foundation in biology, chemistry, physics, statistics, and genetics (foundation courses). These are followed by a two-semester course sequence that covers the fundamentals of neuroscience and behavior. Students can then pick five or more electives focusing on areas of interest.

NSB students are encouraged to take advantage of research experiences in the laboratories of the psychology and biology faculty in the program. This provides valuable experience with cutting-edge equipment and techniques. Some students may share aspects of a larger project, whereas others may be relatively independent and design their own project under supervision. In either case, important skills are gained by the discipline of gathering data, analyzing and interpreting it, and presenting it to a broader audience.

The curriculum provides most of the requirements and recommended courses for students seeking admission to graduate school and to professional schools in medicine and veterinary medicine. Students who might choose not to go on to advanced degrees are well-prepared for employment as skilled technicians in research laboratories or, if their interests are in animal behavior, as field research assistants or animal trainers. With additional courses in education, the B.S. in NSB also qualifies graduates to teach at the elementary, junior high, and high school levels.

Faculty participating in the NSB major combine a love of teaching and student mentoring with a passion for research, and encourage student participation. Research facilities that students can use include the Integrative Animal Behavior and Ecoacoustics laboratory, the confocal imaging center, the Hubbard Center for Genomic Studies, and the many marine, freshwater, and estuarine laboratories associated with UNH programs. Students can also take summer courses at the Shoals Marine Laboratory.

## Requirements

Students majoring in NSB are required to take foundation courses in basic science, core courses, and five electives from an extensive list of courses, including some offered by other departments including biochemistry, molecular and cellular biology, and natural resources. Minimum grade of D- or better is required in CHEM 403, CHEM 404, CHEM 545/CHEM 546, and PHYS 401; minimum grade of C- or better is required in all other courses. Finally, a capstone experience is required. This may be independent research, an advanced seminar, or other special student activity. It is meant to integrate prior experience and take the student to a new level in an area of special interest.

Code	Title	Credits
<b>NSB Foundation courses</b>		
NSB 400	Topics Neuroscience & Behavior	1
BIOL 411 & BIOL 412	Introductory Biology: Molecular and Cellular and Introductory Biology: Evolution, Biodiversity and Ecology (2 semesters)	8
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II (2 semesters)	8
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
PHYS 401	Introduction to Physics I	4
PSYC 402 or BIOL 528	Statistics in Psychology Applied Biostatistics I	4

GEN 604	Principles of Genetics	4
NSB 500 & NSB 501	Fundamentals of Neuroscience and Behavior I and Fundamentals of Neuroscience and Behavior I Laboratory	5
NSB 502 & NSB 503	Fundamentals of Neuroscience and Behavior II/Systems Neuroscience and Fundamentals of Neuroscience and Behavior II Laboratory	5
<b>Electives (Choose 5)</b>		<b>20-22</b>
BIOL 541	Ecology	
BIOL 675	Medical Botany	
BIOL 714	Model Organisms in Biological and Medical Research	
BMCB 605	Principles of Cell Biology	
BMCB 760	Pharmacology	
BMS 507 & BMS 508	Human Anatomy and Physiology I and Human Anatomy and Physiology II <sup>1</sup>	
BMS 702	Endocrinology	
BMS 711	Toxicology	
BMS 718	Mammalian Physiology	
GEN 706	Human Genetics	
KIN 706 & KIN 707	Neurology and Neurology Lab <sup>1</sup>	
MEFB 714	Field Animal Behavior (SML, C)	
NSB 705	Molecular and Cellular Neurobiology (C)	
NSB 727	Animal Communication (C)	
NSB #728	Research Methods in Animal Behavior (C)	
PHIL 630	Neuroscience and Philosophy	
PSYC 511	Sensation and Perception	
PSYC 512	Psychology of Primates	
PSYC 513	Cognitive Psychology	
PSYC 521	Behavior Analysis	
PSYC 710	Visual Perception (C)	
PSYC 716	Cognitive Neuroscience (C)	
PSYC 720	Animal Cognition (C)	
PSYC 731	Brain and Behavior (C)	
PSYC 733	Drugs and Behavior (C)	
PSYC 735	Neurobiology of Mood Disorders (C)	
PSYC 736	Attention Disorders (C)	
PSYC 737	Behavioral Medicine (C)	
ZOOL 613	Animal Behavior	
PSYC 741W	Special Topics (Neuroscience of Memory, Behavioral Neuroscience, Science of Daydreaming C)	
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory (C) <sup>1</sup>	
ZOOL 690	Evolution	
ZOOL 726	Conservation Behavior (C)	
ZOOL 733	Behavioral Ecology (C)	
ZOOL 736	Genes and Behavior (C)	
ZOOL 777	Neuroethology (C)	
795/796 or 799 Independent Study, (C) <sup>2</sup>		
<b>Capstone <sup>3</sup></b>		
<b>Total Credits</b>		<b>69-71</b>

<sup>1</sup> Both must be taken to count as one of the 5 required major electives

<sup>2</sup> One experience totaling at least 4 credits, but can be earned over the course of two consecutive semesters provided the experience is with the same research mentor. Can only substitute for one elective.

<sup>3</sup> Courses that are eligible to fulfill the Capstone requirement are indicated with a (C) and must be taken senior year. You can: 1) designate a course as a Capstone course, with additional requirements as determined by the instructor; 2) complete one semester of Capstone Research (BIOL 795, PSYC 795, or INCO 790); 3) do an honors thesis in Neuroscience and Behavior (NSB 799H) or Biology or Psychology (BIOL 799 or PSYC 797/PSYC 799) or; 4) participate in an alternative activity with approval from the student's academic advisor.

NSB majors may use BIOL 411, BIOL 412, CHEM 403, CHEM 404, PHYS 401, PHYS 407 and either PSYC 402 or BIOL 528 to fulfill the Biological Sciences, Physical Sciences, Discovery Lab, and Quantitative



Reasoning Discovery requirements. Students transferring into the NSB program from other UNH majors must hold a cumulative GPA of at least 3.2 at the time of requested major change.

## Student Learning Outcomes

Students demonstrate that they understand basic principles of neuroscience and behavior.

- Apply the core principles of biology, chemistry, physics, and statistics to more advanced concepts in neuroscience and behavior.
- Apply the principles of evolution and genetics to understand how genotype and phenotype affect the structure and function of animal nervous systems and behavior.
- Describe the basic features of animal nervous system development, organization, signaling, integration, and higher-level processing, and how these are altered in diseases of the nervous system.
- Explain the four levels of analysis emphasized in modern animal behavior research: causation, development, function, and evolution.
- Describe molecular and cellular approaches to the study of brain structure, function, and development, as well as behavioral and cognitive neuroscience approaches to studying higher level brain functions.

Students demonstrate that they can undertake scientifically valid methods of inquiry.

- Apply appropriate research methods, laboratory techniques, and statistical methods to investigate scientific questions in neuroscience and behavior.

Students demonstrate that they can think critically and analytically.

- Read and critique primary research literature related to the nervous system, how nervous system function generates behavior, and how behavior addresses fitness-related challenges across a diversity of species.

Students demonstrate that they can communicate effectively.

- Demonstrate scientific writing skills, and proficiency in delivering oral presentations related to both the primary literature and findings from student investigations in neuroscience and behavior.

Students practice science responsibly and ethically, and acknowledge the influence of cultural and historical biases in the sciences.

## Nutrition (NUTR)

Nutrition is the study of how nutrients and food components function at molecular, cellular, and whole-body levels to impact human health and disease. Students are grounded in fundamental sciences as they develop nutrition-specific competencies in nutrition and health, foods, nutritional assessment, wellness, life cycle nutrition, and/or metabolic biochemistry.

The nutrition program prepares students for entry-level positions in health care, education, or the biotechnology industry, or entry into post-baccalaureate professional programs such as dietetic internship, medical school, dental school, or graduate school. Nutrition faculty have expertise in clinical nutrition, sports nutrition, and food science, as well as assessing risk factors of chronic disease risk (i.e. obesity, diabetes, cardiovascular, cognitive) in diverse populations (pediatric, young adult, older adult). Undergraduate students actively participate

in ongoing research projects in these areas. The College Health and Nutrition Assessment Survey (CHANAS) is one resource that supports nutrition research at the University of New Hampshire.

Students pursuing the B.S. degree in Nutrition choose from one of three areas of specialization: Dietetics, Nutrition and Wellness, or Nutritional Sciences options:

The curriculum for the Dietetics option is accredited by the Academic Council for Education in Nutrition and Dietetics (ACEND) of the Academy of Nutrition and Dietetics (AND). Students who complete the B.S. in Nutrition with the Dietetics option are eligible to apply for a dietetic internship, a prerequisite for becoming a registered dietitian.

Students who complete the Nutrition and Wellness option are prepared for jobs in agencies or businesses that have an emphasis on health and wellness, including schools, fitness centers, and non-profit or community organizations.

Students in the Nutritional Sciences option most often enroll in a post-graduate educational degree program (e.g., medical school, graduate school, physician assistant program, etc.) or enter the biomedical/biotechnology workplace.

## Pre-Professional Health Programs

Students interested in postgraduate careers in the health care professions should visit UNH's Pre-Professional Health Programs Advising Office. Requirements for specific types of professional schools (e.g., medical, dental, physician assistant, pharmacy, etc.) are also provided by the [Pre-Professional Health Advising Office](#). While many of the prerequisite courses required by professional schools are also requirements of the Nutrition major, you should consult with your faculty adviser to create a plan of study that best prepares you for pursuing a career in one of these health professions.

<https://colsa.unh.edu/agriculture-nutrition-food-systems>

## Programs

- [Nutrition Major \(B.S.\)](#) (p. 334)
- [Nutrition Major: Dietetics Option \(B.S.\)](#) (p. 335)
- [Nutrition Major: Nutrition and Wellness Option \(B.S.\)](#) (p. 338)
- [Nutrition Major: Nutritional Sciences Option \(B.S.\)](#) (p. 337)
- [Nutrition Minor](#) (p. 340)
- [Culinary Nutrition and Food Studies Minor](#) (p. 340)

## Faculty

<https://colsa.unh.edu/agriculture-nutrition-food-systems/faculty-staff-directory>

## Nutrition Major (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/nutrition-major>

## Description

Nutrition is the study of food, the nutrients found in food, and the body's metabolism of these nutrients to maintain and promote health. Nutrition

is an interdisciplinary science based on biochemistry and physiology, but also integrates sociology, psychology, molecular biology, and genetics.

Students have three curriculum options within the major to pursue a bachelor's degree in nutrition. The option is declared within the nutrition major after their second semester in the program. Options include:

- **Dietetics option** - is the first step to becoming a registered dietitian. The Didactic Program in Dietetics (DPD) curriculum is accredited by The Accreditation Council for Education in Nutrition and Dietetics (ACEND). It prepares you for a dietetic internship.
- **Nutrition and Wellness option** - provides a foundation in chemistry, anatomy, physiology and microbiology and includes courses on stress, wellness and exercise science. Students gain real-world experience providing hands-on nutrition and health guidance.
- **Nutritional Sciences option** - provides a comprehensive background in biology, chemistry, physiology, nutrition, biochemistry and physics, and includes courses on nutritional assessment, life cycle nutrition, nutrition and health, and careers in nutrition.

The program prepares students for success by offering real-world learning opportunities throughout the curriculum. These opportunities include applied research, field experiences, internships, community engagement, and study abroad offerings. Our diverse group of faculty are dedicated to student success in and outside of the classroom. Coursework supports diverse postgraduate pathways including dietetic internships, allied health programs, medical and dental schools and graduate school. The rigorous curriculum is designed to offer a science-based foundation and foster critical-thinking and strong communication skills for future professional success of our students.

## Requirements

Students take 16-18 credits per semester. All students complete foundational courses in the sciences, nutrition core courses, and additional option-specific requirements as noted in the program descriptions (i.e. Dietetics, Nutrition and Wellness, and Nutritional Sciences). Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well.

Code	Title	Credits
NUTR courses:		
NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
NUTR 476	Nutritional Assessment	4
NUTR 650	Life Cycle Nutrition	4
Foundation courses:		
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
SOC 400	Introductory Sociology	4
or PSYC 401	Introduction to Psychology	
Statistics course		4

## Student Learning Outcomes

Student Learning Outcomes are listed within the Nutrition Major program options pages.

## Nutrition Major: Dietetics Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/nutrition-major-dietetics-option>

### Description

Nutrition is the study of how nutrients and food components function at molecular, cellular, and whole-body levels to impact human health and disease. Students are grounded in fundamental sciences as they develop nutrition-specific competencies in nutrition and health, foods, nutritional assessment, wellness, life cycle nutrition, and/or metabolic biochemistry.

The nutrition program prepares students for entry-level positions in health care, education, or the biotechnology industry, or entry into post-baccalaureate professional programs. Nutrition faculty have expertise in clinical nutrition, sports nutrition, and food science, as well as assessing risk factors of chronic disease risk (i.e. obesity, diabetes, cardiovascular, cognitive) in diverse populations (pediatric, young adult, older adult).

The curriculum for the Dietetics option is accredited by the Academic Council for Education in Nutrition and Dietetics (ACEND) of the Academy of Nutrition and Dietetics (AND). Students who complete the B.S. in Nutrition with the Dietetics option are eligible to apply for a dietetic internship, a prerequisite for becoming a registered dietitian.

### Requirements

A grade of C-minus or better must be earned in all NUTR courses required by the major.

#### Foundation Courses

Code	Title	Credits
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
SOC 400	Introductory Sociology	4
or PSYC 401	Introduction to Psychology	
Choose ONE statistics course		4
BIOL 528	Applied Biostatistics I	
PSYC 402	Statistics in Psychology	
SOC 402	Statistics	

#### Science Core Courses

Code	Title	Credits
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
BMS 501	Microbes in Human Disease	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658	General Biochemistry	3

#### Nutrition Core Courses

Code	Title	Credits
NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
NUTR 476	Nutritional Assessment	4
NUTR 650	Life Cycle Nutrition	4

#### Dietetics Option Courses

Code	Title	Credits
NUTR 403	Culinary Arts Skills Development	4
NUTR 504	Managerial Skills in Dietetics	4
NUTR 550	Food Science: Principle and Practice	4
NUTR 610	Nutrition Education and Counseling	4
NUTR 700	Career Development in Dietetics	1
NUTR 720	Community Nutrition	4
NUTR 750	Nutritional Biochemistry	4
NUTR 773	Clinical Nutrition	4
NUTR 775	Practical Applications in Medical Nutrition Therapy	4
NUTR 780	Critical Issues in Nutrition	4
HMP 401	United States Health Care Systems	4

### Dietetics Capstone Experience

One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement for Dietetics students is satisfied through the completion of NUTR 720 Community Nutrition or NUTR 780 Critical Issues in Nutrition during their senior year.

**NOTE:** Both NUTR 720 Community Nutrition and NUTR 780 Critical Issues in Nutrition are required courses; one of these courses must be taken during the student's senior year to fulfill the university's capstone requirement.

## Degree Plan

### SAMPLE Course Sequence for Dietetics

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
BMS 507	Human Anatomy and Physiology I	4
SOC 400 or PSYC 401	Introductory Sociology or Introduction to Psychology	4
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
NUTR 476	Nutritional Assessment	4
BMS 508	Human Anatomy and Physiology II	4
HMP 401	United States Health Care Systems	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
CHEM 403	General Chemistry I	4
NUTR 403	Culinary Arts Skills Development	4
Select one of the following:		4
PSYC 402	Statistics in Psychology	
SOC 402	Statistics	
BIOL 528	Applied Biostatistics I	
Inquiry Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
NUTR 504	Managerial Skills in Dietetics	4

CHEM 404	General Chemistry II	4
Discovery Course		4
Elective (any course)		4

**Credits 16**

### Third Year

#### Fall

NUTR 550	Food Science: Principle and Practice	4
NUTR 610	Nutrition Education and Counseling	4
BMS 501	Microbes in Human Disease	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5

**Credits 17**

#### Spring

NUTR 600	Field Experience in Nutrition	2
NUTR 650	Life Cycle Nutrition	4
NUTR 773	Clinical Nutrition	4
BMCB 658	General Biochemistry (no lab required)	3
Discovery Course		4

**Credits 17**

### Fourth Year

#### Fall

NUTR 700	Career Development in Dietetics	1
NUTR 750	Nutritional Biochemistry	4
NUTR 775	Practical Applications in Medical Nutrition Therapy	4
Discovery Course		4
Elective (any course)		1-4

**Credits 14-17**

#### Spring

NUTR 720	Community Nutrition	4
NUTR 780	Critical Issues in Nutrition	4
Discovery Course		4
Elective (any course)		3-4

**Credits 15-16**

**Total Credits 128-132**

## Student Learning Outcomes

- Demonstrate how to locate, interpret, evaluate and use professional literature to make ethical, evidence-based practice decisions. Writing assignment
- Use current information technologies to locate and apply evidence-based guidelines and protocols.
- Apply critical thinking skills.
- Demonstrate effective and professional oral and written communication and documentation.
- Describe the governance of nutrition and dietetics practice, such as the Scope of Nutrition and Dietetics Practice and the Code of Ethics for the Profession of Nutrition and Dietetics; and describe interprofessional relationships in various practice settings.
- Assess the impact of a public policy position on nutrition and dietetics practice.

- Discuss the impact of health care policy and different health care delivery systems on food and nutrition services.
- Identify and describe the work of interprofessional teams and the roles of others with whom the registered dietitian nutritionist collaborates in the delivery of food and nutrition services.
- Demonstrate an understanding of cultural competence/sensitivity.
- Demonstrate identification with the nutrition and dietetics profession through activities such as participation in professional organizations and defending a position on issues impacting the nutrition and dietetics profession.
- Demonstrate an understanding of the importance and expectations of a professional in mentoring and precepting others.
- Use the Nutrition Care Process to make decisions, identify nutrition-related problems and determine and evaluate nutrition interventions.
- Develop an educational session or program/educational strategy for a target population.
- Demonstrate counseling and education methods to facilitate behavior change for and enhance wellness for diverse individuals and groups.
- Explain the processes involved in delivering quality food and nutrition services.
- Describe basic concepts of nutritional genomics.
- Apply management theories to the development of programs or services.
- Evaluate a budget and interpret financial data.
- Describe the regulation system related to billing and coding, what services are reimbursable by third party payers, and how reimbursement may be obtained.
- Apply the principles of human resource management to different situations.
- Describe safety principles related to food, personnel and consumers.
- Analyze data for assessment and evaluate data to be used in decision-making for continuous quality improvement.

## Nutrition Major: Nutritional Sciences Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/nutrition-major-nutritional-sciences-option>

### Description

Nutrition is the study of how nutrients and food components function at molecular, cellular, and whole-body levels to impact human health and disease. Students are grounded in fundamental sciences as they develop nutrition-specific competencies in nutrition and health, foods, nutritional assessment, wellness, life cycle nutrition, and/or metabolic biochemistry.

The nutrition program prepares students for entry-level positions in health care, education, or the biotechnology industry, or entry into post-baccalaureate professional programs. Nutrition faculty have expertise in clinical nutrition, sports nutrition, and food science, as well as assessing risk factors of chronic disease risk (i.e. obesity, diabetes, cardiovascular, cognitive) in diverse populations (pediatric, young adult, older adult).

Students in the Nutritional Sciences option most often enroll in a post-graduate educational degree program (e.g., medical school, graduate

school, physician assistant program, etc.) or enter the biomedical/biotechnology workplace.

### Requirements

A minimum grade of C- or above is required in all NUTR courses required by the major.

Code	Title	Credits
<b>Foundation Courses</b>		
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
SOC 400	Introductory Sociology	4
or PSYC 401	Introduction to Psychology	
Choose ONE statistics course:		4
BIOL 528	Applied Biostatistics I	
PSYC 402	Statistics in Psychology	
SOC 402	Statistics	
<b>Science Core Courses</b>		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
GEN 604	Principles of Genetics	4
<b>Nutrition Core Courses</b>		
NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
NUTR 476	Nutritional Assessment	4
NUTR 650	Life Cycle Nutrition	4
<b>Nutritional Science Option Courses</b>		
MATH 424B	Calculus for Life Sciences	4
NUTR 750	Nutritional Biochemistry	4
NUTR 751	Nutritional Biochemistry of Micronutrients	4
<b>Major Elective Courses</b>		
Two nutrition Electives and a third Elective outside the major are chosen in consultation with the student's advisor, based on the student's career interests.		
<b>Choose 2 NUTR courses (minimum 8 credits)</b>		
NUTR 403	Culinary Arts Skills Development	4
NUTR 405	Food and Society	4
NUTR 504	Managerial Skills in Dietetics	4
NUTR 506	Nutrition and Wellness	4
NUTR 525	Food and Culture in Italy	4
NUTR 530	Critical Analysis in Food Studies	4
NUTR 535	History of Food in Italy	4
NUTR 546	Nutrition in Exercise and Sports	4
NUTR 550	Food Science: Principle and Practice	4
NUTR 560	Introduction to Research in Nutrition	2
NUTR 595	Mediterranean Diet and Culture	4
NUTR 600	Field Experience in Nutrition	1-4
NUTR 610	Nutrition Education and Counseling	4
NUTR 625	From Farm to the Italian Table	4
NUTR 709	Nutritional Epidemiology	4
NUTR 710	Advanced Diabetes Care	2
NUTR 720	Community Nutrition	4
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	4
NUTR 740	Nutrition for Children with Special Needs	4
NUTR 755 & NUTR 758	Treatment of Adult Obesity and Practicum in Weight Management	5
NUTR #760 & NUTR #761	Research Experience Nutrition I and Research Experience Nutrition II	4
NUTR 773	Clinical Nutrition	4
NUTR 775	Practical Applications in Medical Nutrition Therapy	4

NUTR 780	Critical Issues in Nutrition	4
NUTR 790	Undergraduate Teaching Experience	1-2
Elective Outside the Major at 600- or 700-Level (4 credits)		

### Nutritional Science Capstone Experience

One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement for Nutritional Sciences students is satisfied through the completion of NUTR 720 Community Nutrition or NUTR 751 Nutritional Biochemistry of Micronutrients in Nutrition during their senior year.

NOTE: NUTR 751 Nutritional Biochemistry of Micronutrients is a required course; it will only fulfill the university's capstone requirement if taken during the student's senior year.

## Degree Plan

### SAMPLE Course Sequence for Nutritional Science

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
ENGL 401	First-Year Writing	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
CHEM 403	General Chemistry I	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
NUTR 476	Nutritional Assessment	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
CHEM 404	General Chemistry II	4
MATH 424B	Calculus for Life Sciences	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMS 507	Human Anatomy and Physiology I	4
Select one of the following:		4
BIOL 528	Applied Biostatistics I	
PSYC 402	Statistics in Psychology	
SOC 402	Statistics	
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMS 508	Human Anatomy and Physiology II	4
SOC 400 or PSYC 401	Introductory Sociology or Introduction to Psychology	4
Elective (any course)		4
<b>Credits</b>		<b>17</b>

### Third Year

#### Fall

GEN 604	Principles of Genetics	4
Nutrition Elective		2-4
Discovery Course		4
Elective (any course)		4
<b>Credits</b>		<b>14-16</b>

#### Spring

NUTR 650	Life Cycle Nutrition	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
Discovery Course		4
Nutrition Elective		2-4
<b>Credits</b>		<b>15-17</b>

### Fourth Year

#### Fall

NUTR 750	Nutritional Biochemistry	4
Discovery Course		4
Elective (any course)		4
Elective (any course)		4
<b>Credits</b>		<b>16</b>

#### Spring

NUTR 751	Nutritional Biochemistry of Micronutrients	4
600 or 700-Level Elective Outside the Major		4
Discovery Course		4
Elective (any course)		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>128-132</b>

## Student Learning Outcomes

- Demonstrate how to locate, interpret, evaluate and use professional literature to make ethical, evidence-based conclusions and decisions.
- Use current information technologies to locate and apply evidence-based guidelines and protocols.
- Apply critical thinking skills.
- Demonstrate effective and professional oral and written communication and documentation.
- Demonstrate an understanding of cultural competence/sensitivity.
- Describe basic concepts of nutritional genomics.
- Demonstrate an understanding of the scientific method and how it is used to generate knowledge in nutrition science.

## Nutrition Major: Nutrition and Wellness Option (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/nutrition-major-nutrition-wellness-option>

### Description

Nutrition is the study of how nutrients and food components function at molecular, cellular, and whole-body levels to impact human health and



disease. Students are grounded in fundamental sciences as they develop nutrition-specific competencies in nutrition and health, foods, nutritional assessment, wellness, life cycle nutrition, and/or metabolic biochemistry.

The nutrition program prepares students for entry-level positions in health care, education, or the biotechnology industry, or entry into post-baccalaureate professional programs. Nutrition faculty have expertise in clinical nutrition, sports nutrition, and food science, as well as assessing risk factors of chronic disease risk (i.e. obesity, diabetes, cardiovascular, cognitive) in diverse populations (pediatric, young adult, older adult).

Students who complete the Nutrition and Wellness option are prepared for jobs in agencies or businesses that have an emphasis on health and wellness, including schools, fitness centers, and non-profit or community organizations.

## Requirements

A minimum grade of C-minus or better must be earned in all NUTR courses required by the major.

Code	Title	Credits
<b>Foundation Courses</b>		
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
SOC 400	Introductory Sociology	4
or PSYC 401	Introduction to Psychology	
Choose ONE statistics course		4
BIOL 528	Applied Biostatistics I	
PSYC 402	Statistics in Psychology	
SOC 402	Statistics	
<b>Science Core Courses</b>		
CHEM 411	Introductory Chemistry for Life Sciences	4
BMS 501	Microbes in Human Disease	4
BMCB 501	Biological Chemistry	4
<b>Nutrition Core Courses</b>		
NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
NUTR 476	Nutritional Assessment	4
NUTR 650	Life Cycle Nutrition	4
<b>Nutrition and Wellness Courses</b>		
NUTR 403	Culinary Arts Skills Development	4
NUTR 506	Nutrition and Wellness	4
NUTR 546	Nutrition in Exercise and Sports	4
NUTR 610	Nutrition Education and Counseling	4
NUTR 720	Community Nutrition	4
NUTR 755	Treatment of Adult Obesity	3
NUTR 758	Practicum in Weight Management	2
OT 513	Stressed Out: The Science and Nature of Human Stress	4
ENGL 502	Professional and Technical Writing	4
or ENGL 503	Persuasive Writing	
HMP 401	United States Health Care Systems	4
HMP 501	Epidemiology and Community Medicine	4
EXSC 620	Physiology of Exercise	4
or HPE 648	Current Issues in Teaching Health	
700-level elective		4-5

### Nutrition and Wellness Capstone Experience

One capstone experience, supervised and approved within the major, is required of all seniors. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement for Wellness students is satisfied through the completion of NUTR 720 Community Nutrition or NUTR 755 Treatment of Adult Obesity during their senior year.

**NOTE:** Both NUTR 720 Community Nutrition and NUTR 755 Treatment of Adult Obesity are required courses; one of these courses must be taken during the student's senior year to fulfill the university's capstone requirement.

## Degree Plan

### SAMPLE Course Sequence for Nutrition and Wellness

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
NUTR 400	Nutrition in Health and Well Being	4
NUTR 401	Professional Perspectives on Nutrition	1
BMS 507	Human Anatomy and Physiology I	4
SOC 400	Introductory Sociology	4
or PSYC 401	or Introduction to Psychology	
ENGL 401	First-Year Writing	4
<b>Credits</b>		<b>17</b>

<b>Spring</b>		
NUTR 476	Nutritional Assessment	4
BMS 508	Human Anatomy and Physiology II	4
HMP 401	United States Health Care Systems	4
Discovery course		4
<b>Credits</b>		<b>16</b>

<b>Second Year</b>		
<b>Fall</b>		
CHEM 411	Introductory Chemistry for Life Sciences	4
NUTR 403	Culinary Arts Skills Development	4
OT 513	Stressed Out: The Science and Nature of Human Stress	4
Inquiry course		4
<b>Credits</b>		<b>16</b>

<b>Spring</b>		
NUTR 506	Nutrition and Wellness	4
BMCB 501	Biological Chemistry	4
Select one of the following:		4
BIOL 528	Applied Biostatistics I	
PSYC 402	Statistics in Psychology	
SOC 402	Statistics	
Elective (WI)		4
<b>Credits</b>		<b>16</b>

<b>Third Year</b>		
<b>Fall</b>		
NUTR 546	Nutrition in Exercise and Sports	4
NUTR 610	Nutrition Education and Counseling	4
BMS 501	Microbes in Human Disease	4
EXSC 620	Physiology of Exercise	4
or HPE 648	or Current Issues in Teaching Health	
<b>Credits</b>		<b>16</b>

<b>Spring</b>		
NUTR 650	Life Cycle Nutrition	4
ENGL 502	Professional and Technical Writing	4
or ENGL 503	or Persuasive Writing	

HMP 501	Epidemiology and Community Medicine	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

**Fourth Year****Fall**

NUTR 755	Treatment of Adult Obesity	3
NUTR 758	Practicum in Weight Management	2
Discovery Course		4
Discovery Course or Elective		4
Elective (any course)		3-4

**Credits 16-17**

**Spring**

NUTR 720	Community Nutrition	4
700-level Elective		4
Discovery Course		4
Elective (any course)		3-4

**Credits 15-16**

**Total Credits 128-130**

## Student Learning Outcomes

- Demonstrate how to locate, interpret, evaluate and use professional literature to make ethical, evidence-based conclusions and decisions.
- Use current information technologies to locate and apply evidence-based guidelines and protocols.
- Apply critical thinking skills.
- Demonstrate effective and professional oral and written communication and documentation.
- Demonstrate an understanding of cultural competence/sensitivity.
- Describe basic concepts of nutritional genomics.
- Demonstrate an understanding of the scientific method and how it is used to generate knowledge in nutrition science.
- Understand basic concepts of statistical analysis.

## Nutrition Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/nutrition>

### Description

The nutrition minor is particularly suited to students interested in pursuing professional careers related to human health and wellness. The minor consists of a minimum of 20 credits, no more than 8 of which can also be used to fulfill major requirements. A C average (2.00) is required in courses that the minor department approves; a grade of C-minus or better is required in all courses to be counted toward the minor. Courses taken on a Pass/Fail basis may not be used for a minor.

Students declare the nutrition minor by submitting the [Intent to Minor in Nutrition](#) form to the Nutrition minor advisor, preferably prior to the start of their junior year. Submission of the Intent to Minor form is required to gain registration preference in certain courses if space is available and by discretion of the instructor. To complete the minor, students submit a

[Certification of Completion of Minor](#) form during their final semester at UNH.

## Requirements

Code	Title	Credits
<b>Required Course</b>		
NUTR 400	Nutrition in Health and Well Being	4

Students may tailor the minor in Nutrition to personal interests or professional aspirations. Note that many courses have prerequisites and/or require special permission.

Code	Title	Credits
<b>Additional Courses</b>		
Choose a minimum of 16-credits from the list below. At least 4 credits must be at the 600- or 700-level		
NUTR 403	Culinary Arts Skills Development	4
or HMGD #403	Introduction to Food Management	
NUTR 405	Food and Society	4
NUTR 476	Nutritional Assessment	4
NUTR 504	Managerial Skills in Dietetics	4
NUTR 506	Nutrition and Wellness	4
NUTR 525	Food and Culture in Italy	4
NUTR 530	Critical Analysis in Food Studies	4
NUTR 535	History of Food in Italy	4
NUTR 546	Nutrition in Exercise and Sports	4
NUTR 550	Food Science: Principle and Practice	4
NUTR 560	Introduction to Research in Nutrition	2
NUTR 595	Mediterranean Diet and Culture	4
NUTR 610	Nutrition Education and Counseling	4
NUTR 625	From Farm to the Italian Table	4
NUTR 650	Life Cycle Nutrition	4
NUTR 709	Nutritional Epidemiology	4
NUTR 710	Advanced Diabetes Care	2
NUTR 720	Community Nutrition	4
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	4
NUTR 740	Nutrition for Children with Special Needs	4
NUTR 750	Nutritional Biochemistry	4
NUTR 751	Nutritional Biochemistry of Micronutrients	4
NUTR 755	Treatment of Adult Obesity	3
NUTR 758	Practicum in Weight Management	2
NUTR 773	Clinical Nutrition	4
NUTR 790	Undergraduate Teaching Experience	1-2

## Culinary Nutrition and Food Studies Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/culinary-nutrition-food-studies>

### Description

The Culinary Nutrition & Food Studies Minor provides students the ability to explore the foundation of nutritional sciences and gain a practical appreciation of the culinary arts while building an understanding of our food environment & culture as it applies to human health. The Minor offers students hands-on learning experiences in culinary arts and the flexibility to incorporate study abroad coursework via the UNH in Italy program.

The Minor may be of interest to students preparing for future careers in allied health or health promotion and who recognize the growing need for training in culinary nutrition. Dietitians, physicians, wellness coaches, nurses, and other health care providers with strong culinary skills will

likely be better equipped to empower clients to choose and prepare healthier food choices.

## Requirements

Requirements for the Culinary Nutrition & Food Studies Minor (20 credits).

Code	Title	Credits
<b>Required Core Courses</b>		<b>8</b>
NUTR 400	Nutrition in Health and Well Being	
NUTR 403	Culinary Arts Skills Development <sup>1</sup>	
<b>Food Studies Electives - Select two courses:</b>		<b>8</b>
NUTR 405	Food and Society	
NUTR 525	Food and Culture in Italy	
NUTR 530	Critical Analysis in Food Studies	
NUTR 550	Food Science: Principle and Practice	
HMG1 570	International Food and Culture	
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	
<b>Culinary Nutrition Practicum</b>		<b>4</b>
NUTR 628	Culinary Nutrition Practicum	

<sup>1</sup> HMG1 #403 Introduction to Food Management will be considered an equivalent course to NUTR 403 Culinary Arts Skills Development

## Sustainable Agriculture and Food Systems (SAFS)

The sustainable agriculture and food systems (SAFS) program offers a flexible curriculum to students seeking integrated knowledge and experiences in modern agricultural and food systems to prepare for varied careers in these fields.

Students in this program will obtain knowledge in a variety of topics including sustainable agricultural practices, the science and management of working landscapes, locally produced foods, value-added agricultural products, and the promotion of healthy eating through sustainable food production and food policies. SAFS graduates will be prepared to pursue careers in a wide range of fields including the production of food, fiber, and agricultural services; management and marketing of agricultural operations; management of working lands, landscapes and ecosystems; agriculture/food/nutrition/natural resources-related research; policy-making; and other current and emerging professions.

The program offers both a bachelor of science (B.S.) degree and a bachelor of arts (B.A.) degree. The B.A. degree offers more flexibility to take courses from a variety of disciplines or pursuing a dual degree, second major, or minor. The B.S. degree best serves those seeking a strong foundation in scientific and technical knowledge and/or who envision pursuing an advanced degree.

<https://colsa.unh.edu/agriculture-nutrition-food-systems>

## Programs

- [Sustainable Agriculture and Food Systems Major \(B.A.\)](#) (p. 341)
- [Sustainable Agriculture and Food Systems Major \(B.S.\)](#) (p. 343)
- [Brewing Minor](#) (p. 344)

- [Environmental Horticulture Minor](#) (p. 345)
- [Sustainable Agriculture and Food Systems Minor](#) (p. 345)

## Faculty

<https://colsa.unh.edu/agriculture-nutrition-food-systems/faculty-staff-directory>

## Sustainable Agriculture and Food Systems Major (B.A.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/ba/sustainable-agriculture-food-systems-major>

## Description

The Sustainable Agriculture & Food Systems B.A. provides students with a broad base of knowledge and experiences with modern agriculture and food systems. Sustainable Agriculture and Food Systems is an interdisciplinary field comprising the social, physical, and life sciences and beyond. Agriculture is key to solving many of the major challenges facing the world, such as producing food to meet the needs of an ever-growing population while conserving land, water, and soil resources.

Our students get hands-on experience in applied coursework, and we encourage our students to conduct research alongside faculty. Our students become practitioners and entrepreneurs of agricultural and food businesses, researchers and policy-makers at state/federal agencies and non-profit organizations, laboratory technicians, and agricultural educators. Some go on to obtain advanced degrees in the agricultural sciences.

## Requirements

The SAFS B.A. program structure includes FOUR major components: foundation courses, courses in a student-designed emphasis area, program elective courses, and a capstone. You must earn a minimum grade of C- in all courses required for the major.

**Foundation** courses include 36 credits, which satisfy 5 of the University Discovery requirements.

**Student-Designed Emphasis** courses include 20 credits that make up a cohesive emphasis or focus area. Courses may be selected from the *List of Approved Program Electives*, but do not need to be on that list. Each student will define their emphasis area in consultation with their advisor and submit it to the SAFS program committee for approval prior to the start of their 6<sup>th</sup> semester.

**Program Elective** courses include 16 credits, chosen from the *List of Approved Program Elective* courses.

A **Capstone** experience must take place during the senior year. There are two capstone options: SAFS 733 Advanced Topics in Sustainable Agriculture or ANSC 750 Collaborative Farm Design and Development. Your capstone *MAY NOT* be counted towards elective or emphasis credits.

Of the Student-Designed Emphasis and Program Elective courses, **at least 16 credits (not counting the capstone) must be earned at the 600-700 level.**

Code	Title	Credits
<b>B.A. Foundation Courses</b>		<b>36</b>
ANSC 421	Introduction to Animal Science	4
BIOL 528	Applied Biostatistics I	4
or EREC 525	Statistical Methods and Applications	
CHEM 411	Introductory Chemistry for Life Sciences <sup>1</sup>	4
or CHEM 403	General Chemistry I	
EREC 411	Environmental and Resource Economics Perspectives	4
or ECON 402	Principles of Economics (Micro)	
NR 501	Studio Soils	4
SAFS 405	Sustainable Agriculture and Food Production	4
SAFS 421	Introductory Horticulture	4
SAFS 502	Agroecology	4
SAFS 620	Food Systems & Community Resilience	4
<b>Student-Designed Emphasis Area</b>		<b>20</b>
At least 20 credits, proposed using the emphasis area declaration form (see your advisor) at least 1 year prior to planned graduation date.		
<b>Program Electives</b>		<b>16</b>
Select 16 credits from the approved electives list.		
<b>Senior Capstone</b>		
Select one from the following:		
ANSC 750	Collaborative Farm Design and Development	4
or SAFS 733	Advanced Topics in Sustainable Agriculture	

<sup>1</sup> Some courses (e.g. genetics, microbiology) require CHEM 403 and CHEM 404 as a prerequisite. If you intend to take these courses, you should take CHEM 403 rather than CHEM 411.

## Approved Electives

Code	Title	Credits
AAS 421	Large Animal Behavior and Handling Techniques	2
AAS 423	Dairy Selection	2
AAS 425	Introduction to Dairy Herd Management	4
AAS 432	Introduction to Forage and Grassland Management	3
AAS 434	Equipment and Facilities Management	3
AAS 439	Fundamentals of Animal Health	2
ANSC 510	Integration of Culture and Agriculture in Ireland: Past, Present, and Future	2 or 4
ANSC 546	Animal Business Applications	4
ANSC 548	Agricultural Business Management	4
ANSC 600	Field Experience	1-4
ANSC 602	Animal Rights and Societal Issues	4
ANSC 603	Introduction to Livestock Management	4
ANSC 605	Poultry Production and Health Management	4
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Animals	4
ANSC 625	Animal Diseases	4
ANSC 650	Dairy Industry Travel Course	1
ANSC 690	Livestock and Wildlife in Namibia: Challenges, Opportunities and Geography	4
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
ANSC 701	Physiology of Reproduction	4
ANSC 708	Ruminant Nutritional Physiology	3
ANSC 710	Dairy Nutrition	4
ANSC 715	Physiology of Lactation	4
ANSC 724	Reproductive Management and Artificial Insemination	4
ANSC 727	Advanced Dairy Management I	4
ANSC 728	Advanced Dairy Management II	4
ANSC 750	Collaborative Farm Design and Development	4
ANSC 795	Investigations	1-4
BIOL 409	Green Life: Introducing the Botanical Sciences	0 or 4
BIOL 510	Mushrooms, Molds, and Mildews: Introduction to the Fungal Kingdom	4
BIOL 541	Ecology	4
BIOL 566	Systematic Botany	4
BIOL 701	Plant Physiology	4
BIOL 704	Plant-Microbe Interactions	3
BIOL 709	Plant Stress Physiology	3

BIOL 720	Plant-Animal Interactions	4
BIOL 752	New England Mushrooms: a Field and Lab Exploration	4
BMS 503	General Microbiology	3
BMS 504	General Microbiology Laboratory	2
CEP 415	Community Development Perspectives	4
CHE 410	Energy and Environment	4
ECOG 401	Introduction to Ecogastronomy	4
EREC #600	Field Experience	1-4
EREC 601	Agribusiness Economics and Management	4
EREC 680	Agricultural and Food Policy	4
FORT 564	Arboriculture	3
FORT 576	Forest Products and Wood Science	4
FORT 577	Forest Harvesting Systems	4
FORT 579	Wildland Fire Ecology and Management	4
GEN 604	Principles of Genetics	0 or 4
GEN 772	Evolutionary Genetics of Plants	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4
GEOG 670	Climate and Society	4
HMG1 #403	Introduction to Food Management	4
HMG1 570	International Food and Culture	4
MGT 520	Topics in Management	4
MKTG 530	Survey of Marketing	4
NR 425	Field Dendrology	4
NR 435	Contemporary Conservation Issues and Environmental Awareness	4
NR 504	Freshwater Resources	4
NR 506	Forest Entomology	4
NR 527	Forest Ecology	4
NR 602	Natural Resources and Environmental Policy	4
NR 643	Economics of Forestry	4
NR 650	Principles of Conservation Biology	4
NR 706	Soil Ecology	4
NR 729	Silviculture	4
NR 749	Forest Inventory and Modeling	4
NR 760	Geographic Information Systems in Natural Resources	4
NR 761	Environmental Soil Chemistry	4
NR 765	Community Ecology	4
NR 782	Forest Health in a Changing World	4
NR 785	Systems Thinking for Sustainable Solutions	4
NUTR 400	Nutrition in Health and Well Being	4
NUTR 405	Food and Society	4
NUTR 550	Food Science: Principle and Practice	4
NUTR 600	Field Experience in Nutrition	1-4
NUTR 720	Community Nutrition	4
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	4
NUTR 795	Investigations	1-4
RMP 724	Research, Evaluation, and Data-Driven Decisions	4
SAFS 410	A Taste of the Tropics	4
SAFS 415	Introduction to Brewing Art and Science	4
SAFS 510	Agriculture and Development in the Neotropics	4
SAFS 515	Technical Brewing	4
SAFS 517	Advanced Aspects of Brewing	4
SAFS #600	Field Experience	0
SAFS 601	Fruit Crop Production	4
SAFS 632	Urban Agriculture	4
SAFS 651	Plant Pathology	4
SAFS 670	Systems Thinking: Land Use Capability and Sustainability in Aotearoa New Zealand	4
SAFS 671	Agroecology and Sustainable Land Management in Aotearoa New Zealand	4
SAFS 672	Pathways to Sustainable Agriculture and Food Systems in Aotearoa New Zealand	4
SAFS 673	Agricultural Production and Business Practice in Aotearoa New Zealand	4
SAFS 679	Food Production Field Experience I	4
SAFS 680	Food Production Field Experience II	4
SAFS 689	Greenhouse Management and Operation	4
SAFS 733	Advanced Topics in Sustainable Agriculture	4
SAFS 760	Insect Pest Management	4
SAFS 795	Investigations	1-4
SAFS 799	Honors Senior Thesis	1-4

ZOOL 610	Principles of Aquaculture	4
MEFB 772	Fisheries Biology: Conservation and Management	4

## University Requirements

In addition to meeting the SAFS major requirements, students must satisfy all University requirements including those that pertain to the minimum number of credits, grade-point average, writing-intensive courses, the Discovery Program, and foreign language (only for B.A. students).

## Student Learning Outcomes

- Students will demonstrate a working understanding of the interdisciplinary nature of agriculture and food systems and the basic principles underpinning sustainability including: economic viability, environmental stewardship, social responsibility, and the trade-offs between competing metrics of sustainability.
- Students will demonstrate in-depth knowledge, critical thinking and analysis, and effective written communication in a self-declared area of emphasis within the program.
- Students will gain an applied understanding of agriculture and food system sustainability by engaging in an experiential education opportunity.
- Students will be able to independently interpret, evaluate, and engage with research in the agricultural sciences, including its biological, physical, social, and/or economic aspects.

## Sustainable Agriculture and Food Systems Major (B.S.)

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/bs/sustainable-agriculture-food-systems-major>

## Description

The Sustainable Agriculture and Food Systems B.S. provides students with a strong foundation in biological sciences and a broad base of knowledge and experiences with modern agriculture and food systems. Sustainable Agriculture and Food Systems is an interdisciplinary field comprising the social, physical, and life sciences and beyond. Agriculture is key to solving many of the major challenges facing the world, such as producing food to meet the needs of an ever-growing population while conserving land, water, and soil resources.

Our students get hands-on experience in applied coursework, and we encourage our students to conduct research alongside faculty. Our students become practitioners and entrepreneurs of agricultural and food businesses, researchers and policy-makers at state/federal agencies and non-profit organizations, laboratory technicians, and agricultural educators. Some go on to obtain advanced degrees in the agricultural sciences.

## Requirements

The SAFS B.S. program structure includes FOUR major components: foundation courses, courses in a student-designed emphasis area, program elective courses, and a capstone. You must earn a minimum grade of C- in all courses required for the major.

**Foundation** courses include 36 credits, which satisfy 5 of the University Discovery requirements.

**Student-Designed Emphasis** courses include 20 credits that make up a cohesive emphasis or focus area. Courses may be selected from the *List of Approved Program Electives*, but do not need to be on that list. Each student will define their emphasis area in consultation with their advisor and submit it to the SAFS program committee for approval prior to the start of their 6<sup>th</sup> semester.

**Program Elective** courses include 16 credits, chosen from the *List of Approved Program Elective* courses.

A **Capstone** experience must take place during senior year. There are two capstone options: SAFS 733 Advanced Topics in Sustainable Agriculture or ANSC 750 Collaborative Farm Design and Development. Your capstone *MAY NOT* be counted towards elective or emphasis credits.

Of the Student-Designed Emphasis and Program Elective courses, **at least 16 credits (not counting the capstone) must be earned at the 600-700 level.**

Code	Title	Credits
<b>B.S. Foundation Courses</b>		
ANSC 421	Introduction to Animal Science	4
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 528	Applied Biostatistics I	4
or EREC 525	Statistical Methods and Applications	
EREC 411	Environmental and Resource Economics Perspectives	4
or ECON 402	Principles of Economics (Micro)	
CHEM 403	General Chemistry I <sup>1</sup>	4
or CHEM 411	Introductory Chemistry for Life Sciences	
CHEM 404	General Chemistry II	4
or BMBB 501	Biological Chemistry	
or BIOL 541	Ecology	
NR 501	Studio Soils	4
SAFS 405	Sustainable Agriculture and Food Production	4
SAFS 421	Introductory Horticulture	4
SAFS 502	Agroecology	4
SAFS 620	Food Systems & Community Resilience	4
<b>Student-Designed Emphasis Area</b>		<b>20</b>
At least 20 credits, proposed using the emphasis area declaration form (see your advisor) at least 1 year prior to planned graduation date.		
<b>Program Electives</b>		<b>16</b>
Select 16 credits from the approved electives list		
<b>Senior Capstone Experience</b>		
Select one from the following:		
ANSC 750	Collaborative Farm Design and Development	4
or SAFS 733	Advanced Topics in Sustainable Agriculture	
<b>Total Credits</b>		<b>88</b>

<sup>1</sup> Some courses (e.g. genetics, microbiology) require CHEM 403 General Chemistry I and CHEM 404 General Chemistry II as a prerequisite. If you intend to take these courses, you should take CHEM 403 General Chemistry I rather than CHEM 411 Introductory Chemistry for Life Sciences.

## Approved Electives

Code	Title	Credits
AAS 421	Large Animal Behavior and Handling Techniques	2
AAS 423	Dairy Selection	2
AAS 425	Introduction to Dairy Herd Management	4
AAS 432	Introduction to Forage and Grassland Management	3
AAS 434	Equipment and Facilities Management	3



AAS 439	Fundamentals of Animal Health	2
ANSC 510	Integration of Culture and Agriculture in Ireland: Past, Present, and Future	2 or 4
ANSC 546	Animal Business Applications	4
ANSC 548	Agricultural Business Management	4
ANSC 600	Field Experience	1-4
ANSC 602	Animal Rights and Societal Issues	4
ANSC 603	Introduction to Livestock Management	4
ANSC 605	Poultry Production and Health Management	4
ANSC 609	Principles of Animal Nutrition	4
ANSC 612	Genetics of Animals	4
ANSC 625	Animal Diseases	4
ANSC 650	Dairy Industry Travel Course	1
ANSC 690	Livestock and Wildlife in Namibia: Challenges, Opportunities and Geography	4
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	4
ANSC 701	Physiology of Reproduction	4
ANSC 708	Ruminant Nutritional Physiology	3
ANSC 710	Dairy Nutrition	4
ANSC 715	Physiology of Lactation	4
ANSC 724	Reproductive Management and Artificial Insemination	4
ANSC 727	Advanced Dairy Management I	4
ANSC 728	Advanced Dairy Management II	4
ANSC 750	Collaborative Farm Design and Development	4
ANSC 795	Investigations	1-4
BIOL 409	Green Life: Introducing the Botanical Sciences	0 or 4
BIOL 510	Mushrooms, Molds, and Mildews: Introduction to the Fungal Kingdom	4
BIOL 541	Ecology	4
BIOL 566	Systematic Botany	4
BIOL 701	Plant Physiology	4
BIOL 704	Plant-Microbe Interactions	3
BIOL 709	Plant Stress Physiology	3
BIOL 720	Plant-Animal Interactions	4
BIOL 752	New England Mushrooms: a Field and Lab Exploration	4
BMS 503	General Microbiology	3
BMS 504	General Microbiology Laboratory	2
CEP 415	Community Development Perspectives	4
CHE 410	Energy and Environment	4
ECOG 401	Introduction to Ecogastronomy	4
EREC #600	Field Experience	1-4
EREC 601	Agribusiness Economics and Management	4
EREC 680	Agricultural and Food Policy	4
FORT 564	Arboriculture	3
FORT 576	Forest Products and Wood Science	4
FORT 577	Forest Harvesting Systems	4
FORT 579	Wildland Fire Ecology and Management	4
GEN 604	Principles of Genetics	0 or 4
GEN 772	Evolutionary Genetics of Plants	4
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	4
GEOG 670	Climate and Society	4
HMG1 #403	Introduction to Food Management	4
HMG1 570	International Food and Culture	4
MGT 520	Topics in Management	4
MKTG 530	Survey of Marketing	4
NR 425	Field Dendrology	4
NR 435	Contemporary Conservation Issues and Environmental Awareness	4
NR 504	Freshwater Resources	4
NR 506	Forest Entomology	4
NR 527	Forest Ecology	4
NR 602	Natural Resources and Environmental Policy	4
NR 643	Economics of Forestry	4
NR 650	Principles of Conservation Biology	4
NR 706	Soil Ecology	4
NR 729	Silviculture	4
NR 749	Forest Inventory and Modeling	4
NR 760	Geographic Information Systems in Natural Resources	4
NR 761	Environmental Soil Chemistry	4
NR 765	Community Ecology	4

NR 782	Forest Health in a Changing World	4
NR 785	Systems Thinking for Sustainable Solutions	4
NUTR 400	Nutrition in Health and Well Being	4
NUTR 405	Food and Society	4
NUTR 550	Food Science: Principle and Practice	4
NUTR 600	Field Experience in Nutrition	1-4
NUTR 720	Community Nutrition	4
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	4
NUTR 795	Investigations	1-4
RMP 724	Research, Evaluation, and Data-Driven Decisions	4
SAFS 410	A Taste of the Tropics	4
SAFS 415	Introduction to Brewing Art and Science	4
SAFS 510	Agriculture and Development in the Neotropics	4
SAFS 515	Technical Brewing	4
SAFS 517	Advanced Aspects of Brewing	4
SAFS #600	Field Experience	0
SAFS 601	Fruit Crop Production	4
SAFS 632	Urban Agriculture	4
SAFS 651	Plant Pathology	4
SAFS 670	Systems Thinking: Land Use Capability and Sustainability in Aotearoa New Zealand	4
SAFS 671	Agroecology and Sustainable Land Management in Aotearoa New Zealand	4
SAFS 672	Pathways to Sustainable Agriculture and Food Systems in Aotearoa New Zealand	4
SAFS 673	Agricultural Production and Business Practice in Aotearoa New Zealand	4
SAFS 679	Food Production Field Experience I	4
SAFS 680	Food Production Field Experience II	4
SAFS 689	Greenhouse Management and Operation	4
SAFS 733	Advanced Topics in Sustainable Agriculture	4
SAFS 760	Insect Pest Management	4
SAFS 795	Investigations	1-4
SAFS 799	Honors Senior Thesis	1-4
ZOOL 610	Principles of Aquaculture	4
MEFB 772	Fisheries Biology: Conservation and Management	4

## University Requirements

In addition to meeting the SAFS major requirements, students must satisfy all University requirements including those that pertain to the minimum number of credits, grade-point average, writing-intensive courses, and the Discovery Program.

## Student Learning Outcomes

- Students will demonstrate a working understanding of the interdisciplinary nature of agriculture and food systems and the basic principles underpinning sustainability including: economic viability, environmental stewardship, social responsibility, and the trade-offs between competing metrics of sustainability.
- Students will demonstrate in-depth knowledge, critical thinking and analysis, and effective written communication in a self-declared area of emphasis within the program.
- Students will gain an applied understanding of agriculture and food system sustainability by engaging in an experiential education opportunity.
- Students will be able to independently interpret, evaluate, and engage with research in the agricultural sciences, including its biological, physical, social, and/or economic aspects.

## Brewing Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/brewing>

## Description

Through completion of the brewing minor, students will gain a well-rounded knowledge of the brewing industry to complement their major field of study. This series of courses will encompass all aspects of beer brewing from agricultural production of raw ingredients to quality control and distribution of the final product. Undergraduates in any major field of study may minor in brewing.

Brewing is unique in that it requires a balanced knowledge of math, science, engineering, and business as well as an understanding of how and why the product plays an important role in society and culture. With this minor, you will learn how to integrate various fields of study together, a skill which can be applied to any career. You will also gain specific skills and knowledge for the brewing industry.

## Requirements

### Minor Requirements

- Complete 5 Courses with a minimum of 20 credits from the courses listed below, with a grade of C- or better.
- No more than 8 credits used to satisfy major requirements may be used for the minor.
- Pass/Fail courses may not be used for the minor.

Code	Title	Credits
<b>Required Courses:</b>		
SAFS 415	Introduction to Brewing Art and Science	4
SAFS 515	Technical Brewing	4
SAFS 517	Advanced Aspects of Brewing	4
<b>Elective in Business/Finance - Select one course:</b>		<b>4</b>
ACC 501	Survey of Accounting	
ADMN 502	Financial Accounting	
ADMN 585	Marketing	
EREC 601	Agribusiness Economics and Management	
MGT 520	Topics in Management <sup>1</sup>	
MKTG 530	Survey of Marketing	
<b>Elective in Food/Culture - Select one course:</b>		<b>4</b>
HMG1 #403	Introduction to Food Management	
HMG1 405	Introduction to Food and Service Management	
HMG1 771	International Wine and Beverage	
HIST 425	Foreign Cultures <sup>2</sup>	
NUTR 550	Food Science: Principle and Practice	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> MGT 520 Topics in Management - fulfills this elective requirement.

<sup>2</sup> HIST 425 Foreign Cultures: Beer in World History

## Environmental Horticulture Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/environmental-horticulture>

## Description

By completing the minor in Environmental Horticulture, students will gain knowledge of several aspects of horticultural production systems. The required course provides theoretical and applied knowledge in plant science. Students will get more in-depth knowledge by taking additional

coursework focused on botany, various crop production systems, or integrated pest management strategies.

Our environmental horticulture students study the science and art of cultivating plants, and the many ways that plants enhance the human experience. The cultivation of fruits, vegetables and ornamental plants is key to solving many of the major challenges facing the world; such as producing food to meet the needs of an ever-growing population while conserving land, water, and soil resources. An understanding of these challenges and potential solutions can enhance any career. A minor in environmental horticulture may complement any major field of study.

Interested students should contact Andrew Ogden in the Department of Agriculture, Nutrition, and Food Systems, (603) 862-4893.

## Requirements

Code	Title	Credits
<b>Required Core Course</b>		
SAFS 421	Introductory Horticulture	4
<b>Electives</b>		
Select an 16 credits from the following courses:		16
BIOL 409	Green Life: Introducing the Botanical Sciences	
BIOL 566	Systematic Botany	
SAFS 405	Sustainable Agriculture and Food Production	
SAFS 410	A Taste of the Tropics	
SAFS 601	Fruit Crop Production	
SAFS 632	Urban Agriculture	
SAFS 651	Plant Pathology	
SAFS 679	Food Production Field Experience I (4 cr each)	
or SAFS 680	Food Production Field Experience II	
SAFS 689	Greenhouse Management and Operation	
SAFS 760	Insect Pest Management	
SAFS 795	Investigations (Horticulture related topics)	
<b>Total Credits</b>		<b>20</b>

## Sustainable Agriculture and Food Systems Minor

<https://colsa.unh.edu/agriculture-nutrition-food-systems/program/minor/sustainable-agriculture-food-systems>

## Description

By pursuing a minor in Sustainable Agriculture and Food Systems (SAFS), students will gain knowledge of several aspects of agricultural systems.

The required course (SAFS 405) provides an introduction to sustainable and organic agriculture practices, including an array of strategies to sustainably manage soil, nutrient, water, and genetic resources. Students will get more in-depth knowledge of additional aspects of sustainable agriculture by taking additional coursework focused on agricultural production, management, and/or policy.

Sustainable Agriculture and Food Systems encompasses a mixture of the natural sciences, social sciences, and business skills, plus much more. Agriculture is key to solving many of the major challenges facing the world; such as producing food to meet the needs of an ever-growing population while conserving land, water, and soil resources. An understanding of these challenges and potential solutions can enhance any career. Undergraduates in any major field of study (except SAFS) may minor in Sustainable Agriculture and Food Systems.

### Certificate of Minor

During the student's final semester, the student must fill out a Certification of Completion of Minor form and obtain the signatures of the student's major advisor, minor advisor, and the student's Dean's Office.

## Requirements

Code	Title	Credits
<b>Required SAFS Core Course</b>		
SAFS 405	Sustainable Agriculture and Food Production	4
<b>Electives <sup>1</sup></b>		
AAS 432	Introduction to Forage and Grassland Management	16
ANSC 421	Introduction to Animal Science	
ANSC 750	Collaborative Farm Design and Development	
EREC 680	Agricultural and Food Policy	
NR 501	Studio Soils	
NUTR 405	Food and Society	
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	
SAFS 410	A Taste of the Tropics	
SAFS 421	Introductory Horticulture	
SAFS 502	Agroecology	
SAFS 510	Agriculture and Development in the Neotropics	
SAFS 601	Fruit Crop Production	
SAFS 620	Food Systems & Community Resilience	
SAFS 632	Urban Agriculture	
SAFS 651	Plant Pathology	
SAFS 670	Systems Thinking: Land Use Capability and Sustainability in Aotearoa New Zealand	
SAFS 671	Agroecology and Sustainable Land Management in Aotearoa New Zealand	20
SAFS 672	Pathways to Sustainable Agriculture and Food Systems in Aotearoa New Zealand	
SAFS 673	Agricultural Production and Business Practice in Aotearoa New Zealand	
SAFS 679	Food Production Field Experience I	
SAFS 680	Food Production Field Experience II	
SAFS 689	Greenhouse Management and Operation	
SAFS 733	Advanced Topics in Sustainable Agriculture	
SAFS 760	Insect Pest Management	
ZOOL 610	Principles of Aquaculture	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Electives - 16 credits of elective coursework, 8 credits must be at the 600/700 level, selected from the courses listed.

Students are encouraged to discuss their intent to minor with the minor advisor as early as possible, typically no later than the end of the junior year. Not all classes are offered every year.

## Sustainable Energy

- [Sustainable Energy Minor](#) (p. 346)

## Sustainable Energy Minor

<https://colsa.unh.edu/natural-resources-environment/program/minor/sustainable-energy>

### Description

The Minor in Sustainable Energy provides the flexibility and focus that allows for students to expand their exposure to the topic within the context of their own major. The goal of the program is to match the developing nature of the field with the skills needed to understand sustainable energy in the greater context of its opportunities and challenges. Courses in the minor will build on existing competencies and

create an experience that provides an exposure to new the perspectives and conceptual framework that is at the core of the developing field of sustainable energy.

### Objectives

The objectives of the Minor in Sustainable Energy are to provide students with the educational experience necessary to participate in one of the fastest growing fields of employment. Coupled with an ability to focus on meaningful employment, is our challenge to confront a changing climate; students will be given an opportunity to be a part of the solution.

### Curriculum and Requirements

The curriculum and requirements for the minor are based on exposure to three competencies that reflect the exposure necessary to grasp the basic understanding of sustainable energy:

- **Technical** – Requires a basic understanding of the grid, energy flow, energy usage and the technologies of efficiency, generation and management of energy and generation sources.
- **Economics and Finance** – Requires a basic understanding of utility structure, energy markets and utility rate-making. An additional focus includes the business aspect of financing and projecting the cost-effectiveness of energy generation sources and fuels – including the development of innovative business models for deploying sustainable energy.
- **Policy** – Requires a basic understanding in policy-making and implementation, including a historic perspective of our utilities, incentives and subsidies and their impact on market forces. An additional focus includes the policy impacts of aspects related to sustainable energy deployment, including, interconnection, net metering and feed in tariffs and tax incentives.

### Contact Information

Students with questions about the minor or who would like more information should contact [Dr. Julia Novak Colwell](mailto:julia.colwell@unh.edu) ([julia.colwell@unh.edu](mailto:julia.colwell@unh.edu)) in the Department of Natural Resources and the Environment.

## Requirements

Code	Title	Credits
Required Courses		11-12
Introduction:		
NR 507	Introduction to our Energy System and Sustainable Energy	
Critical Thinking:		
NR 606	International Energy Topics	
or CEE 705	Introduction to Sustainable Engineering	
Competency:		
NR 787	Advanced Topics in Sustainable Energy	7-8
Select at least one course from each of the following categories:		
Technology/Engineering Category:		
CHE 410	Energy and Environment	
CEE 520	Environmental Pollution and Protection: A Global Context	
CEE 719	Green Building Design	
Social & Economic Policy Category:		
NR 602	Natural Resources and Environmental Policy	
CEP 673	Green Real Estate	
EREC 572	Introduction to Natural Resource Economics	
SOC 565	Environment and Society	
TOUR 767	Social Impact Assessment	
NR 606	International Energy Topics	
Total Credits		
		18-20

- Students must earn a grade of C- or better in order for a course to be counted for credit toward the minor.
- No pass/fail graded course shall count toward the minor.
- Up to 8 credits can be used to satisfy both major and minor requirements.
- Appropriate course substitutes from other study-abroad programs may also be used with permission.

## Tourism Management

### Programs

- [Tourism Management Minor](#) (p. 347)

## Tourism Management Minor

<https://paulcollege.unh.edu/hospitality-management/program/minor/tourism-management>

### Description

"Tourism" is the world's largest and most diverse industry. Tourism is a composite of activities, services, and industries delivering travel experiences through transportation, accommodations, eating and drinking establishments, shops, entertainment, activity facilities (parks, sports, and amusement parks), historic sites, natural resources, among others.

The faculty of Recreation Management and Policy [RMP], Hospitality Management [HMG], and Natural Resources and the Environment [NRE] Tourism [Tour] have bundled a number of courses for non-majors which, when combined with certain elective courses, can constitute a Minor in Tourism Management. Each of the courses offered for this minor are already offered in each of the three departments. These programs represent the three Colleges of College of Health and Human Services, Peter T. Paul College of Business and Economics, and the College of Life Science and Agriculture.

#### Questions about the minor may be directed to:

Recreation Management and Policy – Dr. Bob Barcelona,

[Bob.Barcelona@unh.edu](mailto:Bob.Barcelona@unh.edu)

Tourism Management – Dr. Rob Robertson, [Rob.Robertson@unh.edu](mailto:Rob.Robertson@unh.edu)

Hospitality Management – Dr. Markus Schuckert,

[Markus.Schuckert@unh.edu](mailto:Markus.Schuckert@unh.edu) ([markus.schuckert@unh.edu](mailto:markus.schuckert@unh.edu))

Approval of the Minor for Graduation, verification and sign-off must be coordinated with Dr. Rob Robertson.

### Requirements

Code	Title	Credits
<b>Required Courses</b>		
TOUR 400	Introduction to Tourism	4
HMG 401	Introduction to the Hospitality Industry	4
RMP 490	Recreation & Tourism in Society	4
The remaining two courses for the minor may be used to focus your study in an area of interest. One course must be an experiential learning course. Areas of interest, with sample course, include:		8
<b>Lodging and Resort Management:</b>		
HMG 681	Contemporary Resort Development and Management	
HMG 570	International Food and Culture <sup>1</sup>	
HMG 554	Lodging Operations Management	

HMG# 682	Private Club Management	
RMP 775	Entrepreneurial and Commercial Recreation <sup>1</sup>	
TOUR 767	Social Impact Assessment	
Event Planning and Management:		
HMG# 661	Event Design, Planning, and Management	
RMP 680	Festival and Event Planning	
RMP 560	Recreational Sport Management	
TOUR 767	Social Impact Assessment	
International Travel and Tourism:		
HMG# 570	International Food and Culture <sup>1</sup>	
TOUR 510	Tourism and Global Understanding <sup>1</sup>	
EREC 444	The New Pirates of the Caribbean	
ECOG 401	Introduction to Ecogastronomy	
TOUR 767	Social Impact Assessment	
HMG# 756	International Franchising	
RMP 711	Recreation Resource Management	
Total Credits		20

<sup>1</sup> Identification of experiential learning courses.

Courses taken during study abroad maybe considered as part of the minor; prior approval of an advisor is required.

#### Please Note:

The courses may be taken in any order, and you are responsible for checking pre-requisites for the elective courses.

Following University policy, you must complete 20 semester hours with a grade of C- or better and a 2.0 grade point average.

Courses taken on a Pass/Fail basis may not be used toward the minor.

No more than 8 credits used by the student to satisfy major requirements may be used for the minor.

No transfer courses may be used toward the minor.

## Wildlife and Conservation Biology

The Wildlife & Conservation Biology major provides students with the knowledge and tools to study, conserve, and manage wildlife and their habitats.

Our students combine science with their passion for nature and the outdoors. Our courses emphasize hands-on experience and place fundamental principles within an applied context. Students are encouraged to conduct research alongside faculty, and faculty actively assist students in obtaining internships.

Our students become research biologists and resource managers at state/federal agencies and non-profit organizations, conservation law officers, and environmental educators. Many go on to obtain an advanced degree.

<https://colsa.unh.edu/natural-resources-environment>

### Programs

- [Wildlife and Conservation Biology Major \(B.S.\)](#) (p. 348)
- [Wildlife and Conservation Biology Minor](#) (p. 349)

### Faculty

<https://colsa.unh.edu/natural-resources-environment/people>

# Wildlife and Conservation Biology Major (B.S.)

<https://colsa.unh.edu/natural-resources-environment/program/bs/wildlife-conservation-biology-major>

## Description

The Wildlife & Conservation Biology major provides students with the knowledge and tools to study, conserve, and manage wildlife and their habitats.

Our students combine science with their passion for nature and the outdoors. Our courses emphasize hands-on experience and place fundamental principles within an applied context. Students are encouraged to conduct research alongside faculty, and faculty actively assist students in obtaining internships.

Our students become wildlife biologists and resource managers at state/federal agencies and non-profit organizations, conservation law officers, and environmental educators. Many go on to obtain an advanced degree.

## Requirements

In addition to the Wildlife and Conservation Biology degree requirements (below), students must complete the University Discovery Program and the University Writing Requirements. Given the flexibility of this major, students may also complete a minor or dual major in a second area of interest, or apply for [certification by The Wildlife Society](#).

Code	Title	Credits
<b>Requirements</b>		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
EREC 411	Environmental and Resource Economics Perspectives	4
MATH 424B or MATH 420	Calculus for Life Sciences Finite Mathematics	4
NR 425	Field Dendrology	4
NR 433	Wildlife Ecology	4
CHEM 411	Introductory Chemistry for Life Sciences	4
BMCB 501	Biological Chemistry	4
NR 527 or BIOL 541	Forest Ecology Ecology	4
NR 415	Natural Resources Field Methods	2
NR 417	Sophomore Seminar: Wildlife and Conservation Biology	2
NR 658 or ESCI 777	Introduction to Geographic Information Systems GIS for Earth & Environmental Sciences	4
BIOL 528	Applied Biostatistics I	4
NR 602	Natural Resources and Environmental Policy	4
NR 650	Principles of Conservation Biology	4
NR 615 or NR 603	Wildlife Habitats Landscape Ecology	4
NR 640	Wildlife Population Ecology	4
NR 664 or ZOOL 690	Conservation Genetics Evolution	4
NR 740	Inventory and Monitoring of Ecological Communities	4
NR 750	Sustaining Biological Diversity (Capstone) <sup>1</sup>	4
Select one of the following Communication Skills courses:		
NR 508	Communicating Science	
ENGL 501	Introduction to Creative Nonfiction	
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
CMN 500	Public Speaking	

Select one of the following Vertebrate Ecology, Evolution, and Diversity courses:		4
NR 712	Mammalogy	
MEFB 510	Field Ornithology	
ZOOL 542	Ornithology	
ZOOL 566	Herpetology	
ZOOL 710	Sharks and Bony Fishes	
Select one of the following Physiology/Behavior courses:		3-5
NR #625	Physiological Ecology	
ZOOL 518	Comparative Morphology and Biology of Vertebrates	
ZOOL 625	Principles of Animal Physiology	
ZOOL 613	Animal Behavior	
Select one of the following additional Ecology courses:		4
NR 642	Introduction to Biogeography	
NR 765	Community Ecology	
NR 603	Landscape Ecology	
NR 713	Quantitative Ecology	
<b>Total Credits</b>		<b>91-93</b>

<sup>1</sup> Can also be met using NR 663 Applied Directed Research in New Zealand UNH EcoQuest (or similar) if taken as a senior. An Honors Thesis/UROP/URA/SURF/Independent Study (or similar) **cannot** count as a Capstone for this major.

## Degree Plan

### Sample Course Sequence for Wildlife and Conservation Biology

Course	Title	Credits
<b>First Year</b>		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
ENGL 401	First-Year Writing	4
EREC 411	Environmental and Resource Economics Perspectives	4
MATH 424B or MATH 420	Calculus for Life Sciences or Finite Mathematics	4
NR 425	Field Dendrology	4
NR 433	Wildlife Ecology	4
Discovery electives		
<b>Credits</b>		<b>28</b>
<b>Second Year</b>		
CHEM 411	Introductory Chemistry for Life Sciences	4
BMCB 501	Biological Chemistry	4
BIOL 528	Applied Biostatistics I	4
Select one of the following:		4
NR 508	Communicating Science	
ENGL 501	Introduction to Creative Nonfiction	
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
CMN 500	Public Speaking	
NR 527 or BIOL 541	Forest Ecology or Ecology	4
NR 415	Natural Resources Field Methods	2
NR 417	Sophomore Seminar: Wildlife and Conservation Biology	2
Select one of the following:		4



NR 712	Mammalogy	
MEFB 510	Field Ornithology	
ZOOL 542	Ornithology	
ZOOL 566	Herpetology	
ZOOL 710	Sharks and Bony Fishes	
Discovery electives		
<b>Credits</b>		<b>28</b>
<b>Third Year</b>		
NR 602	Natural Resources and Environmental Policy	4
NR 650	Principles of Conservation Biology	4
NR 615 or NR 603	Wildlife Habitats or Landscape Ecology	4
NR 640	Wildlife Population Ecology	4
NR 664 or ZOOL 690	Conservation Genetics or Evolution	4
NR 658 or ESCI 777	Introduction to Geographic Information Systems or GIS for Earth & Environmental Sciences	4
Select one of the following:		4-5
NR #625	Physiological Ecology	
ZOOL 518	Comparative Morphology and Biology of Vertebrates	
ZOOL 625	Principles of Animal Physiology	
ZOOL 613	Animal Behavior	
Discovery electives		
<b>Credits</b>		<b>28-29</b>
<b>Fourth Year</b>		
NR 750	Sustaining Biological Diversity (Capstone)	4
NR 740	Inventory and Monitoring of Ecological Communities	4
Select one of the following:		4
NR 642	Introduction to Biogeography	
NR 765	Community Ecology	
NR 603	Landscape Ecology	
NR 713	Quantitative Ecology	
Discovery electives		
<b>Credits</b>		<b>12</b>
<b>Total Credits</b>		<b>96-97</b>

## Student Learning Outcomes

Students will:

- Understand the ecological and societal value of biodiversity, sustainability, and environmental stewardship;
- learn/understand ecological concepts and fundamental principles and techniques to manage and conserve wildlife habitat and populations;
- know the taxonomy, ecology, and natural history of the majority of native flora and fauna in New England;
- locate, evaluate, and summarize information from both print and electronic media relevant to wildlife and conservation biology issues;

- effectively communicate scientific information in written and oral formats;
- master mathematical, statistical, and study design knowledge and skills, and use state-of-the-art software, hardware, and analytical techniques relevant to wildlife and conservation biology;
- be familiar with a variety of natural resource laws and regulations;
- understand how to integrate relevant social sciences and human dimensions approaches to address wildlife and conservation biology issues as part of multidisciplinary teams.

## Wildlife and Conservation Biology Minor

<https://colsa.unh.edu/natural-resources-environment/program/minor/wildlife-conservation-biology>

### Description

The minor in Wildlife and Conservation Biology serves as a concentrated study, beyond a student's primary major, that allows students to explore their interest in wildlife ecology and conservation and their passion for nature and the outdoors.

Students interested in a minor in Wildlife and Conservation Biology must complete a minimum of 5 courses and 20 credits. Up to 8 credits can be used to satisfy both major and minor requirements. A maximum of 2 EcoQuest courses may be used to satisfy requirements. Appropriate course substitutes from other study-abroad programs may also be used with permission.

### Requirements

Code	Title	Credits
<b>Category 1</b>		<b>4</b>
NR 650 or NR 433 or NR 661	Principles of Conservation Biology Wildlife Ecology Restoration Ecology and Ecosystem Management in New Zealand	
<b>Category 2</b>		
Select one of the following:		4
MEFB 628	Marine Invertebrate Evolution and Ecology	
NR 425	Field Dendrology	
NR 506	Forest Entomology	
NR 712	Mammalogy	
ZOOL 542	Ornithology	
ZOOL 566	Herpetology	
ZOOL 710	Sharks and Bony Fishes	
<b>Category 3</b>		
Remaining 12 credits may be chosen from the following:		12
NR 615	Wildlife Habitats <sup>2</sup>	
NR #625	Physiological Ecology	
NR 640	Wildlife Population Ecology	
NR 642 or NR 603 or NR 660	Introduction to Biogeography Landscape Ecology Ecology and Biogeography of New Zealand	
NR 650 or NR 661	Principles of Conservation Biology Restoration Ecology and Ecosystem Management in New Zealand	
NR 664	Conservation Genetics	
NR 713	Quantitative Ecology	
NR 734	Tropical Ecology	
NR 740 or NR 663	Inventory and Monitoring of Ecological Communities <sup>1</sup> Applied Directed Research in New Zealand	
NR 765	Community Ecology	

NR 795	Investigations <sup>2</sup>
ZOOL 613	Animal Behavior
or ZOOL 733	Behavioral Ecology
<hr/>	
Total Credits	20

<sup>1</sup> Enrollments are capped and admission is not guaranteed to those pursuing a minor.

<sup>2</sup> NR 795 requires working with an individual WCB faculty member on a special problem/issue.

## Zoology (ZOOL)

Zoology is a field within the biological sciences that is dedicated to the study of animals: their classification, evolution, and development along with their habits, behaviors, and relationships. The zoology majors (B.S. and B.A.) build on the core biology curriculum by including courses in comparative morphology, physiology, and a wide selection of animal survey classes. In the Bachelor of Science degree program, you will take a series of foundational courses in biology, chemistry, physics, statistics, and ecology while having the flexibility to specialize within the major and/or the pursuance of a minor. The Bachelor of Arts degree in zoology is designed as a flexible program, allowing you to pursue an interdisciplinary or dual major for a career in fields such as education, conservation, and public relations.

The University's location and facilities provide unique opportunities for the study of aquatic and terrestrial animals due to its access to the seacoast and the lakes region of New Hampshire, White Mountain National Forest, and the presence of two coastal marine laboratories, as well as estuarine and freshwater facilities. There is a strong teaching and research emphasis on ecological and physiological processes in aquatic animals and ecosystems. Major strengths of the program are the hands-on approach to teaching and emphasis on involving undergraduates in research.

<https://colsa.unh.edu/biological-sciences>

### Programs

- [Zoology Major \(B.A.\)](#) (p. 350)
- [Zoology Major \(B.S.\)](#) (p. 352)
- [Zoology Minor](#) (p. 353)

### Faculty

<https://colsa.unh.edu/biological-sciences/people>

## Zoology Major (B.A.)

<https://colsa.unh.edu/biological-sciences/program/ba/zoology-major>

### Description

Built upon the common background of the biology core curriculum, the Bachelor of Arts (B.A.) in Zoology is designed for students to create an interdisciplinary or dual major, particularly if they want to pursue public relations, teaching, or other careers in combination with a liberal arts background. Students have more flexibility when choosing courses from the biology core and may enter this program as freshmen or transfer in

from other liberal arts or science programs. Students must fulfill a foreign language requirement in lieu of one advanced elective.

## New England Regional Student Program

The bachelor's degree in zoology is one of the specialized curricula recognized by the New England Board of Higher Education and participates in the New England Regional Student Program. Under this program, students from any of the New England states pay the UNH in-state tuition rate plus 75 percent.

## General Science Certification

See [Department of Education](#)

### Requirements

Requirements for the Major: Minimum grade of D# or better is required in CHEM 411, PHYS 401, and MATH 424B (if taken); minimum grade of C# or better is required in all other courses. ZOOL 600, BIOL 695, ZOOL 795, or ZOOL 799 may substitute for one elective with academic advisor approval, but only if taken for at least four credits. These four credits may be spread over multiple semesters if they are consecutive and with the same faculty mentor.

Code	Title	Credits
<b>Core Curriculum Courses</b>		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 528 or MATH 424B	Applied Biostatistics I Calculus for Life Sciences	4
BIOL 541	Ecology	4
BMCB 501	Biological Chemistry	4
CHEM 411	Introductory Chemistry for Life Sciences	4
GEN 604 or ANSC 612	Principles of Genetics Genetics of Animals	4
PHYS 401	Introduction to Physics I	4
ZOOL 400	Professional Perspectives in Zoology	1
ZOOL 518	Comparative Morphology and Biology of Vertebrates	4
ZOOL 625	Principles of Animal Physiology	3
BIOL 780	Capstone Companion Course	1
<b>Zoology Electives</b>		
Zoology Elective Courses (Choose 2)		8-9
ZOOL 529	Developmental Biology	
ZOOL 613	Animal Behavior	
ZOOL 690	Evolution	
Animal Survey Courses (Choose 1)		4-5
ZOOL 542	Ornithology	
ZOOL 555	Introduction to Entomology	
ZOOL 566	Herpetology	
MEFB 628	Marine Invertebrate Evolution and Ecology	
ZOOL 710	Sharks and Bony Fishes	
NR 712	Mammalogy	
<b>Biological Science Elective <sup>1</sup></b>		
Select one course from the following list <sup>1</sup>		4-5
BIOL 720	Plant-Animal Interactions (C)	4
BMS 718	Mammalian Physiology	4
MEFB 503	Introduction to Marine Biology	0 or 4
MEFB 504	Field Wildlife Forensics	2
MEFB 628	Marine Invertebrate Evolution and Ecology	5
MEFB 717	Lake Ecology	4
MEFB 719	Field Studies in Lake Ecology	4
MEFB 755	Biological Oceanography	3
MEFB 772	Fisheries Biology: Conservation and Management	4
MEFB 773	Physiology of Fishes	4

NR 615	Wildlife Habitats	4
NR 640	Wildlife Population Ecology	4
NR 642	Introduction to Biogeography	4
NR 650	Principles of Conservation Biology	4
NR 712	Mammalogy	4
NSB 705	Molecular and Cellular Neurobiology (C)	4
NSB 727	Animal Communication (C)	4
NSB #728	Research Methods in Animal Behavior	4
TECH 797	Undergraduate Ocean Research Project	2
ZOOL 529	Developmental Biology	0 or 4
ZOOL 542	Ornithology	0 or 4
ZOOL 555	Introduction to Entomology	4
ZOOL 566	Herpetology	4
ZOOL 600	Field Experience	1-4
ZOOL 613	Animal Behavior	5
ZOOL 690	Evolution	4
ZOOL 708	Stream Ecology	4
ZOOL 710	Sharks and Bony Fishes	0 or 4
ZOOL 726	Conservation Behavior	4
ZOOL 733	Behavioral Ecology (C)	0 or 4
ZOOL 736	Genes and Behavior (C)	4
ZOOL 770	Senior Seminar in Zoology	2
ZOOL 777	Neuroethology (C)	4
ZOOL 795	Independent Investigations in Zoology	1-4
ZOOL 799	Honors Senior Thesis	1-4
Shoals Courses:		
MEFB 500	Coastal Habitat Field Research Methods	4
MEFB #505	Introduction to Applied Science Communication	4
MEFB 506	Marine Parasitology and Disease	4
MEFB 510	Field Ornithology	4
MEFB 530	Evolution and Marine Diversity	4
MEFB 535	Marine Mammal Biology	4
MEFB #630	Biodiversity and Biology of Marine Invertebrates	4
MEFB 674	Ecology and Marine Environment	4
MEFB 702	Sustainable Marine Fisheries	4
MEFB 714	Field Animal Behavior	4
MEFB 730	Underwater Research	4
MEFB 741	Sharks: Biology and Conservation	4
MEFB 751	Research in Marine Biology	4
MEFB 754	Anatomy and Function of Marine Vertebrates	4
Study Abroad Courses:		
NR 660	Ecology and Biogeography of New Zealand	5
NR 661	Restoration Ecology and Ecosystem Management in New Zealand	4
NR 662	Environmental Policy, Planning and Sustainability in New Zealand	3
NR 663	Applied Directed Research in New Zealand	4

<sup>1</sup> A single course cannot be used for both a core requirement and an elective (e.g., ZOOL 542 cannot be used to fulfill the animal survey requirement and as an elective).

## Capstone Experience

As part of the University of New Hampshire's Discovery Program requirements, all students must complete a capstone experience during their senior year (after earning at least 90 credits). **The capstone experience for students majoring in Biology consists of BOTH (1) an approved individual experience AND (2) the successful completion of the BIOL 780 Capstone Companion Course.** Students will not be approved for graduation until capstone certification has been granted.

### 1) The individual experience

The individual experience may be satisfied through various forms of experiential learning (e.g., Honors thesis, mentored research project, internship) or a course denoted with a "(C)" in the courses listed above. The individual experience must fulfill **at least one** of the University's capstone criteria:

- synthesizes and applies disciplinary knowledge and skills
- fosters reflection on undergraduate learning and experience
- demonstrates emerging professional competencies
- applies, analyzes, and/or interprets research, data, or artistic expression
- explores areas of interest based on the integration of the prior learning

**Before beginning *any* capstone individual experience, students MUST SUBMIT A COMPLETED CAPSTONE APPROVAL FORM to their Program Coordinator.**

Students can obtain this form on the Department's Capstone page or from their Program Coordinator. Here they will describe their proposed individual experience and how it fulfills at least one of the University's capstone criteria listed above. If the student is selecting a "C" course for their individual experience, they should obtain the course syllabus from the instructor for information about the course's content and learning objectives.

### 2) Enrollment in BIOL 780 Capstone Companion Course

Students will also be required to enroll in BIOL 780 (1 cr.) **during the semester of their individual experience.** BIOL 780 is offered every Fall and Spring semester.

- If the individual experience is a two-semester thesis, BIOL 780 should be taken during the second semester.
- If the individual experience occurs during the summer (e.g., internship), BIOL 780 should be taken during the Fall semester that immediately follows.
- Note: Because BIOL 780 is not offered during the summer, students cannot complete their individual experience during the summer *and graduate during that same August*. Summer experiences could only be used as individual capstone experiences if completed the summer before the student's senior year.

## Student Learning Outcomes

Students demonstrate that they understand basic principles of Zoology.

- Understand the biodiversity and ecological roles of selected animal taxa.
- Demonstrate understanding of animal physiology and structure at the cellular and organismal levels.
- Describe and apply key principles and mechanisms of evolution and genetics.
- Comprehend the relationship between organisms and their environments.

Students demonstrate that they can undertake scientifically valid methods of inquiry.

- Demonstrate proficiency in searching, reading, and understanding scientific literature.

Students demonstrate that they can think critically and analytically.

- Analyze and present data using appropriate quantitative and graphical tools.

Students demonstrate that they can communicate effectively.

- Develop effective written and oral communication skills for conveying scientific information effectively to a wide audience.

Students practice science responsibly and ethically, and acknowledge the influence of cultural and historical biases in the sciences.

# Zoology Major (B.S.)

<https://colsa.unh.edu/biological-sciences/program/bs/zoology-major>

## Description

The Bachelor of Science (B.S.) in Zoology builds from the common background of the biology core curriculum to provide ample time for third- and fourth-year students to concentrate in specialized disciplines such as marine and freshwater biology, behavior, cell and developmental biology, ecology, evolution, fisheries, physiology, and neurobiology while giving students the foundation from which they can specialize in the area of zoology. Undergraduate students are encouraged to conduct field or lab-based research which helps determine advanced education disciplines for graduate studies. Many students ultimately work in the government, environmental agencies, education as well as agricultural, pharmaceutical, and biotechnology industries, where they conduct advanced research and/or teaching. Zoology majors had the second highest income and lowest unemployment rate according to data from the 2016 U.S. Census Bureau's American Community Survey.

### New England Regional Student Program

The bachelor's degree in zoology is one of the specialized curricula recognized by the New England Board of Higher Education and participates in the New England Regional Student Program. Under this program, students from any of the New England states pay the UNH in-state tuition rate plus 75 percent.

## Requirements

Requirements for the Major: Minimum grade of D# or better is required in CHEM 411, PHYS 401, and MATH 424B (if taken); minimum grade of C# or better is required in all other courses. ZOOL 600, BIOL 695, ZOOL 795, or ZOOL 799 may substitute for one elective with academic advisor approval, but only if taken for at least four credits. These four credits may be spread over multiple semesters if they are consecutive and with the same faculty mentor.

## Major Requirements

Code	Title	Credits
Core Curriculum Courses		
BIOL 411	Introductory Biology: Molecular and Cellular	4
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 528	Applied Biostatistics I	4
BIOL 541	Ecology	4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4

CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
GEN 604 or ANSC 612	Principles of Genetics Genetics of Animals	4
MATH 424B or BIOL #633 or BIOL 711	Calculus for Life Sciences Data Analysis for Life Science Experimental Design & Analysis	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4
ZOOL 400	Professional Perspectives in Zoology	1
ZOOL 518	Comparative Morphology and Biology of Vertebrates	4
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory	5
Capstone		
BIOL 780	Capstone Companion Course	1
Zoology Electives		
Zoology Elective Courses (Choose 2)		8-9
ZOOL 529	Developmental Biology	
ZOOL 613	Animal Behavior	
ZOOL 690	Evolution	
Animal Survey Courses (Choose 1)		4-5
ZOOL 542	Ornithology	
ZOOL 555	Introduction to Entomology	
ZOOL 566	Herpetology	
MEFB 628	Marine Invertebrate Evolution and Ecology	
ZOOL 710	Sharks and Bony Fishes	
NR 712	Mammalogy	
Biological Science Electives <sup>1</sup>		
Select two courses <sup>1</sup>		
BIOL 720	Plant-Animal Interactions (C)	4
BMS 718	Mammalian Physiology	4
MEFB 503	Introduction to Marine Biology	0 or 4
MEFB 504	Field Wildlife Forensics	2
MEFB 628	Marine Invertebrate Evolution and Ecology	5
MEFB 717	Lake Ecology	4
MEFB 719	Field Studies in Lake Ecology	4
MEFB 755	Biological Oceanography	3
MEFB 772	Fisheries Biology: Conservation and Management	4
MEFB 773	Physiology of Fishes	4
NR 615	Wildlife Habitats	4
NR 640	Wildlife Population Ecology	4
NR 642	Introduction to Biogeography	4
NR 650	Principles of Conservation Biology	4
NR 712	Mammalogy	4
NSB 705	Molecular and Cellular Neurobiology (C)	4
NSB 727	Animal Communication (C)	4
NSB #728	Research Methods in Animal Behavior	4
TECH 797	Undergraduate Ocean Research Project <sup>2</sup>	2
ZOOL 529	Developmental Biology	0 or 4
ZOOL 542	Ornithology	0 or 4
ZOOL 555	Introduction to Entomology	4
ZOOL 613	Animal Behavior	5
ZOOL 566	Herpetology	4
ZOOL 600	Field Experience <sup>3</sup>	1-4
ZOOL 690	Evolution	4
ZOOL 708	Stream Ecology	4
ZOOL 710	Sharks and Bony Fishes	0 or 4
ZOOL 726	Conservation Behavior	4
ZOOL 733	Behavioral Ecology (C)	0 or 4
ZOOL 736	Genes and Behavior (C)	4
ZOOL 770	Senior Seminar in Zoology	2
ZOOL 777	Neuroethology (C)	4
ZOOL 795	Independent Investigations in Zoology <sup>3</sup>	1-4
ZOOL 799	Honors Senior Thesis <sup>3</sup>	1-4

Shoals Courses:		
MEFB 500	Coastal Habitat Field Research Methods	4
MEFB #505	Introduction to Applied Science Communication	4
MEFB 506	Marine Parasitology and Disease	4
MEFB 510	Field Ornithology	4
MEFB 530	Evolution and Marine Diversity	4
MEFB 535	Marine Mammal Biology	4
MEFB #630	Biodiversity and Biology of Marine Invertebrates	4
MEFB 674	Ecology and Marine Environment	4
MEFB 702	Sustainable Marine Fisheries	4
MEFB 714	Field Animal Behavior	4
MEFB 730	Underwater Research	4
MEFB 741	Sharks: Biology and Conservation	4
MEFB 751	Research in Marine Biology	4
MEFB 754	Anatomy and Function of Marine Vertebrates	4
Study Abroad Courses:		
NR 660	Ecology and Biogeography of New Zealand	5
NR 661	Restoration Ecology and Ecosystem Management in New Zealand	4
NR 662	Environmental Policy, Planning and Sustainability in New Zealand	3
NR 663	Applied Directed Research in New Zealand	4

- <sup>1</sup> A single course cannot be used for both a core requirement and an elective (e.g., ZOOL 542 cannot be used to fulfill the animal survey requirement and as an elective).
- <sup>2</sup> This class requires enrollment in both fall and spring sections, 2 credits/semester for a total of 4 credits.
- <sup>3</sup> A 600, 695, 795, or 799 experience may substitute for one elective with academic advisor approval, but only if taken for at least four credits. These four credits may be spread over multiple semesters if they are consecutive and with the same faculty mentor.

## Capstone Experience

As part of the University of New Hampshire's Discovery Program requirements, all students must complete a capstone experience during their senior year (after earning at least 90 credits). **The capstone experience for students majoring in ZOOLOGY BS consists of BOTH (1) an approved individual experience AND (2) the successful completion of the BIOL 780 Capstone Companion Course.** Students will not be approved for graduation until capstone certification has been granted.

### 1) The individual experience

The individual experience may be satisfied through various forms of experiential learning (e.g., Honors thesis, mentored research project, internship) or a course denoted with a "(C)" in the courses listed above. The individual experience must fulfill **at least one** of the University's capstone criteria:

- synthesizes and applies disciplinary knowledge and skills
- fosters reflection on undergraduate learning and experience
- demonstrates emerging professional competencies
- applies, analyzes, and/or interprets research, data, or artistic expression
- explores areas of interest based on the integration of the prior learning

**Before beginning any capstone individual experience, students MUST SUBMIT A COMPLETED CAPSTONE APPROVAL FORM to their Program Coordinator.**

Students can obtain this form on the Department's Capstone page or from their Program Coordinator. Here they will describe their proposed individual experience and how it fulfills at least one of the University's capstone criteria listed above. If the student is selecting a "C" course for

their individual experience, they should obtain the course syllabus from the instructor for information about the course's content and learning objectives.

### 2) Enrollment in BIOL 780 Capstone Companion Course

Students will also be required to enroll in BIOL 780 Capstone Companion Course (1 cr.) **during the semester of their individual experience.** BIOL 780 is offered every Fall and Spring semester.

- If the individual experience is a two-semester thesis, BIOL 780 should be taken during the second semester.
- If the individual experience occurs during the summer (e.g., internship), BIOL 780 should be taken during the Fall semester that immediately follows.
- Note: Because BIOL 780 is not offered during the summer, students cannot complete their individual experience during the summer *and graduate during that same August*. Summer experiences could only be used as individual capstone experiences if completed the summer before the student's senior year.

## Student Learning Outcomes

Students demonstrate that they understand basic principles of Zoology.

- Understand the biodiversity and ecological roles of selected animal taxa.
- Demonstrate understanding of animal physiology and structure at the cellular and organismal levels.
- Describe and apply key principles and mechanisms of evolution and genetics.
- Comprehend the relationship between organisms and their environments.

Students demonstrate that they can undertake scientifically valid methods of inquiry.

- Demonstrate proficiency in searching, reading, and understanding scientific literature.

Students demonstrate that they can think critically and analytically.

- Analyze and present data using appropriate quantitative and graphical tools.

Students demonstrate that they can communicate effectively.

- Develop effective written and oral communication skills for conveying scientific information effectively to a wide audience.

Students practice science responsibly and ethically, and acknowledge the influence of cultural and historical biases in the sciences.

## Zoology Minor

<https://colsa.unh.edu/biological-sciences/program/minor/zoology>

### Description

The Zoology Minor is designed to provide a general introduction to animals and their ecology, while requiring in-depth knowledge of the diversity of at least one group (Animal Survey Course), a course dealing



with animal structure, behavior, or physiology, and an additional animal-focused course at the 600 or higher level of the student's choice.

## Requirements

The Zoology minor requires five courses.

Code	Title	Credits
<b>Required:</b>		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	4
BIOL 541	Ecology	4
<b>Select one Animal Survey Course:</b>		<b>4-5</b>
MEFB 628	Marine Invertebrate Evolution and Ecology	
NR 712	Mammalogy	
ZOOL 542	Ornithology	
ZOOL 710	Sharks and Bony Fishes	
<b>Select one animal structure, behavior or physiology course:</b>		<b>4-5</b>
MEFB 628	Marine Invertebrate Evolution and Ecology	
ZOOL 518	Comparative Morphology and Biology of Vertebrates	
ZOOL 529	Developmental Biology	
ZOOL 613	Animal Behavior	
ZOOL 690	Evolution	
<b>Select one additional animal-focused course at the 600 level or higher chosen from the courses above</b>		<b>4-5</b>

College of Life Sciences and Agriculture students: two courses in the major may be used toward the minor, as long as selected from the courses listed above.

## Peter T. Paul College of Business and Economics

Lucy Gilson, Dean

Luciana Echazu, Associate Dean for Undergraduate Education

Victoria A. Parker, Associate Dean of Graduate Education and Faculty Administration

The Peter T. Paul College of Business and Economics (Paul College) empowers students to be mindful, dynamic leaders through rigorous academics and experiential-learning opportunities led by industry experts and researchers—creating an engaged academic and professional community. Paul College prepares students for careers in Business, Economics, and Hospitality Management. Each program has its unique disciplinary traditions and the simultaneous commitment to broad educational excellence in critical thought, communication, analytic skills, digital literacy, and ethical reasoning.

Paul College's undergraduate curricula combine a breadth of liberal education with specifics of professional education in business administration, economics, and hospitality management. In tandem with their studies at Paul College, undergraduates enrolled in Paul College programs take part of their coursework in other colleges in the University in order to fulfill the Discovery Program requirements. Beyond those requirements, students are encouraged to elect additional courses in the arts, social sciences, humanities, mathematics, and sciences. Thus, students who complete the Paul College programs in business administration, economics, and hospitality management develop an impressive portfolio of marketable skills and knowledge base that may be applied to a variety of fields.

### Accreditation

Peter T. Paul College of Business and Economics is accredited by the Association to Advance Collegiate Schools of Business (AACSB) for the degree programs of business administration and hospitality management.

### Degrees

- Bachelor of Arts (B.A.) in Economics
- Bachelor of Science (B.S) in Business Administration, Analytical Economics, or Hotel and Hospitality Management

For information concerning advanced degrees, see the Graduate Catalog.

### Degree Requirements

Paul College degree candidates must satisfy all of the University Discovery Program requirements for graduation as well as the particular requirements of their individual major programs. Modifications tend to occur in major(option) programs during the four-year period of a student's undergraduate career; Students are expected to conform to these changes. In addition, candidates must complete a math course (MATH 422 Mathematics for Business Applications, MATH 424A Calculus for Social Sciences, or equivalent) and an ethics course (PHIL 431 Business Ethics or equivalent). Bachelor of Science in Business Administration degree students are required to earn 134 credits. Economics majors must also satisfy specific requirements associated with the bachelor of arts degree (see bachelor of arts degree requirements).

In order to graduate, students must achieve a grade-point average of at least 2.3 (2.0 for the B.A. in economics) in the major courses and a minimum grade of C- (for ADMN 403 Computing Essentials for Business, students must obtain credit) in each major course. Course listings are provided by program, or in the case of business administration by department:

- Accounting and Finance (ACFI)
- Business Administration (ADMN)
- Decision Sciences (DS)
- EcoGastronomy (ECOG)
- Economics (ECON)
- Hospitality Management (HMGT)
- Management (MGT)
- Marketing (MKTG)

Prior to attaining junior rank, students will be considered "provisional Paul" students. Students are limited to Paul College major courses during this period and a minimum overall GPA of 2.3 at UNH must be maintained by all Paul students in order to remain in the College. If the minimum overall GPA drops below 2.3 during the provisional period, the student will be placed on Paul College probation for one (1) semester. Failure to achieve a minimum overall GPA of 2.3 after the probationary semester will require the student to change to a major outside Paul College.

Paul College courses may not be taken on a pass/fail basis by a student majoring in business administration, economics, or hospitality management. Any Paul College major required course (including ADMN 403 Computing Essentials for Business) in which a grade below C- is obtained must be repeated. No more than two Paul College courses may be repeated and each course may be repeated at most one time.

Students transferring into Paul College from other universities must have business, economics, and hospitality management courses reviewed and approved by the faculty through the Paul College Undergraduate Programs Office to be considered for major requirements. Transfer credit is normally granted only for 400- and 500-level courses, and normally only when the transferring institution is AACSB-accredited.

### Paul College Programs

#### FIRE (First-year Innovation and Research Experience)

FIRE is an integrated, team-based, and game-like experience, developed for first-year students. Launched in the 2015-2016 academic year and under the direction of the Undergraduate Programs and Advising Office, this program was designed to expand upon the principles and mission of the Peer Advising program by engaging first-year students in developing habits and strategies for success. Students complete a one-credit, credit/fail course each semester (PAUL 405 Freshman Academic Experience I/PAUL 406 Freshman Academic Experience II), guided by peer mentors (selected upper-class students) and alumni. Students collaborate and compete, both individually and in teams, through academic challenges, research, and game scenarios culminating in participation at the Undergraduate Research Conference (URC)

More information can be found on the [FIRE](#) webpage.

#### Independent Study/Internship

Juniors or seniors in high academic standing in the Paul College may elect the internship or independent study course for variable credit.

For either course, the student must secure a faculty sponsor in the area of interest and submit a written proposal prior to the start of the semester in which the project is to be undertaken. Independent study normally involves research, while internships are usually undertaken with cooperation of an off-campus organization and involve a non-routine but practical application of skills and concepts acquired in a student's program.

Independent studies and internships require considerable self-direction and self-monitoring on the part of the student, who must be in high academic standing. Careful prior review of requirements with the undergraduate adviser and faculty sponsor is necessary. Students may earn no more than 16 credits combined in internships, independent studies, field experience, and supervised student teaching experience.

The Washington Center internship, a semester of supervised work experience in Washington, D.C., as well as the Semester in the City internship, in Boston, are open to any major.

## International Programs

International education is a high priority of Paul College with many Education Abroad opportunities available. Through semester abroad and short-term programs, students have the ability to immerse themselves in a variety cultural environments to better prepare for a career in a globalized business industry. Paul College students may engage in a diverse array of opportunities:

- Study abroad in countries including, but not limited to: Australia, China, Hungary, Ireland, Italy, Korea, Portugal, and Spain
- Faculty-led programs to destinations such as Ascoli Piceno, Italy and Dominican Republic
- International internships
- Research grant programs
- Volunteer or non-profit work

Students are encouraged to begin planning their international experiences early on in their academic careers by visiting the Paul College Undergraduate Programs and Advising Office. In most cases, students are able to take a semester abroad without losing any time towards graduation. Paul College students are highly encouraged to study abroad at schools accredited by the AACSB (Association to Advance Collegiate Schools of Business) and/or EQUIS (European Quality Improvement System). More information about international experiences can be found on the Paul College website as well as by programs offered through UNH Global.

## Paul College Honors Program

The Paul College Honors Program is designed to provide high achieving students with an enhanced academic experience. Students in the University Honors Program or current students in Paul College have the opportunity to apply to the program at the beginning of the second semester sophomore year. The application process is competitive and based upon grade point average, extra-curricular experiences, and student interests.

*The Program consists of the following elements:*

**Designation and Designation Workshop** (PAUL 790 Honors/The Workshop) — Students pick a course to designate as honors and work with the professor to create a special honors project related to the course. The

Designation Workshop brings all honors students together to share, build upon, and ultimately present their designation work.

**Consulting Project** (PAUL 792 Honors/Seminar)—Designed to broaden perspective and build a bridge to the real world, the Honors Experience matches students with small businesses across New Hampshire. With the help of the Small Business Development Center, we will identify real-world projects and give students a chance to apply their learning.

**Research Seminar** (PAUL 794 Honors/The Research Process)—The Research Seminar is dedicated to preparing students to write their honors thesis. The thesis process is broken into steps, and students complete a thesis proposal. Students will attend and discuss faculty research presented at the Paul Scholars series.

**Thesis**—The culminating experience of Paul Honors is the thesis. Students apply what they have learned and undertake their own research with the help of a faculty mentor.

## Five-Year Programs

### Four-One Program: B.S.-M.B.A.

After completion of the bachelors degree program, students may apply to the Paul College masters of business administration full-time program. This innovative curriculum is designed specifically to accelerate your progress through this highly-ranked AACSB-accredited MBA program. Details are provided in the Programs of Study sections of this catalog and the Graduate Catalog.

### Four-One Program: B.S.-M.S.A.

The American Institute of Certified Public Accountants (AICPA), the national association of professional accountants, mandated that five years of university education be required for national certified public accountant (CPA) certification as of the year 2000. Most states have approved similar requirements for licensing/certification. The Paul College offers a five-year program designed for students who desire a professional accounting career. The program leads to the joint awarding of a bachelor of science in business administration and a master of science in accounting degree. Application for admission to this highly selective program is made in the senior year. Details are provided in the Programs of Study sections of this catalog and the Graduate Catalog.

## Paul College—Minors and Courses for Non-majors

### Minors

Paul College faculty has developed a group of courses for non-majors, which, when combined with certain other courses, can constitute a minor in business administration, economics, entrepreneurship, hospitality management, or leadership.

### Non-majors

Paul College also serves the needs of undergraduates elsewhere in the University, within the limits of its resources, for whom selected courses in business administration, economics, or hospitality management are desirable complements to their primary course of study. To the extent that space is available after majors have enrolled, a limited number of Paul College courses are open to non-majors who have the prerequisite preparation. A maximum of 32 credits in courses offered by the Peter T. Paul College of Business and Economics may be taken by non-Paul

College students. Students interested in these courses should contact the Paul College Undergraduate Programs and Advising Office.

## Advising System

Undergraduate advising in the Paul College is carried out jointly by dedicated academic advisers and faculty. The academic advisers are based in the [Paul College Undergraduate Programs and Advising Office](#), where student academic records are kept. The advisers assist students in program planning, preregistration, understanding and meeting general academic/degree requirements, and general career planning. In addition, the advisers coordinate study abroad and domestic exchange programs, as well as the honors programs.

Undergraduates are encouraged to develop an advisory relationship with one or more faculty members with whom they have mutual interests. By providing their own experience and expertise, faculty may provide additional support to students for course, program, and career selection. All students are urged to seek as much assistance as they need from appropriate sources, but are reminded that theirs is the ultimate responsibility for knowing and meeting the various academic requirements for a degree.

<https://paulcollege.unh.edu/>

## Departments

- [Business Administration](#) (p. 357)
- [Economics](#) (p. 368)
- [Hospitality Management](#) (p. 374)

## Programs of Study

- [Business Administration \(ADMN\)](#) (p. 357)
- [Ecogastronomy \(ECOG\)](#) (p. 367)
- [Economics \(ECON\)](#) (p. 368)
- [Entrepreneurship](#) (p. 374)
- [Hospitality Management \(HMGH\)](#) (p. 374)
- [Leadership](#) (p. 376)
- [Sales](#) (p. 377)
- [Tourism Management](#) (p. 378)

## Business Administration (ADMN)

The business administration program provides students with the pillars of a business education as well as specialized options to propel them on their career paths. The curriculum consists of fifteen core courses as well as option/major courses, which imparts students with expertise in one or two areas of business. At the same time, Paul College students achieve a well-rounded education by selecting courses in the liberal arts and the sciences from other colleges and schools in the University, including to complete University Discovery requirements. The Peter T. Paul College's program in business administration is accredited by the Association to Advance Collegiate Schools of Business (AACSB) and is separate from the business program at the UNH-Manchester campus.

## Core Curriculum

The business administration's core curriculum constitutes the fundamental theories, principles, concepts, and skill sets necessary for students to thrive in the professional business world. Each required core

course equips students with the knowledge and skills utilized in key areas of business, while building upon their social, competitive, and analytical intelligence. The business administration program also augments its core curriculum with math, ethics, and economics.

In order to graduate, students must achieve a grade-point average of at least 2.3 in the major courses and a minimum grade of C- (for [ADMN 403](#) Computing Essentials for Business, students must obtain credit) in each Paul College major course. Core courses are generally completed in the first five semesters of enrollment at Paul College, with the exception of [ADMN 775](#) Strategic Management: Decision Making (capstone course):

- [MATH 422](#) Mathematics for Business Applications, or [MATH 424A](#) Calculus for Social Sciences
- [PHIL 431](#) Business Ethics
- [ECON 401](#) Principles of Economics (Macro)
- [ECON 402](#) Principles of Economics (Micro)
- [ADMN 400](#) Introduction to Business
- [ADMN 403](#) Computing Essentials for Business (1 credit)
- [ADMN 410](#) Management Information Systems
- [ADMN 510](#) Business Statistics
- [ADMN 502](#) Financial Accounting
- [ADMN 503](#) Managerial Accounting
- [ADMN 570](#) Introduction to Financial Management
- [ADMN 575](#) Behavior in Organizations
- [ADMN 580](#) Quantitative Decision Making
- [ADMN 585](#) Marketing
- [ADMN 775](#) Strategic Management: Decision Making (Capstone course, satisfies capstone requirement for the University Discovery Program)

### Additional requirements:

- [PAUL 405](#) Freshman Academic Experience I
- [PAUL 406](#) Freshman Academic Experience II
- [PAUL 660](#) BiP-Social Intelligence Topics
- [PAUL 670](#) BiP-Analytical Intelligence Topics
- [PAUL 680](#) BiP-Competitive Intelligence Topics
- [PAUL 690](#) BiP-Professional Intelligence Topics

## Options in the Business Administration Program

As students advance, they must declare an option within the business administration program (students can complete two options by choice). Bachelor of Science in Business Administration requires the completion of 134 credits total. Declaration of an option occurs during their second semester sophomore year, thus focusing on a particular area of business during their last three semesters. The sophomore option declaration date is set by the Undergraduate Programs and Advising Office and usually by February of the sophomore year. Students are encouraged to discuss their interests with several faculty members and an academic adviser in this decision-making process. Options comprise a minimum of four courses, but requirements do vary by option and are determined by the nature of the career field. Current business administration options are:

- Accounting
- Entrepreneurial Studies
- Finance
- Information Systems and Business Analytics
- International Business and Economics
- Management
- Marketing
- Student-Designed

Due to the dynamic nature of the business world, the portfolio of options offered may change from time to time. Students are expected to stay attuned to these changes through Paul College Undergraduate Programs and Advising Office. A change of option/major may only be made once per semester.

## Business in Practice (BiP) Program

The Business in Practice (BiP) program enhances Paul College's rigorous academics by bridging the gap between theory and practical application. Through experiential learning projects, you work directly with industry leaders and companies to acquire a deeper grasp of real business issues and responsibilities, giving you the tools, skills and know-how to launch a successful and meaningful business career. The program is designed to be flexible and optimizes your skill level in key intelligence areas most valued by employers.

### BiP INTELLIGENCES AND LEARNING GOALS

You will take a minimum of four courses\*, one in each of the intelligence areas:

- PAUL 660 BiP-Social Intelligence Topics - ability to navigate complex social relationships and environments.
- PAUL 670 BiP-Analytical Intelligence Topics - ability to analyze and evaluate ideas, solve problems and make decisions.
- PAUL 680 BiP-Competitive Intelligence Topics - ability to gather, analyze and distribute information and ideas about products, customers, competitors or the external environment.
- PAUL 690 BiP-Professional Intelligence Topics - ability to achieve professional success.

\*Other Paul College courses or opportunities may be assigned with BiP Intelligence attributes and satisfy a BiP course requirement. Please check with Paul College Undergraduate Programs Office for other potential courses designated with a BiP Intelligence attribute.

<https://paulcollege.unh.edu/business-administration>

## Programs

- [Business Administration Major \(B.S.\)](#) (p. 358)
- [Business Administration Major: Accounting Option \(B.S.\)](#) (p. 359)
- [Business Administration Major: Entrepreneurial Studies Option \(B.S.\)](#) (p. 360)
- [Business Administration Major: Finance Option \(B.S.\)](#) (p. 361)
- [Business Administration Major: Information Systems and Business Analytics Option \(B.S.\)](#) (p. 362)
- [Business Administration Major: International Business and Economics Option \(B.S.\)](#) (p. 363)
- [Business Administration Major: Management Option \(B.S.\)](#) (p. 364)

- [Business Administration Major: Marketing Option \(B.S.\)](#) (p. 365)
- [Business Administration Major: Student Designed Option \(B.S.\)](#) (p. 366)
- [Business Administration Minor](#) (p. 367)

## Faculty

<https://paulcollege.unh.edu/directory/all>

## Business Administration Major (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major>

## Description

A Bachelor of Science in business administration will help you build the skills, knowledge and experience to land a job and thrive in today's evolving economy. Graduates are in demand in a variety of industries including accounting, finance, information systems and business analytics, management and marketing. Whether you aspire to work for a high-powered firm, start-up or non-profit or launch your own business, a business administration degree opens the doors to many career opportunities.

At Paul College, students in the business administration major take foundation courses in their freshman and sophomore years that cover the fundamental theories, principles, concepts and skill sets in key areas of business, while building upon their social, analytical, competitive and professional intelligence. These foundation courses prepare you to move into a variety of fields and companies. You also must declare an option within your major during the second semester of your sophomore year that provides deeper expertise in a specific business area to propel you on your career path. Many students choose more than one! Options within the major include: accounting, entrepreneurial studies, finance, information systems and business analytics, international business and economics, management, marketing, and student designed.

## Requirements

The following courses are major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted in those program descriptions. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.



Code	Title	Credits
<b>Business Administration core requirements</b>		
<b>ADMN courses:</b>		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 510	Business Statistics	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 775	Strategic Management: Decision Making <sup>1</sup>	4
<b>Other subject code courses:</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
or MATH 424A	Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics <sup>2</sup>	2
PAUL 670	BiP-Analytical Intelligence Topics <sup>2</sup>	2
PAUL 680	BiP-Competitive Intelligence Topics <sup>2</sup>	2
PAUL 690	BiP-Professional Intelligence Topics <sup>2</sup>	2

<sup>1</sup> This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

<sup>2</sup> Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending of the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

## Student Learning Outcomes

- Students will demonstrate proficiency in the core content areas of business.
- Students will think critically to address business situations.
- Students will demonstrate communication skills to interact effectively in business situations.
- Students will identify and understand the ethical dimensions and implications of business decisions.
- Students will demonstrate the ability to analyze a business situation by applying a multiple stakeholder lens.
- Students will demonstrate an understanding of business practices as they relate to local, national and global competitiveness.

## Business Administration Major: Accounting Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-accounting-option>

## Description

**The Option in Accounting** prepares students for careers in a “recession proof profession” with excellent placement and salary statistics.

Accounting is referred to as the “language of business” because all businesses rely on accounting information for decision-making.

Because accounting is inherently subjective, accounting students learn the analytical skills necessary to make idiosyncratic decisions.

However, in contrast to other professions, accountants also learn a technical knowledge base that allows them to understand how accounting choices can affect the information used for decision-making in all disciplines. This deeper understanding of business data helps accounting professionals provide value to clients and employers.

Because every business relies on accounting information, accounting students can select an industry and position that aligns with their personal interests. Examples of commonly selected positions include audit, tax, financial consulting, and management. The Option provides students with the requisite knowledge to obtain certifications in a variety of areas, including accounting (CPA), management (CMA), internal auditing (CIA), forensics (CFE), and information systems (CISA). Students may also take advantage of the four-one (5 year) program to earn a M.S. in Accounting at Paul College, which can speed career progression. Irrespective of the position or educational pathway an individual student selects, the demand for accounting professionals exceeds supply, making accounting a great career choice.

## Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
<b>Business Administration core requirements</b>		
<b>ADMN courses:</b>		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 510	Business Statistics	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 775	Strategic Management: Decision Making <sup>1</sup>	4
<b>Other subject code courses:</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
or MATH 424A	Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics <sup>2</sup>	2
PAUL 670	BiP-Analytical Intelligence Topics <sup>2</sup>	2

PAUL 680	BiP-Competitive Intelligence Topics <sup>2</sup>	2
PAUL 690	BiP-Professional Intelligence Topics <sup>2</sup>	2

<sup>1</sup> This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

<sup>2</sup> Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending of the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

## Option in Accounting

Code	Title	Credits
<b>Required courses:</b>		
ACC 721	Intermediate Financial Accounting I	4
ACC 722	Intermediate Financial Accounting II	4
ACC 723	Advanced Managerial Accounting	4
ACC 724	Auditing	4
ACC 726	Introduction to Federal Taxation	4
ACC 747	Business Law	4
<b>Select one of the following:</b>		
ACC 727	Financial Statement Analysis	4
ACC 720	Topics in Accounting	4
ACC 725	Independent Studies in Accounting	4
ACC 799	Honors Thesis in Accounting	4
<b>Total Credits</b>		<b>28</b>

## Student Learning Outcomes

- Students will demonstrate proficiency in the core content areas of business.
- Students will think critically to address business situations.
- Students will demonstrate communication skills to interact effectively in business situations.
- Students will identify and understand the ethical dimensions and implications of business decisions.
- Students will demonstrate the ability to analyze a business situation by applying a multiple stakeholder lens.
- Students will demonstrate an understanding of business practices as they relate to local, national and global competitiveness.

## Business Administration Major: Entrepreneurial Studies Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-entrepreneurial-studies-option>

### Description

The **Option in Entrepreneurial Studies** is designed for students interested in entrepreneurship and creativity and who seek to learn about starting high growth business, working for a new venture, investing in start-ups or becoming involved in a new venture creation within an established organization. The ES option fosters an entrepreneurial

culture throughout the program with a priority on applied learning in the dynamic environment of entrepreneurial ventures. Students apply what they've learned to a senior project and in conducting due diligence for investors. The ES option studies entrepreneurship from the entrepreneurs, employees and the investor's perspective.

## Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
<b>Business Administration core requirements</b>		
<b>ADMN courses:</b>		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 510	Business Statistics	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 775	Strategic Management: Decision Making <sup>1</sup>	4
<b>Other subject code courses:</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
or MATH 424A	Calculus for Social Sciences	4
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics <sup>2</sup>	2
PAUL 670	BiP-Analytical Intelligence Topics <sup>2</sup>	2
PAUL 680	BiP-Competitive Intelligence Topics <sup>2</sup>	2
PAUL 690	BiP-Professional Intelligence Topics <sup>2</sup>	2

<sup>1</sup> This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

<sup>2</sup> Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending of the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

## Option in Entrepreneurial Studies

Code	Title	Credits
<b>Required</b>		
MKTG 763	Marketing Analytics	4
or MKTG 764	New Product Development	4

DS 741	Private Equity/Venture Capital	4
DS 742	Internship in Entrepreneurial and Management Practice	4
MGT 733	Launching New Ventures	4
<b>Total Credits</b>		<b>16</b>

## Student Learning Outcomes

- Students will demonstrate proficiency in the core content areas of business.
- Students will think critically to address business situations.
- Students will demonstrate communication skills to interact effectively in business situations.
- Students will identify and understand the ethical dimensions and implications of business decisions.
- Students will demonstrate the ability to analyze a business situation by applying a multiple stakeholder lens.
- Students will demonstrate an understanding of business practices as they relate to local, national and global competitiveness.

## Business Administration Major: Finance Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-finance-option>

### Description

The **Option in Finance** provides students with the knowledge and analytical skills necessary to make informed financial decisions for themselves and their organizations. Business students interested in numbers, quantitative analysis, problem solving, utilizing creativity, and practical applications will appreciate this option. Opportunities exist in a variety of fields, including commercial and investment banking, insurance, corporate finance, money management, venture capital, risk management, and real estate.

The job outlook for finance students is strong, and starting and mid-career salaries are typically among the highest of all majors at a university. Many premier jobs in business, such as hedge fund manager, investment banker, and CFO, are in finance.

### Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
<b>Business Administration core requirements</b>		
<b>ADMN courses:</b>		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 502	Financial Accounting	4

ADMN 503	Managerial Accounting	4
ADMN 510	Business Statistics	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 775	Strategic Management: Decision Making <sup>1</sup>	4
<b>Other subject code courses:</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
or MATH 424A	Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics <sup>2</sup>	2
PAUL 670	BiP-Analytical Intelligence Topics <sup>2</sup>	2
PAUL 680	BiP-Competitive Intelligence Topics <sup>2</sup>	2
PAUL 690	BiP-Professional Intelligence Topics <sup>2</sup>	2

<sup>1</sup> This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

<sup>2</sup> Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending on the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

### Option in Finance

Code	Title	Credits
<b>Option in Finance</b>		
<b>Required Courses</b>		
FIN 701	Financial Policy	4
FIN 702	Investments Analysis	4
<b>Three additional Electives</b>		<b>12</b>
Must select at least one course from the Core and Exploration elective categories below.		
<b>Core Electives</b>		
Must select at least one course from the following:		
FIN 703	International Financial Management	
FIN 704	Derivatives Securities and Markets	
FIN 705	Financial Institutions	
FIN 706	Financial Modeling and Analytics	
FIN 707	Equity Analysis and Firm Valuation	
FIN 708	Real Estate Finance	
FIN 709	Mortgage Banking and Fixed Income Securities	
<b>Exploration Electives, must select at least one course:</b>		
ACC 724	Auditing <sup>2</sup>	
DS 775	Corporate Project Experience <sup>2</sup>	
FIN 710	Big Data in Finance	
FIN 711	Investment Banking	
FIN 714W	Financial Scandals, Upheavals, and Crises	
FIN 720	Topics in Finance II	
FIN 725	Independent Studies in Finance <sup>1</sup>	
Additional course by petition approved by Finance Option Coordinator		
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Independent study must be approved by option coordinator; four credits; paper required.

<sup>2</sup> Requires pre-requisites outside of finance option.

## Student Learning Outcomes

- Students will demonstrate proficiency in the core content areas of business.
- Students will think critically to address business situations.
- Students will demonstrate communication skills to interact effectively in business situations.
- Students will identify and understand the ethical dimensions and implications of business decisions.
- Students will demonstrate the ability to analyze a business situation by applying a multiple stakeholder lens.
- Students will demonstrate an understanding of business practices as they relate to local, national and global competitiveness.

## Business Administration Major: Information Systems and Business Analytics Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-information-systems-business>

### Description

The Option in Information Systems and Business Analytics (ISBA) will appeal to students who wish to learn how to take advantage of contemporary technologies to solve complex business problems. Pivotal contributors to the success of any venture must be able to understand and communicate both the business needs as well as the technical details of solutions. The option prepares students for a career in a wide range of industries by helping them master the fundamentals of information systems and business analytics, as well as the ability to implement solutions or provide leading-edge, analytics-based solutions to real business problems. Students work on real-world industry projects and apply concepts and problem-solving skills learned in the classroom. All students in the option develop functional knowledge and skills in information systems and business analytics. Beyond the required courses in the option, students may choose between an emphasis in Information Systems or an emphasis in Business Analytics. The ISBA option can be completed as a single or dual option. In either case, the graduate will have tangible knowledge and skills. Regardless of one's interest area or degree, employers look for people that can help them solve problems efficiently and effectively. The ISBA option prepares students to do just that, and continue learning as technology and business continue to change.

### Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
<b>Business Administration core requirements</b>		
<b>ADMN courses:</b>		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 510	Business Statistics	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 775	Strategic Management: Decision Making <sup>1</sup>	4
<b>Other subject code courses:</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
or MATH 424A	Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics <sup>2</sup>	2
PAUL 670	BiP-Analytical Intelligence Topics <sup>2</sup>	2
PAUL 680	BiP-Competitive Intelligence Topics <sup>2</sup>	2
PAUL 690	BiP-Professional Intelligence Topics <sup>2</sup>	2

- <sup>1</sup> This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.
- <sup>2</sup> Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending on the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

## Option in Information Systems and Business Analytics

Code	Title	Credits
<b>Required</b>		
DS 673	Database Management	4
DS 775	Corporate Project Experience	4
<b>Electives: Select three courses <sup>1</sup></b>		<b>12</b>
<b>DS Electives</b>		
DS 662	Programming for Business	
DS 671	Data Visualization and Prescriptive Analytics	
DS 774	E-Business	
DS 768	Forecasting Analytics	
DS 720	Topics in Decision Sciences II (Regression Analysis)	
<b>Other Electives</b>		
ADMN 799	Honors Thesis/Project <sup>3</sup>	
MATH 426	Calculus II	
ACC 720	Topics in Accounting (Accounting Analytics) <sup>2</sup>	
MKTG 763	Marketing Analytics <sup>2</sup>	
FIN 706	Financial Modeling and Analytics <sup>2</sup>	
FIN 710	Big Data in Finance <sup>2</sup>	
IT 666	Cybersecurity Practices	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> At least two elective courses must be DS courses.

<sup>2</sup> Only for students completing 2nd option in Accounting, Finance or Marketing.

<sup>3</sup> Subject to approval from Option Coordinator based on thesis topic relevance to ISBA.

## Student Learning Outcomes

- Students will demonstrate proficiency in the core content areas of business.
- Students will think critically to address business situations.
- Students will demonstrate communication skills to interact effectively in business situations.
- Students will identify and understand the ethical dimensions and implications of business decisions.
- Students will demonstrate the ability to analyze a business situation by applying a multiple stakeholder lens.
- Students will demonstrate an understanding of business practices as they relate to local, national and global competitiveness.

## Business Administration Major: International Business and Economics Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-international-business-economics>

### Description

The **Option in International Business and Economics** offers an interdisciplinary course of study, providing strong business training for students pursuing careers at organizations with an international focus, particularly in multinational corporations, international banks, and government agencies. It achieves this by combining general business training with in-depth knowledge in economics, finance, and management. Students are strongly encouraged to round out their education with either an internship at an international organization or by studying abroad for one semester.

### Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
<b>Business Administration core requirements</b>		
<b>ADMN courses:</b>		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4

ADMN 510	Business Statistics	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 775	Strategic Management: Decision Making <sup>1</sup>	4
<b>Other subject code courses:</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422 or MATH 424A	Mathematics for Business Applications Calculus for Social Sciences	4
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics <sup>2</sup>	2
PAUL 670	BiP-Analytical Intelligence Topics <sup>2</sup>	2
PAUL 680	BiP-Competitive Intelligence Topics <sup>2</sup>	2
PAUL 690	BiP-Professional Intelligence Topics <sup>2</sup>	2

<sup>1</sup> This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

<sup>2</sup> Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending on the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

## Option in International Business and Economics

Code	Title	Credits
<b>Required courses:</b>		
ECON 645	International Economics	4
<b>Select three of the following: <sup>1</sup></b>		<b>12</b>
ECON 655	Innovation in the Global Economy	
ECON #746	International Finance	
FIN 703	International Financial Management	
MGT 755	Global Mindset for Sustainable Business	
MKTG 760	International Marketing	
A faculty-approved course in International Business		
<b>Select one of the following:</b>		<b>4</b>
One of the remaining courses from list above		
Credited internship at an international organization		
One-semester study abroad experience that involves at least one approved international business or economics course and that results in at least 12 academic credits being transferred back to UNH		
FIN 704	Derivatives Securities and Markets	
ECON 668	Economic Development	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Students should consult with their academic adviser and/or the faculty option coordinator in their selection of these courses according to their interests.

## Student Learning Outcomes

- Students will demonstrate proficiency in the core content areas of business.
- Students will think critically to address business situations.



- Students will demonstrate communication skills to interact effectively in business situations.
- Students will identify and understand the ethical dimensions and implications of business decisions.
- Students will demonstrate the ability to analyze a business situation by applying a multiple stakeholder lens.
- Students will demonstrate an understanding of business practices as they relate to local, national and global competitiveness.

## Business Administration Major: Management Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-management-option>

### Description

The **Option in Management** provides students with the knowledge and skills to assess organizational effectiveness, identify challenges, develop solutions, and implement changes in order to improve internal and external performance. Courses emphasize critical thinking, problem-solving, planning, interpersonal skills related to ethical leadership in the global economy, managing innovation and technology, organizational change and sustainability, and international and cross-cultural issues in organizations.

The option emphasizes the generalist's mindset in concert with a specialist's functional understanding of the firm. This is an excellent option for students who see themselves as "big picture" people. Future career paths include an array of management, supervisory, entrepreneurial, human resources, and other positions in for-profit and non-profit organizations. The option is also recommended for students considering graduate education in management or law.

### Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
<b>Business Administration core requirements</b>		
<b>ADMN courses:</b>		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 510	Business Statistics	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 775	Strategic Management: Decision Making <sup>1</sup>	4
<b>Other subject code courses:</b>		

ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422 or MATH 424A	Mathematics for Business Applications Calculus for Social Sciences	4
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics <sup>2</sup>	2
PAUL 670	BiP-Analytical Intelligence Topics <sup>2</sup>	2
PAUL 680	BiP-Competitive Intelligence Topics <sup>2</sup>	2
PAUL 690	BiP-Professional Intelligence Topics <sup>2</sup>	2

- <sup>1</sup> This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.
- <sup>2</sup> Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending of the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

Code	Title	Credits
<b>Option in Management</b>		
<b>Required courses</b>		<b>8</b>
Select two courses from the following:		
MGT 630	Leading in Diverse Organizations	
MGT 701	Stakeholder Engagement & Sustainable Businesses	
MGT 714	Organizational Changemaker Skills	
<b>Management Electives <sup>1</sup></b>		<b>12</b>
Select three courses from the following:		
MGT 640	Human Resource Management	
MGT 642	Talent Acquisition	
MGT 662	Exploration in Entrepreneurial Management	
or MGT 733	Launching New Ventures	
MGT 666	Judgment Days: Revelations for Negotiating in your Favor	
MGT 713	Leadership Assessment and Development	
MGT 755	Global Mindset for Sustainable Business	
MGT 620	Topics in Management <sup>2</sup>	
or MGT 720	Topics in Management II	
INCO 505I	Semester in the City: Boston and SITC @ UNH Internship <sup>3</sup>	
<b>Total Credits</b>		<b>20</b>

- <sup>1</sup> Students may take third required course as one elective.
- <sup>2</sup> Topics will change from year to year.
- <sup>3</sup> INCO 505I may be applied as 4 credits (1 elective course) towards the Management Option.

## Additional Tracks in Management

Students may decide to concentrate their electives in a particular area and select one of two tracks (see below), or may combine courses from the two tracks to fulfill the MGT elective course requirement.

Code	Title	Credits
<b>Strategic HR &amp; Analytics Track</b>		
<b>Required Courses</b>		
MGT 630	Leading in Diverse Organizations	4
MGT 640	Human Resource Management	4
MGT 714	Organizational Changemaker Skills	4
<b>Select two courses from the following:</b>		<b>8</b>
MGT 642	Talent Acquisition	

MGT 666	Judgment Days: Revelations for Negotiating in your Favor	
MGT 720	Topics in Management II (Leadership, Motivation & Rewards)	
<b>Total Credits</b>		<b>20</b>

  

Code	Title	Credits
<b>Sustainable Business Track</b>		
<b>Required Courses</b>		
MGT 701	Stakeholder Engagement & Sustainable Businesses	4
MGT 713	Leadership Assessment and Development	4
MGT 720	Topics in Management II (Design Thinking for Strategic Innovation)	4
<b>Business Electives</b>		<b>4</b>
Select one course from the following:		
MGT 662	Exploration in Entrepreneurial Management	
MGT 666	Judgment Days: Revelations for Negotiating in your Favor	
MGT 755	Global Mindset for Sustainable Business	
MKTG 620	Topics in Marketing (Sustainable & Responsive Marketing Practices)	
<b>Sustainability Electives</b>		<b>4</b>
Select one course from the following:		
ANTH 695	Globalization and Global Population Health	
ECON 655	Innovation in the Global Economy	
EREC 572	Introduction to Natural Resource Economics	
GEOG 685	Population and Development	
NR 507	Introduction to our Energy System and Sustainable Energy	
NR 784	Sustainable Living - Global Perspectives	
NR 785	Systems Thinking for Sustainable Solutions	
PHIL 531	Topics in Professional and Business Ethics	
POLT 750	Politics of Poverty	
SOC 565	Environment and Society	
SUST 501	Sustainability in Action	
<b>Total Credits</b>		<b>20</b>

## Student Learning Outcomes

- Students will demonstrate proficiency in the core content areas of business.
- Students will think critically to address business situations.
- Students will demonstrate communication skills to interact effectively in business situations.
- Students will identify and understand the ethical dimensions and implications of business decisions.
- Students will demonstrate the ability to analyze a business situation by applying a multiple stakeholder lens.
- Students will demonstrate an understanding of business practices as they relate to local, national and global competitiveness.

## Business Administration Major: Marketing Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-marketing-option>

### Description

The **Option in Marketing** focuses on how to develop, establish, and maintain products and services of high value for customers as well as how to deliver and communicate them, from both digital and traditional perspectives. The option addresses key linkages critical to effective customer and brand management, from understanding customer needs and problems to delivering appropriate solutions and services. It further examines decision choices facing managers concerning market selection, entry timing, positional advantage to be pursued, targeting, and

executional approaches. The option emphasizes digital marketing and analytics across its courses.

## Requirements

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years) and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
<b>Business Administration core requirements</b>		
<b>ADMN courses:</b>		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 510	Business Statistics	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 775	Strategic Management: Decision Making <sup>1</sup>	4
<b>Other subject code courses:</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
or MATH 424A	Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics <sup>2</sup>	2
PAUL 670	BiP-Analytical Intelligence Topics <sup>2</sup>	2
PAUL 680	BiP-Competitive Intelligence Topics <sup>2</sup>	2
PAUL 690	BiP-Professional Intelligence Topics <sup>2</sup>	2

<sup>1</sup> This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

<sup>2</sup> Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending on the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

## Option in Marketing

Code	Title	Credits
<b>Required courses:</b>		
MKTG 752	Marketing Research	4
MKTG 753	Consumer/Buyer Behavior	4
MKTG 763	Marketing Analytics	4
MKTG 775	Marketing Workshop	4
<b>Select two of the following courses:</b>		<b>8</b>
MKTG 644	Retail Management in an Omnichannel World	

MKTG 649	Foundations of Personal Selling
MKTG 750	Marketing Strategy
MKTG 757	Integrated Marketing Communication
MKTG 760	International Marketing
MKTG 764	New Product Development
MKTG 765	Applications in Digital Marketing
MKTG 620	Topics in Marketing <sup>1</sup>
or MKTG 720	Topics in Marketing II
<b>Total Credits</b>	<b>24</b>

<sup>1</sup> Offerings will vary from semester to semester.

For additional courses, students are encouraged to meet with department faculty or with the Academic Advising Office for help in choosing a career track and additional courses.

## Student Learning Outcomes

- Students will demonstrate proficiency in the core content areas of business.
- Students will think critically to address business situations.
- Students will demonstrate communication skills to interact effectively in business situations.
- Students will identify and understand the ethical dimensions and implications of business decisions.
- Students will demonstrate the ability to analyze a business situation by applying a multiple stakeholder lens.
- Students will demonstrate an understanding of business practices as they relate to local, national and global competitiveness.

## Business Administration Major: Student Designed Option (B.S.)

<https://paulcollege.unh.edu/business-administration/program/bs/business-administration-major-student-designed-option>

### Description

A **Student-Designed Option (SDO)** in **Business Administration** is for highly motivated and disciplined students to pursue a course of study that is not available through any of the other current options in Paul College. The SDO should be different from any of the existing options and should serve to further the students' intellectual development and future career goals.

The SDO cannot be used to avoid portions of existing options that are presumed to be uninteresting or difficult. For example, the SDO cannot consist of all courses from an existing option with one or two substitutions.

The SDO will consist of courses from Paul College, and courses from outside of Paul College from existing disciplines (e.g., Psychology, Art, Homeland Security, etc.).

### Requirements

#### Student-Designed Option

A typical plan of study follows, showing the major-required courses. Students take 16-18 credits per semester. Discovery Program requirements (including the Inquiry requirement in the first two years)

and elective courses are taken as well. Students are expected to follow this course plan. In the first three semesters, students cannot take more than two major courses in a single semester. The options have additional requirements as noted. For a detailed schedule/plan of study for each option, students should check with the Paul College Undergraduate Programs and Advising Office for specific recommendations.

Code	Title	Credits
<b>Business Administration core requirements</b>		
<b>ADMN courses:</b>		
ADMN 400	Introduction to Business	4
ADMN 403	Computing Essentials for Business	1
ADMN 410	Management Information Systems	4
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ADMN 510	Business Statistics	4
ADMN 570	Introduction to Financial Management	4
ADMN 575	Behavior in Organizations	4
ADMN 580	Quantitative Decision Making	4
ADMN 585	Marketing	4
ADMN 775	Strategic Management: Decision Making <sup>1</sup>	4
<b>Other subject code courses:</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
MATH 422	Mathematics for Business Applications	4
or MATH 424A	Calculus for Social Sciences	
PHIL 431	Business Ethics	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PAUL 660	BiP-Social Intelligence Topics <sup>2</sup>	2
PAUL 670	BiP-Analytical Intelligence Topics <sup>2</sup>	2
PAUL 680	BiP-Competitive Intelligence Topics <sup>2</sup>	2
PAUL 690	BiP-Professional Intelligence Topics <sup>2</sup>	2

<sup>1</sup> This is the capstone course in the business administration program, and satisfies the capstone requirement of the Discovery Program. Students may be required to concurrently enroll in ADMN 700 PAUL Assessment of Core Knowledge (zero credits) for AACSB accreditation purposes.

<sup>2</sup> Students may satisfy PAUL 660, PAUL 670, PAUL 680, PAUL 690 requirements through other courses/experiences with approved intelligence attributes assigned.

Depending on the choice of option and the specific requirements thereof, students may be able to take PAUL or non-PAUL electives in their junior or senior year.

Code	Title	Credits
<b>Student Designed Option (SDO) Requirements</b>		
Students will work with a faculty advisor to draft a proposal to be submitted to the Undergraduate Curriculum Committee. Proposals must be submitted by fall of Junior Year. The option must consist of at least 5 courses and include: <sup>1</sup>		
At least two (2) courses from ACC, DS, FIN, MGT, or MKTG departments that meet approval		
At least two (2) other courses from outside of Paul College		
One (1) Additional Course chosen in consultation with your faculty advisor.		

<sup>1</sup> Students interested in the Student Designed Option must meet with their advisor to discuss their interest and obtain the proposal application.

## Student Learning Outcomes

- Students will demonstrate proficiency in the core content areas of business.

- Students will think critically to address business situations.
- Students will demonstrate communication skills to interact effectively in business situations.
- Students will identify and understand the ethical dimensions and implications of business decisions.
- Students will demonstrate the ability to analyze a business situation by applying a multiple stakeholder lens.
- Students will demonstrate an understanding of business practices as they relate to local, national and global competitiveness.

## Business Administration Minor

<https://paulcollege.unh.edu/business-administration/program/minor/business-administration>

### Description

The Minor in Business Administration offers students majoring in other disciplines the opportunity to develop a well-rounded business background. Students complete coursework in core business areas such as accounting, marketing, management, as well as economics. The minor enables students to enter their selected industries with skills and experience that distinguish them as professionals.

### Requirements

#### Business Administration Minor

Code	Title	Credits
<b>Required courses:</b>		
ECON 402	Principles of Economics (Micro)	4
ACC 501	Survey of Accounting	4
or ADMN 502	Financial Accounting	
MKTG 530	Survey of Marketing	4
MGT 535	Organizational Behavior	4
<b>One elective from the following courses:</b>		<b>4</b>
ADMN 510	Business Statistics	
ADMN 503	Managerial Accounting	
DS 520	Topics in Decision Sciences	
ECON 401	Principles of Economics (Macro)	
ECON 625	Economic History of the United States	
ECON 620	Topics in Economics	
FIN 620	Topics in Finance I	
MGT 620	Topics in Management	
MGT 640	Human Resource Management	
MGT 642	Talent Acquisition	
MGT 666	Judgment Days: Revelations for Negotiating in your Favor	
MKTG 520	Topics in Marketing	
MKTG 547	Promotion and Advertising	
MKTG 649	Foundations of Personal Selling	
PAUL 450	Personal Finance	
*Other courses may be approved by petition		

Please note:

- The courses may be taken in any order; you are responsible for checking pre-requisites for elective courses.
- Capacity in most courses may be limited.
- ACC 501, MKTG 530, and MGT 535 are for Business Administration minor only; they do not carry credit toward Paul College majors.
- The Business Administration minors must also follow UNH's policy on minors.

- Following University policy, you must complete 20 semester hours with a grade of C- or better and a 2.0 grade point average.
- Courses taken on a Pass/Fail basis may not be used for the minor.
- No more than 8 credits used by the student to satisfy major requirements may be used for the minor.
- No more than 8 credits or 2 courses of approved transfer courses may be used toward the minor.

## Ecogastronomy (ECOG)

The Peter T. Paul College of Business and Economics and the College of Life Sciences and Agriculture offer undergraduate students the opportunity to pursue a dual major in EcoGastronomy. The dual major requires completion of the EcoGastronomy program and any other major.

The EcoGastronomy program prepares students for professions within our rapidly evolving food community—from farm to fork to nutrition and health outcomes—where ever-greater integration of agriculture, food, and nutrition requires a broad perspective and a specific blend of skills and knowledge. The dual major in EcoGastronomy is international by providing a context for studying "gastronomy" in Ascoli-Piceno, Italy.

## International Experience

All students who declare the dual major in EcoGastronomy spend a full semester abroad, most likely during their junior year. Students will study in Ascoli Piceno, Italy, (spring, summer or fall semester).

Dual majors will complete a series of upper-level core courses such as history of cuisine and gastronomy, history of food, aesthetics, food law, food technology processes, cross-cultural comparisons, and language.

The study abroad credit requirement is 12 credits.

## Portfolio

Students will be required to submit a portfolio annually to the director, and a cumulative portfolio to the instructor of their capstone course for final assessment.

The courses in the dual major program are multidisciplinary, taught by faculty from different departments in the University. They are designed to integrate UNH strengths in sustainable agriculture, hospitality management, and nutrition to offer a unique academic program emphasizing the interdisciplinary, international, and experiential knowledge that connects all three fields. The program is experiential by requiring students to work in the field growing food, in the kitchen preparing food, and developing the skills associated with both. They will also experience the local food cultures and get firsthand experience on the issues of food security locally, regionally, and globally.

Students who wish to declare a dual major in EcoGastronomy must have a cumulative grade-point average of 2.5; have declared, or be prepared to declare, a disciplinary major; and complete the Introduction to EcoGastronomy course (ECOG 401 Introduction to Ecogastronomy) with a grade of C or better.

ECOG 401 Introduction to Ecogastronomy is prerequisite for study abroad. All required classes and the elective are a pre/corequisite for the senior EcoGastronomy capstone course, ECOG 701 EcoGastronomy Capstone. Exceptions are possible with a late declaration of the dual major. All foreign experiences must be pre-approved by the EcoGastronomy director.

The completion of the dual major requires no additional credits for graduation beyond the 128 required of all UNH students. All coursework required for EcoGastronomy must be completed with a grade C or better. For information, contact the dual major in EcoGastronomy, PCBE 370Z, (603) 862-3327, [ecog.info@unh.edu](mailto:ecog.info@unh.edu).

<https://www.unh.edu/ecogastronomy/>

## Programs

- [Ecogastronomy Dual Major](#) (p. 368)

## Faculty

<https://www.unh.edu/ecogastronomy/faculty>

## Ecogastronomy Dual Major

<https://www.unh.edu/ecogastronomy/curriculum>

## Description

The **Dual Major in EcoGastronomy** integrates UNH strengths in sustainable agriculture, hospitality management, and nutrition. EcoGastronomy offers a unique academic program emphasizing the interdisciplinary, international, and experiential knowledge that connects all three fields.

The EcoGastronomy Dual Major is a collaboration with the University of New Hampshire's College of Life Sciences and Agriculture, Peter T. Paul College of Business and Economics, and the Sustainability Institute.

## Requirements

### EcoGastronomy Dual Major

Code	Title	Credits
<b>Required Courses:</b>		
ECOG 401	Introduction to Ecogastronomy	4
SAFS 405	Sustainable Agriculture and Food Production	4
HMG1 #403	Introduction to Food Management	0 or 4
NUTR 400	Nutrition in Health and Well Being	4
ECOG 685	EcoGastronomy Study Abroad <sup>1</sup>	0-20
ECOG 701	EcoGastronomy Capstone <sup>2</sup>	2-4
<b>Select one elective from the following courses:</b>		<b>4</b>
ANSC 602	Animal Rights and Societal Issues	
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM)	
EREC 680	Agricultural and Food Policy	
HIST 618	American Environmental History	
HMG1 771	International Wine and Beverage	
HMG1 570	International Food and Culture	
MGT 662	Exploration in Entrepreneurial Management	
NR 602	Natural Resources and Environmental Policy	
NR #701	Ecological Sustainability and Values	
NR 720	International Environmental Politics and Policies for the 21st Century	
NR 784	Sustainable Living - Global Perspectives	
NR 785	Systems Thinking for Sustainable Solutions	
NUTR 720	Community Nutrition	
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	
SAFS 679	Food Production Field Experience I	
SOC 665	Environmental Sociology	
ZOOL 610	Principles of Aquaculture	

MEFB 772	Fisheries Biology, Conservation and Management
Total Credits	18-44

- <sup>1</sup> ECOG 685 EcoGastronomy Study Abroad is a variable credit course. ECOG students must complete at least 12 credits of study abroad.
- <sup>2</sup> Satisfies the capstone requirement of the Discovery Program for the EcoGastronomy major.

## Student Learning Outcomes

- Students will understand and be able to communicate the interconnected nature of the food system, taking into account the social, political, ethical, environmental, economic, and social justice issues that are intertwined in the system.
- Students will gain practical understanding of food system sustainability by engaging in experiential education opportunities.
- Students will be able to speak fluently in the language of sustainable food systems.
- Students will effectively analyze and evaluate the full lifecycle of a food, or food product, by identifying and applying reliable information.
- Students will demonstrate effective oral communication skills.
- Students will demonstrate effective written communication skills.
- Students will demonstrate effective presentation skills.

## Economics (ECON)

Economics is the study of how societies organize themselves to produce goods and services and to distribute those products among the members of society. In the modern world, a combination of market forces, public policies, and social customs perform these basic economic tasks. Economists use concepts, models, and data to analyze efficiency of resource use, fairness of economic outcomes, and development of global and national economies. The economics programs are designed to introduce students to the tools of economic analysis and to show students how they can use those tools to analyze and better understand real-world situations.

Undergraduate training in economics is an excellent background for a variety of careers, including banking and financial services, journalism, international business, public service, the diplomatic corps, entrepreneurial ventures, and government administration. An undergraduate major in economics is also excellent preparation for those interested in graduate work in law, business administration, and international relations.

The department offers the choice of a B.A. degree in economics or a B.S. degree in analytical economics. The B.A. degree is designed to offer students maximum flexibility in designing a program of study. Students are encouraged to take a wide variety of courses, double major, and take advantage of study abroad programs. The B.S. degree differs from the B.A. degree in that it requires more quantitative and data analysis courses but does not require a foreign language. It provides more structure and direction than the B.A. degree and is more professionally focused. Please see Economics programs for further information.

Courses in economics are open to nonmajors on a space-available basis. An economics minor is also available, as students majoring in other programs have found that certain economics courses are useful supplements to their own majors and a help in gaining employment.



<https://paulcollege.unh.edu/economics>

## Programs

- [Analytical Economics Major \(B.S.\)](#) (p. 369)
- [Economics Major \(B.A.\)](#) (p. 369)
- [Economics Major: Global Trade and Finance Option \(B.A.\)](#) (p. 370)
- [Economics Major: Money and Financial Markets Option \(B.A.\)](#) (p. 371)
- [Economics Major: Public Policy and Sustainability Option \(B.A.\)](#) (p. 372)
- [Economics Minor](#) (p. 373)

## Faculty

<https://paulcollege.unh.edu/directory/all>

## Analytical Economics Major (B.S.)

<https://paulcollege.unh.edu/economics/program/bs/analytical-economics-major>

## Description

**B.S. in Analytical Economics** emphasizes the predictive and prescriptive modeling skills that are in high demand in today's labor market. Prescriptive modeling is quantitative and strategic decision analysis geared toward corporate decisions. Predictive modeling emphasizes data analysis skills used to develop the information needed to make these decisions.

B.S. analytical economics majors must complete eleven courses in economics with a grade of at least a C- (1.67) in each Paul College major course and an average grade of 2.3 or better in the major courses. In addition, majors must complete MATH 424A and ADMN 403, ADMN 410, ADMN 510, and an ethics course (PHIL 431 Business Ethics or equivalent). ECON 775 is the capstone course for the B.S. major and satisfies the capstone requirement of the University Discovery Program.

## Requirements

B.S. analytical economics majors must complete ten courses in economics with a grade of at least C- (1.67) in each course and an average grade of 2.3 or better in Paul College major courses.

### B.S. in Analytical Economics degree requirements:

Code	Title	Credits
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
ECON 501	Business and Economic History	4
ADMN 403	Computing Essentials for Business	1
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
MATH 424A	Calculus for Social Sciences	4
ADMN 410	Management Information Systems	4
ADMN 510	Business Statistics	4
PHIL 431	Business Ethics	4
ECON 565	Predictive Modeling: Data Driven Economic Analysis	4
ECON 606	Intermediate Microeconomics with Calculus <sup>1</sup>	4
ECON 611	Intermediate Macroeconomic Analysis <sup>1</sup>	4

ECON 726	Introduction to Econometrics	4
ECON 727	Advanced Econometrics <sup>2</sup>	4
<b>Electives:</b>		
At least two (2) Economics electives		8
<b>Capstone:</b>		
ECON 775	Applied Research Skills for Economists <sup>3</sup>	4
<b>Total Credits</b>		<b>63</b>

<sup>1</sup> Major credit toward ECON 606 Intermediate Microeconomics with Calculus and/or ECON 611 Intermediate Macroeconomic Analysis will be awarded to transfer students only if equivalent courses have been taken at the upper level. Transfer students must take at least five of their economics courses at UNH. All economics-related courses taken at other institutions must be approved by the economics department in order for them to count toward the major.

<sup>2</sup> Or other Department approved quantitative course

<sup>3</sup> ECON 775 Applied Research Skills for Economists is the capstone course for the B.S. major and satisfies the capstone requirement of the University Discovery Program.

Students may petition to substitute one business administration course for an economics elective if the course is at the 600 level or above and if a grade of C- or better is earned. Students may earn no more than 16 credits in internships, independent studies, field experience, and supervised student teaching experience. All Analytical Economics majors must satisfy the bachelor of science degree requirements, and all Discovery Program requirements. Students satisfy the Inquiry requirement of the Discovery Program before the end of their sophomore year by completing an Inquiry or Inquiry-attribute course within the Paul College, or another course offered by another college at the University.

## Student Learning Outcomes

- Students have core proficiency in microeconomics. They understand key concepts including opportunity cost, marginal analysis, voluntary exchange, diminishing marginal returns, equilibrium and market structure.
- Students have core proficiency in macroeconomics. They understand key concepts including GDP, inflation, interest rates, business cycles, exchange rates, financial institutions and fiscal and monetary policy.
- Students have strong oral communication skills. This includes fundamental skills in preparing and delivering presentations, as well as being able to explain technical material clearly and concisely.
- Students are able to apply a statistical model to an economic question and interpret the results.
- Students are proficient in applying a programming language to statistical analysis.

## Economics Major (B.A.)

<https://paulcollege.unh.edu/economics/program/ba/economics-major>

## Description

**Bachelor of Arts in Economics** is designed to offer students the maximum flexibility in tailoring a program of study and provides a powerful platform for launching careers in almost all walks of life. Students are encouraged to take a wide variety of courses, double major, and take advantage of study abroad programs.

B.A. economics majors may select to focus their major electives to satisfy the requirements of one of the three options defined by the Department of Economics: Money and Financial Markets, Global Trade and Finance, or Public Policy and Sustainability.

B.A. economics majors must complete ten (10) courses in economics, plus PAUL 405/PAUL 406, ADMN 403, ADMN 510, a math course (MATH 422, MATH 424A, or equivalent), and an ethics course (PHIL 431 or equivalent). Econometrics is highly recommended but not required.

## Requirements

### Economics Major (B.A.)

B.A. economics majors must complete nine courses in economics plus ADMN 510 Business Statistics with a grade of at least C- (1.67) in each Paul College major course and an average grade of 2.0 or better in major courses.

Code	Title	Credits
<b>Freshman Year</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
ECON 501	Business and Economic History	4
ADMN 403	Computing Essentials for Business	1
MATH 422 or MATH 424A	Mathematics for Business Applications Calculus for Social Sciences	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PHIL 431	Business Ethics	4
<b>Sophomore Year</b>		
ADMN 510	Business Statistics	4
ECON 605 or ECON 606	Intermediate Microeconomic Analysis Intermediate Microeconomics with Calculus	4
ECON 611	Intermediate Macroeconomic Analysis	4
<b>Junior and Senior Years</b>		
ECON 774	Senior Economics Seminar <sup>1</sup>	4
Select four (4) additional ECON electives <sup>2</sup>		16
<b>Total Credits</b>		<b>55</b>

<sup>1</sup> ECON 774 Senior Economics Seminar is the capstone course for the B.A. major and satisfies the capstone requirement of the University Discovery Program.

<sup>2</sup> Specific electives for the BA Options must be chosen from an approved list of courses.

Coursework in accounting is recommended but not required. B.A. economics majors may choose to focus their major electives to satisfy the requirements of one of the three options defined by the Department of Economics.

## Student Learning Outcomes

- Students have core proficiency in microeconomics. They understand key concepts including opportunity cost, marginal analysis, voluntary exchange, diminishing marginal returns, equilibrium and market structure.
- Students have core proficiency in macroeconomics. They understand key concepts including GDP, inflation, interest rates, business cycles, exchange rates, financial institutions and fiscal and monetary policy.

- Students have strong oral communication skills. This includes fundamental skills in preparing and delivering presentations, as well as being able to explain technical material clearly and concisely.
- Students are able to use economic models to understand real-world issues relevant to business, public policy and society.
- Students are able to communicate economic concepts clearly in writing. This involves having strong fundamental writing skills as well as being able to explain technical material clearly and concisely.

## Economics Major: Global Trade and Finance Option (B.A.)

<https://paulcollege.unh.edu/economics/program/ba/economics-major-global-trade-finance-option>

## Description

**The Option in Global Trade and Finance** (B.A. degree) studies the global trade and financial systems and their importance for understanding macroeconomics and business activity, foreign direct investments and other international capital flows, globalization, economic growth and development, international financial markets, and currency fluctuations and risk.

Students will learn about the role of the World Trade Organization (WTO), the International Monetary Fund (IMF), and other institutions undergirding the global economy. Students will develop institutional knowledge and analytical skills to study some of the most hotly debated issues of our day, including free-trade policies such as the North American Free Trade Agreement (NAFTA) and WTO, global financial crises, Basel III and other financial reforms, European monetary union, and international policy coordination.

The option is designed for students interested in careers at international organizations such as the IMF, WTO, World Bank, and Organization for Economic Cooperation and Development (OECD). This option also prepares students for careers in the financial services sector, including commercial and investment banking, financial trading, security analysis, portfolio management, and financial advising, and in the government sector, especially at the Federal Reserve System, U.S. Trade Administration, and U.S. State Department.

## Requirements

### Economics Major (B.A.)

B.A. economics majors must complete nine courses in economics plus ADMN 510 Business Statistics with a grade of at least C- (1.67) in each Paul College major course and an average grade of 2.0 or better in major courses.

Code	Title	Credits
<b>Freshman Year</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
ECON 501	Business and Economic History	4
ADMN 403	Computing Essentials for Business	1
MATH 422 or MATH 424A	Mathematics for Business Applications Calculus for Social Sciences	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1

PHIL 431	Business Ethics	4
<b>Sophomore Year</b>		
ADMN 510	Business Statistics	4
ECON 605	Intermediate Microeconomic Analysis	4
or ECON 606	Intermediate Microeconomics with Calculus	
ECON 611	Intermediate Macroeconomic Analysis	4
<b>Junior and Senior Years</b>		
ECON 774	Senior Economics Seminar <sup>1</sup>	4
Select four (4) additional ECON electives <sup>2</sup>		16
<b>Total Credits</b>		<b>55</b>

<sup>1</sup> ECON 774 Senior Economics Seminar is the capstone course for the B.A. major and satisfies the capstone requirement of the University Discovery Program.

<sup>2</sup> Specific electives for the BA Options must be chosen from an approved list of courses.

Coursework in accounting is recommended but not required. B.A. economics majors may choose to focus their major electives to satisfy the requirements of one of the three options defined by the Department of Economics.

## Global Trade and Finance Option Requirements

(Note: Some courses may have prerequisites that are not part of the option.)

Code	Title	Credits
<b>Required courses:</b>		
ECON 645	International Economics	4
<b>Select two of the following (at least one course must be an ECON course):</b>		<b>8</b>
ECON 635	Money and Banking	
ECON 655	Innovation in the Global Economy	
ECON 668	Economic Development	
ECON 726	Introduction to Econometrics	
ECON #746	International Finance	
FIN 703	International Financial Management	
POLT 546	Wealth and Politics in Asia <sup>1</sup>	
POLT #561	Introduction to International Political Economy <sup>1</sup>	
GEOG 582	Global Trade and Local Development <sup>1</sup>	
Other 600-level or 700-level course, must be approved by ECON department		
<b>Total Credits</b>		<b>12</b>

<sup>1</sup> Satisfies the requirement of the option, but does not count toward the four-elective requirement of the economics B.A. degree.

## Student Learning Outcomes

- Students have core proficiency in microeconomics. They understand key concepts including opportunity cost, marginal analysis, voluntary exchange, diminishing marginal returns, equilibrium and market structure.
- Students have core proficiency in macroeconomics. They understand key concepts including GDP, inflation, interest rates, business cycles, exchange rates, financial institutions and fiscal and monetary policy.
- Students have strong oral communication skills. This includes fundamental skills in preparing and delivering presentations, as well as being able to explain technical material clearly and concisely.
- Students are able to use economic models to understand real-world issues relevant to business, public policy and society.

- Students are able to communicate economic concepts clearly in writing. This involves having strong fundamental writing skills as well as being able to explain technical material clearly and concisely.

## Economics Major: Money and Financial Markets Option (B.A.)

<https://paulcollege.unh.edu/economics/program/ba/economics-major-money-financial-markets-option>

### Description

The **Option in Money and Financial Markets** (B.A. degree) explores the complex and interdependent nature of money and financial markets. Students will develop institutional knowledge and analytical skills to understand the role of the financial system in society, fluctuations and risk in asset markets, including those for bonds, stocks, and currency, and how financial derivatives, such as futures, options, and swaps contracts, can be used to hedge risk. Students will also study the conduct and implications of monetary policy, exploring the merits of quantitative easing, macroprudential policy aimed at reducing systemic risk, and other key issues involving the role of the state in the financial system.

The option is designed for students wanting careers in the financial services sector, including commercial and investment banking, financial trading, security analysis, portfolio management, and financial advising, and in the government sector, especially at the Securities and Exchange Commission (SEC), and the U.S. departments of Treasury, Commerce, and State.

### Requirements

## Economics Major (B.A.)

B.A. economics majors must complete nine courses in economics plus ADMN 510 Business Statistics with a grade of at least C- (1.67) in each Paul College major course and an average grade of 2.0 or better in major courses.

Code	Title	Credits
<b>Freshman Year</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
ECON 501	Business and Economic History	4
ADMN 403	Computing Essentials for Business	1
MATH 422	Mathematics for Business Applications	4
or MATH 424A	Calculus for Social Sciences	
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PHIL 431	Business Ethics	4
<b>Sophomore Year</b>		
ADMN 510	Business Statistics	4
ECON 605	Intermediate Microeconomic Analysis	4
or ECON 606	Intermediate Microeconomics with Calculus	
ECON 611	Intermediate Macroeconomic Analysis	4
<b>Junior and Senior Years</b>		
ECON 774	Senior Economics Seminar <sup>1</sup>	4
Select four (4) additional ECON electives <sup>2</sup>		16
<b>Total Credits</b>		<b>55</b>

<sup>1</sup> ECON 774 Senior Economics Seminar is the capstone course for the B.A. major and satisfies the capstone requirement of the University Discovery Program.

<sup>2</sup> Specific electives for the BA Options must be chosen from an approved list of courses.

Coursework in accounting is recommended but not required. B.A. economics majors may choose to focus their major electives to satisfy the requirements of one of the three options defined by the Department of Economics.

## Money and Financial Markets Option Requirements

(Note: Some courses may have prerequisites that are not part of the option.)

Code	Title	Credits
Required course:		
ECON 635	Money and Banking	4
Select two of the following (at least one course must be an ECON course):		8
ECON 633	Microfinance	
ECON 645	International Economics	
ECON 726	Introduction to Econometrics	
ECON #746	International Finance	
FIN 702	Investments Analysis (by permission only) <sup>1</sup>	
FIN 703	International Financial Management (by permission only) <sup>1</sup>	
FIN 705	Financial Institutions (by permission only) <sup>1</sup>	
Other 600-level or 700-level course, must be approved by ECON Dept.		
Total Credits		12

<sup>1</sup> Satisfies the requirement of the option, but does not count toward the four-elective requirement of the economics B.A. degree. FIN courses have a pre-requisite of ADMN 570 Introduction to Financial Management.

## Student Learning Outcomes

- Students have core proficiency in microeconomics. They understand key concepts including opportunity cost, marginal analysis, voluntary exchange, diminishing marginal returns, equilibrium and market structure.
- Students have core proficiency in macroeconomics. They understand key concepts including GDP, inflation, interest rates, business cycles, exchange rates, financial institutions and fiscal and monetary policy.
- Students have strong oral communication skills. This includes fundamental skills in preparing and delivering presentations, as well as being able to explain technical material clearly and concisely.
- Students are able to use economic models to understand real-world issues relevant to business, public policy and society.
- Students are able to communicate economic concepts clearly in writing. This involves having strong fundamental writing skills as well as being able to explain technical material clearly and concisely.

## Economics Major: Public Policy and Sustainability Option (B.A.)

<https://paulcollege.unh.edu/economics/program/ba/economics-major-public-policy-sustainability-option>

### Description

The Option in Public Policy and Sustainability (B.A. degree) examines the factors that influence economic, social, and environmental outcomes, such as unemployment, poverty, economic inequality, health disparities, technological innovation, and pollution. Students will develop the institutional knowledge and theoretical perspective to understand the impact that decisions of individuals, firms, communities, and governments have on such outcomes. Students will analyze the impact of specific government policies and potential reforms, theoretically and empirically.

This option is designed for students seeking careers in policy analysis and research positions at government agencies; think tanks such as RAND Corporation, Urban Institute, and Mathematica Policy Research; consulting firms such as Abt Associates; and non-governmental organizations.

### Requirements

## Economics Major (B.A.)

B.A. economics majors must complete nine courses in economics plus ADMN 510 Business Statistics with a grade of at least C- (1.67) in each Paul College major course and an average grade of 2.0 or better in major courses.

Code	Title	Credits
Freshman Year		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
ECON 501	Business and Economic History	4
ADMN 403	Computing Essentials for Business	1
MATH 422 or MATH 424A	Mathematics for Business Applications Calculus for Social Sciences	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
PHIL 431	Business Ethics	4
Sophomore Year		
ADMN 510	Business Statistics	4
ECON 605 or ECON 606	Intermediate Microeconomic Analysis Intermediate Microeconomics with Calculus	4
ECON 611	Intermediate Macroeconomic Analysis	4
Junior and Senior Years		
ECON 774	Senior Economics Seminar <sup>1</sup>	4
Select four (4) additional ECON electives <sup>2</sup>		16
Total Credits		55

<sup>1</sup> ECON 774 Senior Economics Seminar is the capstone course for the B.A. major and satisfies the capstone requirement of the University Discovery Program.

<sup>2</sup> Specific electives for the BA Options must be chosen from an approved list of courses.

Coursework in accounting is recommended but not required. B.A. economics majors may choose to focus their major electives to satisfy

the requirements of one of the three options defined by the Department of Economics.

## Public Policy and Sustainability Option Requirements

**Students must complete at least two required courses and at least three courses total. At least two courses must be ECON courses. (Note: Some courses may have prerequisites that are not part of the option.)**

Code	Title	Credits
<b>Required courses:</b>		
ECON 653	Law and Economics	4
or ECON 656	Labor Economics	
ECON 706	Economics of Climate Change	4
or EREC 572	Introduction to Natural Resource Economics	
<b>Select one of the following:</b>		<b>4</b>
ECON 625	Economic History of the United States	
ECON 633	Microfinance	
ECON 653	Law and Economics <sup>2</sup>	
ECON 654	Industrial Economics and Business Innovation	
ECON 656	Labor Economics <sup>2</sup>	
ECON 668	Economic Development	
ECON 706	Economics of Climate Change <sup>2</sup>	
EREC 572	Introduction to Natural Resource Economics <sup>1, 2</sup>	
EREC 606	Land Economics Perspectives: Uses, Policies, and Taxes <sup>1</sup>	
EREC 627	Community Economics <sup>1</sup>	
EREC 680	Agricultural and Food Policy <sup>1</sup>	
EREC 708	Environmental Economics <sup>1</sup>	
EREC 760	Ecological-Economic Modeling for Decision Making <sup>1</sup>	
GEOG 582	Global Trade and Local Development <sup>1</sup>	
HMP 746	Health Policy <sup>1</sup>	
SUST 501	Sustainability in Action <sup>1</sup>	
Other 600-level or 700-level course, with approval from ECON Dept.		
<b>Total Credits</b>		<b>12</b>

<sup>1</sup> Satisfies the requirement of the option, but does not count toward the four-elective requirement of the economics B.A. degree. Some courses may have pre-requisites; students are responsible for checking and meeting pre-requisite requirements.

<sup>2</sup> Course may not be used toward the option requirements more than once.

## Student Learning Outcomes

- Students have core proficiency in microeconomics. They understand key concepts including opportunity cost, marginal analysis, voluntary exchange, diminishing marginal returns, equilibrium and market structure.
- Students have core proficiency in macroeconomics. They understand key concepts including GDP, inflation, interest rates, business cycles, exchange rates, financial institutions and fiscal and monetary policy.
- Students have strong oral communication skills. This includes fundamental skills in preparing and delivering presentations, as well as being able to explain technical material clearly and concisely.
- Students are able to use economic models to understand real-world issues relevant to business, public policy and society.
- Students are able to communicate economic concepts clearly in writing. This involves having strong fundamental writing skills as well as being able to explain technical material clearly and concisely.

## Economics Minor

<https://paulcollege.unh.edu/economics/program/minor/economics>

### Description

Economics is a social science that studies how people coordinate their wants and desires, given the decision-making mechanisms, social customs, and political realities of the society. The key words in economics are coordination and incentives.

For business students, a minor in economics provides an understanding of the foundational issues in business such as agency concerns, for liberal arts majors a minor can provide a tool kit for understanding and critically evaluating public policy issues. Economics is an excellent background for many careers including banking and financial services, consulting, public service, NGOs, entrepreneurial ventures and government. It is also excellent preparation for further study in law, business, and international relations.

### Requirements

A minor in economics consisting of five courses is available. At least three of these courses must be taken at UNH. For more on the minor and options within the major, consult the Paul College Undergraduate Programs Office.

Code	Title	Credits
<b>Required courses:</b>		
ECON 401	Principles of Economics (Macro)	4
ECON 402	Principles of Economics (Micro)	4
<b>One of the following courses:</b>		<b>4</b>
ECON 605	Intermediate Microeconomic Analysis	
ECON 611	Intermediate Macroeconomic Analysis	
ECON 635	Money and Banking	
<b>Two electives from the following list:</b>		<b>8</b>
ECON 565	Predictive Modeling: Data Driven Economic Analysis	
ECON 605	Intermediate Microeconomic Analysis <sup>1</sup>	
ECON 611	Intermediate Macroeconomic Analysis <sup>1</sup>	
ECON 625	Economic History of the United States	
ECON 633	Microfinance	
ECON 635	Money and Banking <sup>1</sup>	
ECON 645	International Economics	
ECON 653	Law and Economics	
ECON 654	Industrial Economics and Business Innovation	
ECON 655	Innovation in the Global Economy	
ECON 656	Labor Economics	
ECON 668	Economic Development	
ECON 676	Economics of Sports	
ECON 706	Economics of Climate Change	
ECON 726	Introduction to Econometrics	
ECON #746	International Finance	
ECON 760	Game Theory	
ECON 620	Topics in Economics	
ECON 620W	Topics in Economics	
ECON 720	Economic Problems	
ECON 720W	Economic Problems	
Any 600 or 700 level ECON course		

<sup>1</sup> ECON 605, ECON 611, ECON 635, may only be applied towards the minor requirements once.



- Note that many of the elective courses have ECON 401 and ECON 402 as prerequisites.
- ECON 501 Business and Economic History cannot be used toward the minor.
- All transfer courses must be evaluated for equivalency. No more than 2 transfer courses may be applied to the minor.
- The ECON minor also follows UNH policy on requirements for minors.

## Entrepreneurship

- [Entrepreneurship Minor](#) (p. 374)

## Entrepreneurship Minor

<https://paulcollege.unh.edu/business-administration/program/minor/entrepreneurship>

### Description

The **Minor in Entrepreneurship** in the Peter T. Paul College of Business and Economics is for non-business majors. The minor provides non-business students with concepts, tools and techniques to become creative thinkers, conceptualize and articulate problem statements, construct innovative solutions, and explore and seek opportunities. The focus of the minor is not about creating startups, although this may be an ancillary outcome, rather on entrepreneurial thinking that make the students engage in successful careers in their respective disciplines.

The minor consists of three required courses offered by Paul and two courses from a selective list offered by the other UNH Colleges. The three Paul courses are designed to follow a proscribed sequence that take the student through the entrepreneurial process.

### Requirements

#### Entrepreneurship Minor

Code	Title	Credits
<b>Required Entrepreneurship sequence courses:</b>		
MGT 520	Topics in Management (Thinking like an Entrepreneur)	4
MKTG 520	Topics in Marketing (Understanding Your Customer)	4
DS 520	Topics in Decision Sciences (Realizing the Entrepreneurial Dream)	4
<b>Two courses from UNH Colleges (possible selections):</b>		<b>8</b>
HIST 522	Science in the Modern World	
HMP 721	Managing Health Care Organizations	
HMP 722	Health Care Management II	
RMP 775	Entrepreneurial and Commercial Recreation	
TECH 750	Intellectual Asset Management for Engineers and Scientists	

\*For other course options contact the Associate Dean for Undergraduate Education

Please note:

- The remaining two courses can be from Paul College or the student's home college, depending on suitability and availability of the courses as well as a student's interest to specialize in a specific area within the Minor, and subject to approval – please contact Undergraduate Programs and Advising Office to discuss approval process.
- Some of the listed courses are "special topics" (or equivalent). Please make sure that the course has the same title (not simply the same number) as the listed course in order for it to count for the minor.
- The Entrepreneurship Minor also follows UNH policy for minors

## Hospitality Management (HMGT)

The program in hotel and hospitality management is an integral part of the offerings of the Peter T. Paul College. It is one of only a few programs worldwide accredited by the Association to Advance Collegiate Schools of Business (AACSB). The hospitality management program at UNH provides a world-class education, personal attention and support, and real-world and international experience, setting students apart from the competition and ensuring they are well prepared for a successful and meaningful career.

The hospitality management program develops graduates to be senior executives. This is accomplished through personal attention and support, training on cutting-edge industry-specific software and technology, career development, mentoring and placement, and the network connection of seasoned alumni in top industry positions. Graduates have accepted management positions in lodging and resorts, food service beverage, event planning and design, software companies, tourism, travel and recreation, among the many potential opportunities.

An important aspect of the program is the required professional development, which includes practical work experiences, career development, mentoring, and placement, preparing students to be more competitive in the job market and for a successful and rewarding career. Employers look for individuals with relevant industry experience, and this is provided through the required 400 hours of an approved work experience.

The hotel and hospitality management program offers a wide range of international education options to study abroad. We have partnered with business schools in countries such as Spain, Australia, Croatia, United Kingdom, and Italy.

<https://paulcollege.unh.edu/hospitality-management>

### Programs

- [Hotel and Hospitality Management Major \(B.S.\)](#) (p. 374)
- [Hospitality Management Minor](#) (p. 376)

### Faculty

<https://paulcollege.unh.edu/directory/all>

## Hotel and Hospitality Management Major (B.S.)

<https://paulcollege.unh.edu/hospitality-management/program/bs/hospitality-management-major>

### Description

Hotel and Hospitality Management is more than an area of study; it's a way of life. At the second-oldest four-year degree program in the country you will study and work using state-of-the-art technology and facilities, receiving relevant industry certifications.

The Hotel and Hospitality Management program curriculum comprises foundation courses in hospitality management, business administration courses, and a number of University Discovery Program courses. A

wide range of elective courses complement the foundation courses. To graduate, students must obtain a 2.3 grade-point average in all major required courses and a minimum grade of C- in each Paul College major course. A student must have a minimum of 400-hours of on-the-job, paid work experience in the hospitality industry, earned through a structured paid internship.

## Requirements

A typical plan of study is as follows, showing the requirements of the program. Students complete 16-18 credits per semester, which includes major requirements, electives for the major, Discovery Program requirements, and free electives offered across the college and university.

## Hotel and Hospitality Management Degree Requirements

Code	Title	Credits
<b>Hotel and Hospitality Management (HMG) Core Courses:</b>		
HMG 401	Introduction to the Hospitality Industry	4
HMG 405	Introduction to Food and Service Management	4
HMG 554	Lodging Operations Management	4
HMG 618	Uniform Systems for the Hospitality Industry	4
HMG 635	Hospitality Human Resource Management	4
HMG 655	Hospitality Finance and Development	4
HMG 703	Strategic Management in the Hospitality Industry <sup>1</sup>	4
or HMG 667	Advanced Food & Beverage Operations & Event Management	
Three(3) HMG Elective Courses <sup>2</sup>		12
Four Hundred(400) hours - paid practicum hours through pre-approved work experiences		
<b>Required Courses (Non-HMG):</b>		
ADMN 403	Computing Essentials for Business	1
ADMN 502	Financial Accounting	4
ADMN 510	Business Statistics	4
ADMN 585	Marketing	4
MATH 422	Mathematics for Business Applications	4
ECON 401	Principles of Economics (Macro)	4
PAUL 405	Freshman Academic Experience I	1
PAUL 406	Freshman Academic Experience II	1
Two(2) BiP courses: PAUL 660, PAUL 670, PAUL 680, or PAUL 690 <sup>3</sup>		4
PAUL 690	BiP-Professional Intelligence Topics (HMG specific BiP course titled HMG: Prep for Success) <sup>4</sup>	2
PHIL 431	Business Ethics	4
One Non-HMG Elective Course (approved list below)		4
<b>Total Credits</b>		<b>77</b>

## Additional Tracks in Hotel and Hospitality Management

Students may decide to concentrate their electives in a particular area and select one of two tracks (see below), or may combine courses from the two tracks to fulfill the elective requirement.

### Food Service and Event Management Track

Code	Title	Credits
<b>Required for Track:</b>		
HMG 661	Event Design, Planning, and Management	4
HMG 667	Advanced Food & Beverage Operations & Event Management (capstone)	4
Select two(2) of the following courses:		8
HMG 570	International Food and Culture	
HMG 681	Contemporary Resort Development and Management	
HMG 771	International Wine and Beverage	
HMG 777	Casino Management	

### Hotel Administration and Analytics Track

Code	Title	Credits
<b>Required for Track:</b>		
HMG 703	Strategic Management in the Hospitality Industry (capstone)	4
HMG 758	Revenue Management and Pricing	4
Select two(2) of the following courses:		8
HMG 750	Advanced Operations Management	
HMG 798	Topics (Hospitality Asset and Financial Management)	
HMG 798	Topics (Hospitality Operations and Financial Metrics)	
FIN 708	Real Estate Finance	

### Approved Non-HMG Electives List <sup>6</sup>

Code	Title	Credits
ADMN 410	Management Information Systems	
ADMN 575	Behavior in Organizations	
CMN 500	Public Speaking	
ECOG 401	Introduction to Ecogastronomy	
ECON 402	Principles of Economics (Micro)	
ENGL 502	Professional and Technical Writing	
IA 401	International Perspectives	
MKTG 520	Topics in Marketing (Understanding Your Customer)	
MKTG 649	Foundations of Personal Selling	
MKTG 752	Marketing Research	
MKTG 753	Consumer/Buyer Behavior	
PSYC 401	Introduction to Psychology	
RMP 490	Recreation & Tourism in Society	
RMP 501	Recreation Services for Individuals with Disabilities	
RMP 661	Leadership in Recreation Services	
RMP 680	Festival and Event Planning	
SUST 401	Exploring Sustainability	
TOUR 400	Introduction to Tourism	
TOUR 510	Tourism and Global Understanding	

- <sup>1</sup> HMG degree students must take HMG 703 or HMG 667 as their capstone course.
- <sup>2</sup> Students can not include their elected Capstone course (HMG 703 or HMG 667) as one of their three HMG elective course requirements. It may only apply to one degree requirement.
- <sup>3</sup> Students may take any combination of four(4) credits of BiP intelligence attribute courses: PAUL 660, PAUL 670, PAUL 680 or PAUL 690, or any course that has an assigned BiP intelligence attribute (BIPS, BIPA, BIPC, BIPP).  
Student may not apply the required HMG- PAUL 690 BiP (HMG: Prep for Success) course to fulfill this requirement.
- <sup>4</sup> HMG students must take the HMG designated BiP Professional PAUL 690 (HMG: Prep for Success) course. Please check with the Paul Undergraduate Programs and Advising Office if you have questions.
- <sup>5</sup> Please note: HMG 798 Topics and MKTG 520 Topics in Marketing are topics course designations; you must register for the specific Topics Course Title designated in the catalog.
- <sup>6</sup> Some courses have pre-requisites or major restrictions on sections. Students are responsible for checking pre-requisites and section permissions.

## Student Learning Outcomes

- Students will demonstrate the ability to solve complex problems.
- Students will demonstrate knowledge of the core content areas of the hospitality industry.
- Students will demonstrate effective oral communication skills.
- Students will demonstrate effective written communication skills.

- Students will identify and understand the ethical dimensions and implications of business decisions.
- Students will demonstrate a global awareness of challenges facing hospitality businesses.
- Students will engage in effective team behaviors.

## Hospitality Management Minor

<https://paulcollege.unh.edu/hospitality-management/program/minor/hospitality-management>

### Description

**Hospitality Management Minor** is offered as a professional educational opportunity for students as an entree to the world's largest industry, hospitality and tourism. Students pursuing the minor will have opportunities to interview with major hospitality companies for staff and management training positions. In addition, students will be better able to secure meaningful working experiences in the industry during their college career as they progress towards the minor.

The minor is comprised of five required courses. The courses have been selected to ensure all students have a well-rounded learning experience that will strengthen their ability to succeed.

### Requirements

#### Hospitality Management Minor

A minor in hospitality management is comprised of three required and two elective courses.

Code	Title	Credits
Required Courses		
HMG 401	Introduction to the Hospitality Industry	4
HMG 405	Introduction to Food and Service Management	4
HMG 554	Lodging Operations Management	4
Select two elective courses from the list below.		8
HMG 520	Happy and Healthy at Work: Promoting Wellness, Diversity and Inclusion	
HMG 570	International Food and Culture	
HMG 635	Hospitality Human Resource Management	
HMG 667	Advanced Food & Beverage Operations & Event Management (by permission only)	
HMG 750	Advanced Operations Management (by permission only)	
HMG 771	International Wine and Beverage	
HMG 777	Casino Management	
HMG 798	Topics	
ECOG 401	Introduction to Ecogastronomy	
ACC 501	Survey of Accounting	
or ADMN 502	Financial Accounting	
MKTG 530	Survey of Marketing	
or ADMN 585	Marketing	
<b>Total Credits</b>		<b>20</b>

#### Practicum Requirement:

Students completing the minor will work at one of the Gourmet Dinner weekends. This will typically happen the semester HMG 405; Intro to Food and Service Management is taken.

Please note:

- MKTG 530 Survey of Marketing and ACC 501 Survey of Accounting are for the minor only; they do not carry credit toward Paul College majors.

- Following University policy, you must complete 20 semester hours with a grade of C- or better and a 2.0 grade point average.
- Courses taken on a Pass/Fail basis may not be used for the minor.
- No more than 8 credits used by the student to satisfy major requirements may be used for the minor.
- All transfer courses must be evaluated for equivalency. No more than 2 transfer courses may be applied to the minor.

## Leadership

- [Leadership Minor](#) (p. 376)

## Leadership Minor

<https://paulcollege.unh.edu/business-administration/program/minor/leadership>

### Description

**The Minor in Leadership** at Paul College was designed for students motivated by a deep sense of passion and purpose. This program energizes them to mobilize resources which enable people to successfully fulfill their roles and responsibilities in their organizations. The Leadership minor course of study will help you to develop your leadership identity and skills such as effective communicating, inspiring and developing people, and awakening passion in others for great accomplishments.

The Leadership program combines coursework from management and social sciences, along with an experiential learning requirement in leadership. The minor also allows students to pursue their leadership passions through the selection of two elective courses.

### Requirements

The Minor in Leadership consists of specified courses: two(2) required management courses, one(1) behavior/society course, two(2) elective courses, one(1) leadership experience. Requirements and specified course options to satisfy the minor are listed below.

#### Leadership Minor

Code	Title	Credits
<b>Two Required Management Courses</b>		
<b>Business Administration Majors Only:</b>		
ADMN 575	Behavior in Organizations	
MGT 713	Leadership Assessment and Development	
<b>Non-Business Administration Majors Only:</b>		
MGT 535	Organizational Behavior	
MGT 540	Leadership in the 21st Century	
<b>One of the following Behavior/Society courses:</b>		
POLT 550	Comparative Government and Society	
PSYC 552	Social Psychology	
SOC 450	Contemporary Social Problems	
WS 505	Survey in Women's Studies (Leadership for Social Change)	
<b>Two electives from the following courses:</b>		
AERO 671	Leading People and Effective Communication I	
AERO 672	Leading People and Effective Communication II	
CEP 415	Community Development Perspectives	
CEP 508	Applied Community Development	
CMN 500	Public Speaking	
CMN 598	Special Topics in Interpersonal Studies (Collaborative Leadership)	
HLS 510	Fundamentals of Emergency Management	

HLS 760	Strategic Planning and Decision Making
LLC 535A	Professional Culture in European Union - - Case Study: Germany
LLC 535B	Professional Culture in Latin America - Case Study: Mexico and Brazil
LLC #535C	Professional Culture in Asia – Case Study: China and Japan
MGT 640	Human Resource Management
MGT 642	Talent Acquisition
MGT 666	Judgment Days: Revelations for Negotiating in your Favor
MGT 714	Organizational Changemaker Skills
MILT 602	Leading Small Organizations II
MILT 611	Seminar on Leadership and Management I
OUT 551	Adventure Programming: Backcountry Based Experience
OUT 682	Experiential Teaching and Leadership
OUT 786	Organization and Administration of Outdoor Education Programs
PHIL 410	Happiness, Well-Being , and a Good Life
PSYC 553	Personality
RMP 661	Leadership in Recreation Services
RMP 663	Management and Finance in the Experience Industry
SOC 645	Class, Status and Power
RMP 593	Special Topics
SML 565	Principles of Coaching
SML 740	Athletic Administration
SML 765	Advanced Topics in Coaching
THDA 541	Arts Administration and Entrepreneurship
THDA 641	Stage Management
THDA 741	Directing
THDA 742	Directing II
WS 405	Gender, Power and Privilege
WS 796	Advanced Topics (Leadership for Social Change II)
Or, additional Behavior/Society Course from above	
Additional courses by petition	
<b>One required Leadership Experience from the following:</b>	
Orientation Leader	
Resident Assistant	
Spark Leader	
Teaching Assistant	
PAUL 660	BiP-Social Intelligence Topics (Leadership in Practice )
HHS 798	Special Topics (Student Development Peer Educator)
INCO 505B	Social Innovator's Toolbox
INCO #682	Washington Internship
INCO 795	Washington Center Course
AERO 301	Leadership Laboratory
AERO 541	Team and Leadership Fundamentals I
AERO 542	Team and Leadership Fundamentals II
JUST 410	Sexual Harassment and Rape Prevention (SHARPP) Peer Advocacy
MILT 401	Leadership Laboratory I
MILT 402	Leadership Laboratory II
PAUL 626	Supervised Student Teaching
PAUL 705	Supervised Student Teaching: Peer Advisor
RMP 593	Special Topics ( campus Recreation Applied Leadership)
Alternative leadership experience by petition	

Please note:

- You are responsible for checking pre-requisites for all courses listed
- Pre-requisites and permissions vary by course and department. Students are responsible for checking and meeting pre-requisite requirements. Some courses may be restricted to certain majors and require permission.
- All transfer courses must be evaluated for equivalency
- No more than 2 transfer courses may be applied to the minor
- Capacity in courses may be limited
- Several of the listed courses are "special topics" (or equivalent). Please make sure that the course has the same title (not simply the

same number) as the listed course in order for it to count for the minor.

- The Leadership Minor also follows UNH policy for minors

## Sales

- [Sales Minor](#) (p. 377)

## Sales Minor

<https://paulcollege.unh.edu/business-administration/program/minor/sales>

### Description

**Minor in Sales** – The modern sales professional helps customers solve business problems through active listening, insightful questions, deep empathy, domain competency, and the understanding and communicating of value. The Sales Minor will prepare you to start your career journey into sales by teaching you to sell yourself first and giving you the skills and experience to succeed in your first role. More college graduates will go into sales than any other profession. Why not be prepared and differentiate yourself for the best opportunities by earning a sales minor and developing skills that are transferrable to any profession.

### Requirements

The **Minor in Sales** is open to both Paul College and Non-Paul College students. Please reference the required courses depending on college. The minor consists of three required courses (marketing, sales level-one, sales level-two), two elective courses, and one sales experience. Please contact the Paul College Undergraduate Advising and Programs Office for an up-to-date list of approved elective courses or sales experiences.

## Non-Paul Students – Sales Minor Requirements

Code	Title	Credits
<b>Required Courses:</b>		
MKTG 530	Survey of Marketing	4
MKTG 649	Foundations of Personal Selling	4
MKTG 689	Advanced Sales	4
<b>One Sales Experience: <sup>1</sup></b>		
MKTG 650	Professional Sales Group	
Or qualifying sales internship		
<b>Two Electives from approved list (below)</b>		<b>8</b>

## Paul Student – Sales Minor Requirements

Code	Title	Credits
<b>Required Courses:</b>		
ADMN 585	Marketing	4
MKTG 649	Foundations of Personal Selling	4
MKTG 689	Advanced Sales	4
<b>One Sales Experience: <sup>1</sup></b>		
MKTG 650	Professional Sales Group	
or qualifying sales internship		
<b>Two Elective Courses from approved list (below)</b>		<b>8</b>

<sup>1</sup> **Sales Experience** (1 required):

MKTG 650 Professional Sales Group minimum of two semesters of the 2-credit course, PAUL 795 Internship or internship experience approved by Director, Sales Center.

Please note:

- You are responsible for checking pre-requisites for all courses listed
- All transfer courses must be evaluated for equivalency
- No more than 2 transfer courses may be applied to the minor
- Capacity in courses may be limited
- Some of the listed courses are "special topics" (or equivalent). Please make sure that the course has the same title (not simply the same number) as the listed course in order for it to count for the minor.
- The Sales Minor also follows UNH policy for minors

## Sales Minor – Approved Elective List

Code	Title	Credits
<b>College of Engineering &amp; Physical Sciences</b>		
CS 408	Living in a Networked World: The Good, the Bad, and the Ugly	
CS 501	Professional Ethics and Communication in Technology-related Fields	
IT 403	Introduction to Internet Technologies	
IT 705	Project Management for Information Technology	
TECH 750	Intellectual Asset Management for Engineers and Scientists	
<b>College of Liberal Arts</b>		
CMN 500	Public Speaking	
CMN 504	Introduction to Argumentation	
CMN 572	Analysis of Language and Social Interaction	
CMN 588	Analyzing Institutional Interaction	
CMN 666	Conversation Analysis	
CMN 742	Dialogue and Teamwork	
CMN 788	Opening Everyday Interaction	
ENGL #415E	Literature and Cyberculture	
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
ENGL 602	Advanced Professional and Technical Writing	
ENGL 712	Multimedia Storytelling	
PHIL 412	Beginning Logic	
PHIL #440	Just Business: The Ethics of Markets and Money	
PHIL #444A	Who Am I? Concepts of Self	
POLT 500	American Public Policy	
POLT 760	Theories of International Relations	
POLT 778	International Organization	
PSYC 513	Cognitive Psychology	
PSYC 552	Social Psychology	
PSYC 553	Personality	
THDA 442	Introduction to the Art of Acting	
THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	
THDA 541	Arts Administration and Entrepreneurship	
<b>College of Life Sciences</b>		
CEP 672	Fundamentals of Real Estate	
EREC 627	Community Economics	
TOUR 510	Tourism and Global Understanding	
<b>College of Health and Human Services</b>		
HMP 735	Social Marketing	
HMP 740	Health Care Financial Management	
HMP 741	Health Care Financial Management II	
OUT 444A	Risk and the Human Experience	
RMP 559	Marketing the Recreation Experience	
RMP 560	Recreational Sport Management	
RMP 661	Leadership in Recreation Services	
RMP 663	Management and Finance in the Experience Industry	
RMP 680	Festival and Event Planning	
RMP 775	Entrepreneurial and Commercial Recreation	
SML 560	Sport Psychology	
SML 564	Introduction to Sport Marketing	

SML 630	Sport Facility and Event Management
SML 643	Social Media Marketing in Sport
<b>Paul College of Business and Economics</b>	
ADMN 575 or MGT 535	Behavior in Organizations Organizational Behavior
ECON 605	Intermediate Microeconomic Analysis
HMG 758	Revenue Management and Pricing
<b>Military Science</b>	
MILT 601	Leading Small Organizations I
MILT 602	Leading Small Organizations II
Additional Course Petitions are subject to review/approval by Sales Minor Coordinator	

## Tourism Management

- [Tourism Management Minor](#) (p. 378)

## Tourism Management Minor

### Description

"Tourism" is the world's largest and most diverse industry. Tourism is a composite of activities, services, and industries delivering travel experiences through transportation, accommodations, eating and drinking establishments, shops, entertainment, activity facilities (parks, sports, and amusement parks), historic sites, natural resources, among others.

The faculty of Recreation Management and Policy [RMP], Hospitality Management [HMG], and Natural Resources and the Environment [NRE] Tourism [Tour] have bundled a number of courses for non-majors which, when combined with certain elective courses, can constitute a Minor in Tourism Management. Each of the courses offered for this minor are already offered in each of the three departments. These programs represent the three Colleges of College of Health and Human Services, Peter T. Paul College of Business and Economics, and the College of Life Science and Agriculture.

**Questions about the minor may be directed to:**

Recreation Management and Policy – Dr. Bob Barcelona, [Bob.Barcelona@unh.edu](mailto:Bob.Barcelona@unh.edu)

Tourism Management – Dr. Rob Robertson, [Rob.Robertson@unh.edu](mailto:Rob.Robertson@unh.edu)

Hospitality Management – Dr. Markus Schuckert, [Markus.Schuckert@unh.edu](mailto:Markus.Schuckert@unh.edu) ([markus.schuckert@unh.edu](mailto:markus.schuckert@unh.edu))

Approval of the Minor for Graduation, verification and sign-off must be coordinated with Dr. Rob Robertson.

### Requirements

Code	Title	Credits
<b>Required Courses</b>		
TOUR 400	Introduction to Tourism	4
HMG 401	Introduction to the Hospitality Industry	4
RMP 490	Recreation & Tourism in Society	4
The remaining two courses for the minor may be used to focus your study in an area of interest. One course must be and experiential learning course. Areas of interest, with sample course, include:		8
<b>Lodging and Resort Management:</b>		
HMG 681	Contemporary Resort Development and Management	
HMG 570	International Food and Culture <sup>1</sup>	
HMG 554	Lodging Operations Management	
HMG #682	Private Club Management	
RMP 775	Entrepreneurial and Commercial Recreation <sup>1</sup>	
TOUR 767	Social Impact Assessment	



## Event Planning and Management:

HMG 661	Event Design, Planning, and Management
RMP 680	Festival and Event Planning
RMP 560	Recreational Sport Management
TOUR 767	Social Impact Assessment

## International Travel and Tourism:

HMG 570	International Food and Culture <sup>1</sup>
TOUR 510	Tourism and Global Understanding <sup>1</sup>
EREC 444	The New Pirates of the Caribbean
ECOG 401	Introduction to Ecogastronomy
TOUR 767	Social Impact Assessment
HMG 756	International Franchising
RMP 711	Recreation Resource Management

**Total Credits****20**

<sup>1</sup> Identification of experiential learning courses.

Courses taken during study abroad maybe considered as part of the minor; prior approval of an advisor is required.

**Please Note:**

The courses may be taken in any order, and you are responsible for checking pre-requisites for the elective courses.

Following University policy, you must complete 20 semester hours with a grade of C- or better and a 2.0 grade point average.

Courses taken on a Pass/Fail basis may not be used toward the minor.

No more than 8 credits used by the student to satisfy major requirements may be used for the minor.

No transfer courses may be used toward the minor.

## Special University Programs

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## Domestic Study Programs

### National Student Exchange Program

The University offers many opportunities for exchange study with other institutions within the U.S. and U.S. territories. The National Student Exchange (NSE) program provides an educational experience at another member college or university, within North America. Participating students will develop new ways of viewing the country and culture, and expand their knowledge of our complex society.

Through the National Student Exchange, UNH students can study at one of more than 180 colleges and universities throughout the United States, U.S. territories (Guam, Puerto Rico, and U.S. Virgin Islands), and Canada. Several Historically Black Colleges and Universities (HBCUs) are exchange members, as are Hispanic Serving Institutions (HSIs), Asian American Native American Pacific Island Serving Institutions (AANAPISI), and Council of Public Liberal Arts Colleges (COPLAC). For a full list of participating campuses, visit [www.nse.org](http://www.nse.org).

To qualify for exchange study, students must be full-time undergraduate degree candidates in good standing, at least a 2.5 grade-point average, have earned at least 32 credits (16 of which must be from UNH at the baccalaureate level), have declared a major, and receive approval from the UNH NSE coordinator.

NSE participants pay their usual UNH tuition, and pay housing costs to the host campus, if they utilize their housing. Participation in an exchange program does not disrupt the continuity of a student's educational process. Exchange program participants continue to maintain their status as full-time, matriculated UNH students, even while temporarily located at another university. Students do not have to withdraw from UNH and later be readmitted. Maintaining UNH student status also facilitates reentry into classes, on-campus housing, and many other dimensions of University life. Students return to UNH to complete their studies.

Interested students should contact the Study Away USA/Global Education office Conant Hall 310, (603) 862-3485, [National.Student.Exchange@unh.edu](mailto:National.Student.Exchange@unh.edu) ([national.student.exchange@unh.edu](mailto:national.student.exchange@unh.edu)), or visit [www.unh.edu/nse](http://www.unh.edu/nse).

## New Hampshire Consortium (NHCUC) Student Exchange Program

Under the Student Exchange Program of the New Hampshire College and University Council (NHCUC), UNH students may be eligible to enroll

for one course per semester, one full semester of courses, or a full year of coursework at a member school on a space-available basis. The NHCUC exchange allows matriculated undergraduates to use educational resources that are not available at the home campus and are considered appropriate for their degree programs. Approval of the UNH academic adviser and exchange coordinator is required, and students must meet all UNH Study Away eligibility standards. Institutions in the NHCUC consortium include Colby-Sawyer College, Franklin Pierce University, Hellenic American University, New England College, Southern New Hampshire University, Rivier University, Saint Anselm College, UNH Durham, UNH Manchester, Keene State College, and Plymouth State University. Students will remain as degree candidates and continue to pay normal UNH tuition and fees, but must make their own room and board arrangements if they plan to spend a full semester at another consortium school. For more information and application forms, students should contact the Study Away USA/Global Education office, Conant Hall 310, (603) 862-3485.

## New England Land-Grant Exchange Program

In order to provide students at the New England land-grant universities with expanded access to unique programs and faculty expertise, the institutions have agreed to encourage student exchanges of one, but not more than two, semesters. To qualify, students must identify a course or combination of courses related to their area of academic interest and not available on their home campus, be degree candidates in good standing with at least a 2.5 grade-point average, be at least first-semester sophomores, and receive permission from the appropriate university exchange authorities at both the home and host institutions. Interested students should contact the Study Away USA/Global Education office, Conant Hall 310, (603) 862-3485.

## Semester in the City

UNH offers eligible undergraduate students the opportunity to spend a semester in Boston in a rigorous 30+ hour per week internship with a leading social change organization (nonprofit, business, or public sector).

Students are matched with internships in community development, social justice, health, education, environment, and other areas dedicated to the public good. This 16-credit study away program includes an intensive evening course that examines the theory and practice of various social change approaches, and a series of Friday seminars and reflective workshops, thereby equipping a new generation of leaders who understand both direct and systemic approaches to social and environmental change. Participants pay their UNH tuition, and pay housing costs to the host organization if they utilize their housing.

In order to apply, students should contact the UNH Changemaker Collaborative, 603.862.3697 or visit [www.unh.edu/semesterinthecity](http://www.unh.edu/semesterinthecity).

## The Washington Center for Internships & Academic Seminars

Since 1976, UNH has affiliated with The Washington Center (TWC), to offer a rigorous full-time substantive internship and academic opportunities in Washington, D.C. Students enroll in 16-credits in fall or spring semester, or 12-credits in summer. Students intern 32-35 hours per week, enroll in one upper-level evening course, and attend a professional development seminar and speaker series on Friday. There are countless internship and networking opportunities for all majors, including in the law, government, media, public policy, international

affairs, the environment, health care, law enforcement, and much more. Participants pay their UNH tuition, and pay housing costs to The Washington Center, if they utilize their housing.

In order to apply, students must meet all UNH Study Away Eligibility Requirements including but not limited to being full-time undergraduate degree candidates in good standing with at least a 2.5 grade-point average (above 2.75 is strongly preferred). Interested students should contact the Study Away USA/Global Education office, Conant Hall 310, (603) 862-3485 or visit [www.unh.edu/washington](http://www.unh.edu/washington).

## Fellowship Office

The UNH Office of National Fellowships provides information, counseling, and editorial support to highly motivated and high-achieving students applying for national and international fellowships and scholarships. The office also assists faculty members who serve as mentors and recommenders, and arranges for members of the faculty to take part in interviews and serve on screening committees.

In recruiting, advising, and supporting students who excel in various areas, the office collaborates campus-wide with other offices and departments of the University, including the Beauregard Center, the McNair program, the Honors Program, the Global Education Center, and the Hamel Center for Undergraduate Research, in support of the University's Academic Plan.

The services of the Fellowships Office are available to undergraduates, graduate students, and alumni of the University. The Office of National Fellowships holds membership in the National Association of Fellowships Advisors. For more information, please contact [Jeanne Sokolowski](mailto:Jeanne.Sokolowski@unh.edu) ([Jeanne.Sokolowski@unh.edu](mailto:Jeanne.Sokolowski@unh.edu)), director, Office of National Fellowships Office, Conant 118A; (603) 862-0733.

## Hamel Center for Undergraduate Research

[www.unh.edu/undergrad-research/](http://www.unh.edu/undergrad-research/)

The **Hamel Center for Undergraduate Research** encourages students to design and carry out research, scholarly, or creative projects in collaboration with faculty mentors. To facilitate this, the Hamel Center offers a variety of competitive research awards and fellowships specifically for undergraduate students. Research may take place during the academic year, January term, or over the summer, with a wide range of programs available to suit each student's particular needs:

- **Research Experience and Apprenticeship Program (REAP)** offers high-achieving students the opportunity to apprentice with a UNH faculty mentor for ten weeks of full-time research in the summer after their first year.
- **Undergraduate Research Awards (URAs)** are available each semester (including January Term and summer) for students at all levels: first year through senior year. The research time commitment is flexible.
- **Summer Undergraduate Research Fellowships (SURFs)** for the U.S. offer support for ten weeks of full-time research in the summer following sophomore or junior year.
- **SURF Abroad and the International Research Opportunities Program (IROP)** offer support for rising seniors to conduct nine weeks of full-time summer research abroad.
- Also, by registering for INCO 590 Student Research Experience or INCO 790 Advanced Research Experience, students

at any level can work directly with faculty members while receiving academic credit and support for research expenses.

Once projects are completed, student researchers may receive further support from a [Research Presentation Grant](#) to present their work at a national or international conference. Students may also publish their research findings in UNH's online undergraduate research journal, [Inquiry](#) and/or present their research at UNH's [Undergraduate Research Conference \(URC\)](#).

**Hamel Center research opportunities are available to students across ALL disciplines.**

By conducting research at the undergraduate level, students gain professional skills, hands-on experience, and the opportunity to present and publish their findings in professional venues. Awards from the Hamel Center for Undergraduate Research open doors on real-world disciplinary practice, graduate school, post-baccalaureate fellowships, and professional careers. For information about undergraduate research awards and programs, the *Inquiry* journal, or the URC, contact the Hamel Center for Undergraduate Research at 118 Conant Hall, (603) 862-4323, or visit the website at [www.unh.edu/undergrad-research](http://www.unh.edu/undergrad-research).

## Health Professions Program

### Description

*Offered in Durham and Manchester.*

### WHAT IS THE HEALTH PROFESSIONS Continuing Education Program?

UNH's Health Professions Continuing Education Program, offered at both our Durham and Manchester campuses, is designed for individuals who have earned a bachelors from an accredited college or university but need to complete the prerequisite requirements for admission to a professional healthcare program. Some individuals may need to enhance their existing academic record by retaking some or all their prerequisite coursework to increase the competitiveness of their application. Other individuals may want to change careers and need to complete all their prerequisite coursework.

### WHY COMPLETE YOUR Program AT UNH?

You will complete a rigorous academic program and engage in hands-on learning through fieldwork supported by our state-of-the-art facilities. Our Pre-Professional Health Advising Office helps students interested in pursuing professional degrees make the right academic and extracurricular choices to prepare for the extremely competitive application process. Students who participate in the Health Professions Continuing Education Program will be provided with personalized advising from the Pre-Professional Health Programs Advisor to assist in course registration, answer questions about the application process, review application documents, and navigate other admissions requirements.

### WHAT CLASSES DO I NEED TO COMPLETE?

While most professional programs require similar courses, the classes you need to take depend on the type of program you are planning to apply to in the future. It also depends on what type of student you are.

Record enhancers may want to retake all their prerequisite courses to improve upon their grades or only retake the classes where they earned below B. Career changers, who may have taken some of the non-science

prerequisite courses, may want to retake these courses if they are over 5 years old.

Most students apply to medical, dental, and physician assistant programs; the commonly required courses are listed below:

Code	Title	Credits
<b>Medical &amp; Dental</b>		
BIOL 411 or BIOL 413	Introductory Biology: Molecular and Cellular Principles of Biology I	4
BIOL 412 or BIOL 414	Introductory Biology: Evolution, Biodiversity and Ecology Principles of Biology II	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
English - one year		8
Psychology - one semester		4
Sociology - one semester		4
Statistics		4
Calculus		4
<b>Physician Assistant</b>		
BIOL 411 or BIOL 413	Introductory Biology: Molecular and Cellular Principles of Biology I	4
BIOL 412 or BIOL 414	Introductory Biology: Evolution, Biodiversity and Ecology Principles of Biology II	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BMS 507	Human Anatomy and Physiology I	4
BMS 508	Human Anatomy and Physiology II	4
Psychology - one semester		4
Statistics - one semester		4

## Honors Program

The University Honors Program (UHP), established by the Academic Senate in 1983, recognizes the achievements and capabilities of outstanding students. The program enriches undergraduate education by offering a personal, intensive approach to learning through small classes, engaged scholarship, and individualized collaborations with faculty.

There are various categories of Honors recognition awarded at graduation. The four-year University Honors curriculum is comprised of Discovery Honors courses plus either Departmental or Interdisciplinary Honors experiences. Departmental Honors is a two-year curriculum of enriched work in an academic department, and can be pursued either as a part of the University Honors Program or on its own. Interdisciplinary Honors is made up of three high-impact academic experiences plus a thesis. No award is given for completion of Discovery Honors courses alone; either Departmental Honors or Interdisciplinary Honors work is required to graduate with University Honors.

## Admissions

The Office of Admissions identifies a number of qualified incoming first-year students to be admitted to the Honors Program. Transfer students are also reviewed by the Admissions office for invitation to the Honors Program. After matriculating at UNH, first-years whose grades are in the top 10% of their year in each college are invited to join the program in

January. Students may also petition to join the program if they have a GPA of at least 3.5. Admission to Departmental Honors is determined by each department; many require no invitation or application.

## Required courses and experiences

- Discovery-level honors courses (16 credits)
  - At least 8 credits (usually 2 courses) must be Honors Seminars. Qualifying Honors Seminars have a cap of no more than 20 students, and use discussion as the primary mode of in-class instruction.
  - For the remaining 8 credits, students may choose any Honors course at the 400 or 500 level.
  - At most one course may be a self-designated Honors course, in which students create their own Honors course in collaboration with a faculty member. Self-designated courses will not count toward the honors seminar requirement.
- Departmental Honors OR Interdisciplinary Honors
  - Departmental Honors requirements differ by major.
  - Interdisciplinary Honors requires three approved high-impact academic experiences.
- Honors Thesis of at least 4 credits
  - Students must register for an Honors Thesis course of at least 4 credits supervised by a faculty member.
  - A grade of B or better is required for the Honors Thesis.

## Registering for Honors Discovery Courses

Honors courses can be found on the course schedule by selecting the attributes "Honors Courses" and "All Discovery Courses." Enrollment in these courses is restricted to members of the University Honors Program. Students who are not members of the University Honors Program, but who wish to take an Honors course, may email [honors.program@unh.edu](mailto:honors.program@unh.edu) to request permission.

## Departmental Honors

Currently, there are more than 50 different departments from all five of the University's undergraduate schools and colleges offering departmental honors programs. Academic work for Departmental Honors usually requires a minimum of 16 credits, at least four of which will be devoted to a senior thesis project. Students should familiarize themselves with their department's requirements and should meet with their departmental honors liaison.

## Interdisciplinary Honors

Interdisciplinary Honors recognizes students who seek academic experiences that extend beyond their course curricula. The distinction is earned by completing three approved high-impact academic experiences as well as a thesis.

Approved high-impact experiences that count toward Interdisciplinary Honors include:

- Study abroad in a UNH managed, exchange, or approved program of at least 8 weeks
- Completing the application process for a major national fellowship
- An IROP, SURF, or other approved research experience
- Named co-authorship on a publication in a peer-reviewed journal
- A presentation at a regional or national academic conference
- A UNH Sustainability Fellowship

- Study away at the Washington Center or Semester in the City
- Participation in the McNair Scholars Program (multiple high-impact experiences may be completed within the program)
- Participation in the NH Epscor Biomade URT Program
- Completing INCO 529 and serving as a Connors Writing assistant for one academic year
- Completing INCO 620: Facilitating Deliberative Democracy
- Other approved high-impact experience (by proposal)

Students should consult with Honors Program advisers before the beginning of Junior year to decide which track they will pursue.

## GPA minimum

Members entering in or after the Fall of 2017 must maintain a GPA of 3.2 in the Freshman year and 3.5 thereafter. Students who do not reach the required GPA by the end of each academic year will be notified and offered an opportunity to petition to remain in the program. Students must meet the required GPA in order to graduate with University Honors.

More information is available at the [University Honors Program](https://www.unh.edu/honors/) website. You may also email [honors.program@unh.edu](mailto:honors.program@unh.edu), call (603) 862-3928, or visit Conant Hall, Suite 115.

<https://www.unh.edu/honors/>

## Marine Policy Minor

<https://marine.unh.edu/marine-policy-minor>

### Description

Effective management of human activities in ocean, coastal, and Great Lakes areas is critical to our future. Effective management of human activities in ocean, coastal, and Great Lakes areas is critical to our future.

For more information contact Professor, Gregg Moore, (603)862-5138.

### Requirements

1. The minor requires five courses for a total of 20 credits.
2. Minimum of C- grade earned in each course.
3. No more than 8 credits in the Major can be counted toward the minor.

Code	Title	Credits
<b>Required</b>		
MARI 705	Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy	3
Select two courses from the following:		
MARI 405	Introduction to Marine Mammal Science and Policy	3
CEE 520	Environmental Pollution and Protection: A Global Context	0 or 4
CEE 705	Introduction to Sustainable Engineering	3
MEFB #507	Examining Marine Climate Changes on Appledore Island, ME	2
MEFB 702	Sustainable Marine Fisheries	4
NR 437	Principles of Sustainability	4
NR 602	Natural Resources and Environmental Policy	4
NR #701	Ecological Sustainability and Values	4
NR 720	International Environmental Politics and Policies for the 21st Century	4
NR 754	Critical Issues in Sustainability: Sense of Place	2
NR 786	Leadership for Sustainability	4
PHIL 450	Environmental Ethics	4
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	4

POLT #444	Politics and Policy in a Warming World	4
Select at least one course from the following:		
ESCI 501	Introduction to Oceanography	4
ESCI 502	Beaches and Coasts	4
MEFB 503	Introduction to Marine Biology	0 or 4
MEFB 535	Marine Mammal Biology	4
MEFB 674	Ecology and Marine Environment	4
MEFB 725	Marine Ecology	4
OE 521	Power of the Sea: Scientific Discovery in the Ocean	4
Additional approved courses:		
ME 706	Renewable Energy: Physical and Engineering Principles	3
NR 403	Introduction to Environmental Science	4
NR 435	Contemporary Conservation Issues and Environmental Awareness	4
NR 784	Sustainable Living - Global Perspectives	4
NR 785	Systems Thinking for Sustainable Solutions	4
NR 795	Investigations	1-4
POLT 751	Comparative Environmental Politics and Policy	4
SOC 565	Environment and Society	4
SOC 665	Environmental Sociology	4

## Pre-law Advising

The faculty and staff advisors of the UNH Pre-law Advising Committee work closely with students and alumni to identify interests and explore opportunities within legal education. The committee helps students undertake the best possible preparation for legal education while also bringing the excitement of law to UNH students. The committee achieves this goal through careful consideration of the American Bar Association's (ABA) statement on preparation for legal education (found on the web at [www.americanbar.org/groups/legal\\_education/resources/pre\\_law.html](http://www.americanbar.org/groups/legal_education/resources/pre_law.html)).

In that statement, the ABA explains why no single major or course is required or recommended for students wishing to explore or prepare for legal study. The ABA does, however, describe certain skills and values that are essential to success in law school and to life as a lawyer. These include analytic and problem solving skills, critical reading abilities, writing skills, oral communication and listening abilities, general research skills, task organization and management skills, and the values of serving others and promoting justice.

Pre-law Advising implements the ABA statement by working with student interests and strengths to select UNH courses, internships, leadership opportunities, and experiences that will develop those skills and values. Programmatically, the committee offers individual appointments, sponsors visits to local law schools, and organizes discussions with law school students, admission and financial aid representatives, and with members of the legal community. The committee also provides advising support for LSAT preparation, law school search, writing personal statements, and the application and selection processes.

The Pre-law Advising Office is located in 110 Murkland Hall. Register with the [Pre-Law Office](https://cola.unh.edu/academics/pre-law-advising/schedule-appointment). Additional information is available at <https://cola.unh.edu/academics/pre-law-advising/schedule-appointment>.

## Accelerated Academic Programs

UNH offers two accelerated programs that allow students to earn both a bachelor's degree and a law degree at UNH in six years instead of seven:

- [English Major: Law 3+3 Option](#)
- [History Major: Law 3+3 Option](#)



## Pre-Professional Health Advising

The Pre-Professional Health Programs Advising Office in Rudman Hall provides advising for all students preparing for postgraduate careers in medicine, dentistry, chiropractic, naturopathic medicine, optometry, pharmacy, physical therapy, and physician assistant programs. There is no pre-health major at UNH. Health professional graduate programs do not evaluate based on undergraduate major. Interested UNH students should register with the Pre-Professional Health Programs Advising Office online to be added to an email list and be kept informed of important events, opportunities, and deadlines regarding preparation for application.

*Identifying as a pre-health student at UNH consists of the following:*

1. *Taking the prerequisite courses for admission.* A list of the specific prerequisite courses for each intended health profession can be found on the UNH Pre-Health website.
2. *Gaining volunteer and healthcare experience.* Applicants to health professional programs will be expected to demonstrate a sustained involvement in volunteer and community service. It is also expected that applicants have shadowed healthcare providers. Many students volunteer in various healthcare settings and some students seek out licensure and certificates to provide hands-on patient care. These experiences often include working as an EMT, LNA/CNA, or phlebotomist.
3. *Preparing for entrance exams.* Many professional healthcare programs require their applicants to take a standardized entrance exam prior to matriculation. Students applying to medical school are required to take the MCAT exam. Students applying to dental programs are required to take the DAT. Student applying to optometry programs must take the OAT, and student applying to pharmacy programs must take the PCAT. The MCAT, DAT, OAT, and PCAT are standardized, comprehensive exams that test students' knowledge of biological and physical sciences as well as verbal reasoning and writing skills. Exams are usually taken once the student has completed prerequisite coursework. Students applying for physician assistant and physical therapy programs may be required to take the GRE, a more general exam similar to the SAT in structure and content.

## Application Process

The Pre-Professional Health Programs Advising Office works with the Pre-Professional Health Advisory Committee, a group of 12-15 UNH faculty members and local healthcare providers, to provide students with comprehensive, confidential evaluation services at the time of application. An application information meeting is held each fall to outline the application process and establish timetables and deadlines. Students should note that the medical and dental school application process begins a full two years before matriculation; e.g., in the fall of a student's junior year if they wish acceptance following graduation. However, a delay of a year or more between graduation and admission is neither unusual nor detrimental, and in many cases, students can use this time to improve their credentials by taking additional courses and/or gaining exposure to the profession.

It is important that students understand that in order to gain admission to a health professional program they must not only satisfy the prerequisite requirements, they must satisfy these requirements at a high level of achievement. The Pre-Professional Health Programs Advising Office can provide students with information on competitive GPA and

entrance exam scores for each of the postgraduate health professional programs.

The Pre-Professional Health Programs Advising Office is located in Rudman Hall and can be contacted by phone at (603) 862-3831 or by email at [Premed.Advising@unh.edu](mailto:Premed.Advising@unh.edu). The office also has a website at <https://colsa.unh.edu/academics/pre-professional-health-advising>.

## Reserve Officer Training Corps Programs (ROTC)

Students attending the University of New Hampshire may enroll in the **Air Force Reserve Officer Training Corps** (AFROTC) or in the **Army Reserve Officer Training Corps** (AROTC) at the University.

The Army ROTC and Air Force ROTC offer programs leading to a commission as a second lieutenant in their respective services. Students in either ROTC program may pursue any University curriculum that leads to a baccalaureate or higher degree.

Two- and four-year programs are available. The four-year program is open to freshmen, sophomores, and transfer students. The two-year program is open to students who have at least two academic years remaining in their college/university degree program. In addition to on-campus course requirements, students must attend an officer-preparatory training session for a part of one summer.

ROTC scholarships are offered on a competitive basis by both the Army ROTC and Air Force ROTC. Entering freshmen may compete for four-year scholarships during their last year of high school. Additionally, incoming students may compete for scholarships while already in college if they meet specific ROTC requirements. Scholarships may pay up to full tuition, mandatory fees, and required textbooks for college courses. Incoming students with either a four-year or three-year ROTC scholarship may receive a full or partial room and board grant for the entire time they are on an ROTC scholarship. In addition, all scholarship recipients receive a tax-free monthly subsistence allowance. Non-scholarship students in the last two years of the ROTC program also receive the tax-free monthly subsistence allowance.

Both ROTC programs have administrative and medical requirements, which must be met to qualify for a scholarship and a commission.

More specific information about ROTC programs may be obtained by contacting [Army ROTC](#) at (603) 862-1078 or [Air Force ROTC](#) at (603) 862-1480.

## Air Force Leadership Minor

### Description

1. Minimum GPA of 3.20 in Aerospace Studies courses.
2. Successful completion of 8 semesters of AERO 301<sup>1</sup>.
3. Held at least two semester-long leadership positions, one of which was a leadership position in the AFROTC Group.
4. Successful completion of Field Training.

## Requirements

Code	Title	Credits
<b>Required Courses</b>		
AERO 415	Heritage and Values of the United States Air Force I <sup>1</sup>	2
AERO 416	Heritage and Values of the United States Air Force II <sup>1</sup>	2
AERO 541	Team and Leadership Fundamentals I	2
AERO 542	Team and Leadership Fundamentals II	2
AERO 671	Leading People and Effective Communication I	4
AERO 672	Leading People and Effective Communication II	4
AERO 681	National Security Affairs/Preparation for Active Duty I	4
AERO 682	National Security Affairs/Preparation for Active Duty II	4
<b>Total Credits</b>		<b>24</b>

<sup>1</sup> The program often has National Guard or Reserve men and women join the program to transition onto active duty with a commission. Students with this status are exempt from the first year of ROTC requirements because they have already gained this experience during their time in service. As such, AERO 415, AERO 416, and two semesters of AERO 301 are waived for these students in the pursuit of the minor.

## Study Abroad Programs

<http://www.unh.edu/global/education-abroad>

The University offers opportunities for full-time degree candidates meeting eligibility criteria to pursue a wide variety of education abroad experiences, including study, intern, service and research in many countries around the world. UNH-managed and exchange study programs are described in this section. Students may study abroad in other locations through UNH-approved programs by using the intercollegiate option (INCO). All students who study abroad pay a study abroad administration fee and an international travel insurance fee. For more information, contact the Global Education Center, (603) 862-2398 or visit <http://www.unh.edu/global/education-abroad> or the department identified in the UNH-managed program descriptions.

## Belize

### UNHM BSCI 620 Global Science Exploration

This 4-credits course includes a spring break trip to Belize investigating living organisms in their natural habitat. Students will participate in pre-trip seminars on the country, local flora, fauna and habitats they will visit. Students will design a project to integrate their personal interests and objections with in-country investigation. Post-trip seminar will focus on preparation of project and its presentation. Prereq: BIOL 413 and 414, or BIOL 411 and 412. Permission required. For more information contact the faculty director, [Patricia Halpin](mailto:Patricia.Halpin@unh.edu) ([Patricia.Halpin@unh.edu](mailto:Patricia.Halpin@unh.edu)).

### Archaeological Survey and Mapping in Belize

A January-term course, Archaeological Survey and Mapping in Belize (ANTH 674 Archaeological Survey and Mapping in Belize, 4 credits), offers students hands-on training in survey and mapping techniques, as well as digital cartography using ArcGIS mapping software. This program is also directed by Eleanor Harrison-Buck. For more information, visit [cola.unh.edu/belize-mapping](http://cola.unh.edu/belize-mapping).

## Brazil

### University of Sao Paulo Ribeirao preto Exchange Program

Focused studies in all aspects of music with immersion in Portuguese language and Brazilian culture. This exchange with University of Sao Paulo Ribeirao Preto grew out of collaborations between UNH's and USP-RP's Departments of Music, and offers small group interaction with professors and Brazilian students, and participation in extra-curricular activities, including Filarmonica, Jazz Band, Grupuri (percussion group), and several choirs. This is an ideal exchange for independent students wanting to travel abroad and continue work on their music major. Contact the Global Education Center, (603) 862-2398, email [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

## Canada

### National Student Exchange

Students may spend one or two semesters at one of ten campuses in Canada, through the National Student Exchange (NSE) program. While having the opportunity to learn in a Canadian environment, participants maintain their status as UNH students, pay UNH tuition, and will be able to graduate from UNH on schedule. The exchange is open to students from all UNH majors. Participants must provide proof of proficiency in French for Francophone campuses in Quebec. Interested students should contact Paula DiNardo, Study Away USA office, Conant Hall 310G, (603) 862-3485, or visit [www.unh.edu/nse](http://www.unh.edu/nse).

## Caribbean

### Cruise Ship Management (HMGT #698 Topics)

Offered in January term, this 4-credit course explores through text and on-board experience key areas of cruise ship management: food and beverage, HR, finance, yield management, front office, housekeeping, safety, security, sanitation, and interoperating. Students will participate in a 12-14 day cruise that sails round trip from New York City, after brief class time in Durham during the fall semester. HMGT #698 Topics counts as an elective for majors and minors in hospitality management or any UNH student in proper standing. Students need to commit by the end of September with a deposit to satisfy Cruise Line requirements. For more information, contact [Carl E. Lindblade](mailto:Carl.Lindblade@unh.edu) ([Carl.Lindblade@unh.edu](mailto:Carl.Lindblade@unh.edu)), affiliate professor, Department of Hospitality Management.

### NATIONAL STUDENT EXCHANGE

Students may spend one or two semesters at one of several NSE campuses in the Caribbean (Puerto Rico & U.S. Virgin Islands), through the National Student Exchange (NSE) program. While having the opportunity to learn in a Caribbean environment, participants maintain their status as UNH students, pay UNH tuition, and will be able to graduate from UNH on schedule. All participating campuses in Puerto Rico are designated Hispanic Serving Institutions, where the language of instruction is Spanish. Participants must provide proof of proficiency in Spanish for all campuses in Puerto Rico. Both campuses in the U.S. Virgin Islands are designated Historically Black Colleges and Universities (HBCUs). National Student Exchange is open to full-time undergraduate students from all UNH majors. Interested students should contact Paula DiNardo, Study Away USA office, Conant Hall 310G, (603) 862-3485, or visit [www.unh.edu/nse](http://www.unh.edu/nse).

## China

### Chengdu University Exchange Program

Chengdu University in Chengdu, Sichuan Province, China, is UNH's partner in the Confucius Institute, a non-profit educational institution housed in the College of Liberal Arts that offers a full curriculum in Chinese language and culture. Out of this partnership grew an undergraduate exchange program in which UNH students have the opportunity to study Chinese language and culture in an immersive setting by directly enrolling at Chengdu University. Located in the Shiling Historical and Cultural Scenic Area, the large, gated campus is beautifully landscaped with gardens, ponds, and tree-lined passages with easy access to downtown Chengdu. For more information, contact the Global Education Center, (603) 862-2398, e-mail [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

### Shanghai International Studies University Exchange program

Shanghai is the largest city in China and a major economic, financial, trade, and cultural metropolis. SISU is a prestigious institution that offers multinational and multicultural disciplines to train and prepare future global professionals for a wide range of international expertise. Courses available in Chinese language and culture, Business and Global Studies. Contact the Center for International Education and Global Engagement, (603) 862-2398, email [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

## Costa Rica

### Costa Rica Summer Program (San Joaquin de Flores)

This six-week summer immersion program offers a variety of courses in language and culture taught by the Instituto San Joaquin de Flores. The program combines two Spanish courses, cultural field trips, and weekend trips. Classes meet daily Monday through Friday. Students live with Costa Rican families. Upon the completion of the program, students earn the equivalent of 8 credit hours. The program faculty director is Lina Lee. For more information, visit [cola.unh.edu/costa-rica](http://cola.unh.edu/costa-rica).

### SAFS 510 Agriculture and Development in the Neotropics

Course is designed as a three-week immersion into tropical agriculture and Costa Rican ecology and culture. Agriculture plays a pivotal role in Costa Rica's history and in shaping current events. Production of horticultural and agronomic crops occurs on a variety of scales ranging from large export-based systems, to mid-sized operations for domestic sales, and sustenance-based home gardens. Examples of all systems will be visited and discussions will focus on their overall sustainability. Sustainability is a broad concept and requires consideration of socio-cultural, environmental, and economic factors. Agriculture and agricultural products infuse the culture as seen by large participation in farmers markets and appreciation for a wide variety of fruits and vegetables prepared in myriad ways. An appreciation for nature also infuses the culture and is embodied by the country's extensive system of national parks and protected reserves along with the national philosophy of "Pura Vida." SAFS 510 Agriculture and Development in the Neotropics is open to all UNH students and fulfills elective credit for the Sustainable Agriculture and Food Systems major as well as dual major in Sustainability.

## Cuba

### Discover Cuba J-term

Discover first hand the rich cultural and artistic life of Cuba through this January-Term course. Led by Prof. Lina Lee, UNH Spanish Program, students will participate in an online academic component prior to a 10-day experiential learning trip to Cuba. The course (LLC 555 Discover Cuba: An Arts Experience, will illuminate the art, history, culture, music, and architecture of Cuba through lectures, tours, guided readings, and site visits. The program will be based in Havana in partnership with Spanish Studies Abroad and will include field trips to the colonial cities of Trinidad and Cienfuegos. All course and site work conducted in English - no knowledge of Spanish required. For more information, visit [cola.unh.edu/cuba](http://cola.unh.edu/cuba).

## Dominican Republic

### Perspectives on the Business Environment in the Dominican Republic

Offered in January term, MKTG 620 Topics in Marketing / MKTG 720 Topics in Marketing II, Perspectives on the Business Environment in the Dominican Republic, is a 4-credit course open to all UNH students. Students will participate in a 13-day visit to Santo Domingo in the Dominican Republic, one of the commercial hubs of the Caribbean. The course will include two pretrip classes held in the fall, in which the students will learn about the business culture of the country, as well as a brief introduction to its history and current demographics. The group will travel to Santo Domingo where three to four hours of each weekday (32 contact hours) will be devoted to meeting with business owners and managers from a variety of industries who will discuss business practices. Upon return to Durham, a final three-hour class will be held in the spring semester to wrap up, assess the learning outcomes, and conclude the experience. Contact [Audrey Ashton-Savage \(Audrey.Ashton-Savage@unh.edu\)](mailto:Audrey.Ashton-Savage@unh.edu), the instructor for this course.

### Social Action in the Dominican Republic: Exploring Culture, Poverty, Human Rights, and Social Justice in a Developing Caribbean Nation

### (SW 697 Special Topics in Social Welfare / SW 897 Special Topics in Social Work and Social Welfare)

This course examines issues of culture, poverty, social development, and social justice in the Dominican Republic through direct service learning work and preparatory and reflective class sessions and discussions. Students will have the opportunity to examine development issues that have plagued the island nation for years and current efforts to address these concerns. During spring break, students and a UNH faculty member embark on a service learning adventure to work in the bateyes of the Dominican Republic. Past projects have included the building of schools, clinics, community centers, and residential houses. Additionally, students will be working in local schools, and child welfare centers. Afternoons and evenings will be spent learning about social services in the DR from community leaders and activists, participating in cross-cultural activities with community members, learning about Dominican life and history, and reflecting upon the days' activities. Students will visit other local Haitian immigrant communities (bateyes), and spend an evening in Santo Domingo. Contact [Matthew Toms \(matthew.w.toms@gmail.com\)](mailto:matthew.w.toms@gmail.com).

## France

### Dijon Program

The Dijon Program offers students the chance to spend their junior year or a spring semester in Dijon, France. Students enroll directly in the Université de Bourgogne (University of Burgundy), where they will take courses alongside French students, or at the CIEF (Centre International d'Etudes Françaises), which hosts students from around the world. Students generally live with French families in the heart of this historic city. Credit for all work completed successfully, up to 16 credits, will be automatically transferred to UNH. Though exceptions can be made by the program faculty, the semester program is generally open to those French majors who have completed:

Code	Title	Credits
FREN 631 & FREN 632	Advanced French: Reading and Writing and Advanced French: Listening and Speaking	8
FREN 651 or FREN 652	Love, War, and Power in French Literature (or equivalent) Greatest Hits of French	4
<b>Total Credits</b>		<b>12</b>

and to French minors who have completed:

Code	Title	Credits
FREN 631 & FREN 632	Advanced French: Reading and Writing and Advanced French: Listening and Speaking	8
FREN 651 or FREN 652	Love, War, and Power in French Literature (or equivalent) Greatest Hits of French	4
<b>Total Credits</b>		<b>12</b>

The program faculty director is Ileana Chirila. For more information, visit [cola.unh.edu/dijon](http://cola.unh.edu/dijon).

### Dijon Summer Program

The Dijon Summer Program provides the opportunity to spend four or eight weeks in Dijon, France, taking the equivalent of one or two of the following courses at the Centre International d'Etudes Françaises (CIEF):

Code	Title	Credits
FREN 401	Elementary French I	4
FREN 402	Elementary French II	4
FREN 503	Intermediate French I	4
FREN 504	Intermediate French II	4
FREN 631	Advanced French: Reading and Writing	4
FREN 632	Advanced French: Listening and Speaking	4

An eight-week summer option is also available in the form of FREN 691 Summer Study in Dijon (8 weeks) to French majors who cannot spend a semester abroad for documented reasons. The pre-requisites for FREN 691 Summer Study in Dijon (8 weeks) are:

Code	Title	Credits
FREN 631	Advanced French: Reading and Writing	4
FREN 632	Advanced French: Listening and Speaking	4
FREN 651	Love, War, and Power in French Literature	4
FREN 652	Greatest Hits of French	4

This course is worth 8 credits and consists of eight weeks of intensive French language, literature, culture, and civilization courses at the CIEF at the Université de Bourgogne in Dijon, France. The program faculty director is Ileana Chirila. For more information, visit [cola.unh.edu/dijon](http://cola.unh.edu/dijon).

### Toulouse - A Culinary Exploration of Southern France

Experience first-hand the rich cultural, historical, and culinary heritage of France with a focus on its southwestern regional capital, Toulouse. Students enroll in a 2-credit version of FREN 595 French Practicum

during the second half of the spring semester. On-campus class sessions will prepare students for travel and introduce them to the diversity of French cultural heritage. The program will culminate in a 2-week stay in Toulouse. Students will engage in daily activities, site visits, lectures, and day trips. While much of the in-country portion of the program will focus on the region's culinary diversity, students will also discover the city and region's historic highlights and engage with contemporary social and cultural topics. The program faculty director is Ileana Chirila. For more information, visit [cola.unh.edu/toulouse](http://cola.unh.edu/toulouse).

## Germany & German speaking countries

Students may study for a semester or a full year through an approved study abroad program or, in special cases, by applying directly to universities in Germany, Austria, or Switzerland. Many programs require a minimum grade-point average of 3.0 and a B average in the major. Programs vary greatly in academic focus, size, language of instruction, living arrangements, services, and extra-curricular programming provided, and cost. Study abroad goals and requirements should be discussed with a German adviser as early as freshman year. Program and application materials may be obtained through the Global Education Center. For credit in the German major or minor, the program must be conducted in German. After consultation with the major adviser and the study abroad adviser to establish possible UNH course equivalents and fulfillment of major and/or Discovery Program requirements, students submit a planning form indicating the planned course of study abroad. To ensure proper credit transfer, especially if seeking to transfer credits directly from a university abroad without benefit of an Approved Program, students should keep syllabi, course descriptions, and all written work. Students planning study at a university in Germany, Austria, or Switzerland should note major differences in academic calendar (winter semester October-February, summer session April-July), which may be shortened by the Approved Program to accommodate U.S. academic calendars.

### Berlin Program

The Berlin Summer Program offers students the chance to spend five weeks in Berlin, Germany. Students earn 4 or 8 credits through GERM 586 Study in Berlin, designed to give students an immersion experience in the German language and culture. Students will receive eighty hours of intensive language instruction at the appropriate level (elementary, intermediate, or advanced) at the BSI Private Language School in central Berlin. No prior German language study is required. On designated weekday afternoons, students will gather for cultural excursions and discussions with the on-site UNH faculty member. Students enrolling for 4 credits can receive the UNH German Program language course equivalent of one semester of language study. Students enrolling for 8 credits will receive the UNH German Program language course equivalent of one semester of language study as well as engage in additional UNH faculty-guided cultural study, fulfilling GERM 525 Introduction to German Culture and Civilization (Discovery World Cultures) or other pre-approved courses. Students may fulfill the bachelor of arts language requirement by taking the equivalent of Intermediate German at the BSI Language School or by taking the equivalent of the first semester of Elementary German with the program and then independently continuing language instruction at the BSI for three weeks beyond the program study period, for a total of 8 weeks. Required pre-travel meetings at UNH will prepare students for the Berlin experience. In line with UNH's goals to educate students to become global citizens, this immersion experience will give students insight into what it means to experience a different culture and language. The program is administered by the COLA Center for



Study Abroad, and the faculty director is Charles Vannette. For more information, visit [cola.unh.edu/berlin](http://cola.unh.edu/berlin).

## Intensive Language Courses through the Goethe Institut

Students needing to advance rapidly in proficiency beginning at any level and at any time of year may enroll at a Goethe Institut center in Germany for courses ranging from eight to 16 weeks and receive UNH equivalent credit depending on level of exam passed upon completion of course. UNH's faculty contact is Charles Vannette, (603) 862-0063, or the Global Education Center, (603) 862-2398, or [study.abroad@unh.edu](mailto:study.abroad@unh.edu).

## German Internship

Students who have completed GERM 504 Intermediate German II or equivalent may apply for a 4-8 credit internship placement in a German-speaking firm or organization. The internship does not alone fulfill the study abroad requirement for the major, but may count toward the minor and may be coupled with academic course work through UNH or any study abroad program to fulfill the major study abroad requirement. The faculty contact person is Charles Vannette, (603) 862-4005.

## UNIVERSITY OF MANNHEIM EXCHANGE PROGRAM

Living and studying on a campus surrounding the **Schloss Mannheim** (Mannheim Palace) right at the heart of Europe. This is what students who opt for a semester at the University of Mannheim can expect. The **campus** really deserves to be called **international** – one in five students comes to Mannheim from abroad. Mannheim is very conveniently located: just a few train stops south of Frankfurt (which has a major international airport). For general information, please go to <https://www.uni-mannheim.de/en/academics/coming-to-mannheim/exchange-students/>. According to the 2019 QS World University Ranking by Subject, the University of Mannheim is the best German university in Social Sciences (which includes Business Administration and Economics) and has been ranked number 55 worldwide. The Mannheim Business School has the Triple Crown accreditation: AACSB, EQUIS and AMBA. Contact the Global Education Center, (603) 862-2398, email [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

## Global E3 Engineering Exchange Program

Global E3 allows engineering students to enjoy a fulfilling study abroad experience at one of 31 international member institutions. Through participation in the program, Global E3 graduates gain the necessary foreign language ability, cross-cultural skills, and professional experience to excel in the multinational/multicultural business environment of the 21st century. Global E3 students pay tuition at their home institution, and enjoy the benefits of attending an overseas one. Students can study abroad for the fall semester, spring semester, or the entire school year. At some member universities, Global E3 students are able to take on a supplemental internship after their study abroad experience. Member institutions include some of the best universities in Argentina, Australia, Austria, China, Denmark, France, Germany, Indonesia, Italy, Japan, Malaysia, The Netherlands, Singapore, South Korea, Spain, Sweden, and United Kingdom. For more information contact the Global Education Center, (603) 862-2398, email [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

## Greece

### UNH in GREECE SUMMER PROGRAM

The UNH-in-Greece Program is open to any undergraduate at UNH who is interested in the long history of civilization in Greece, from the classical

period to the present day. Athens is famous as the most important city-state in ancient times and as the site of some of the world's most famous and influential architecture and art, but it is also the vibrant capital of modern Greece (The Hellenic Republic), and that combination of antiquity and modernity, as well as the city's position between West and East, makes it an extraordinary location for on-site, experiential learning. Students earn a total of 10 credits from courses taught by both UNH and Hellenic American University faculty. The program faculty director is Stephen Trzaskoma. For more information, visit [cola.unh.edu/greece](http://cola.unh.edu/greece).

## Hungary

### Budapest spring justice studies and humanities program

The UNH Budapest Spring Program is open to any student interested to deepening their knowledge of modern European history, culture, and justice systems. Each spring semester a group of students, under the supervision of a UNH faculty member, study at [Károli Gáspár University](http://www.karoli-gaspár.hu) of Budapest. Situated along the Danube River, Budapest is an exciting and cosmopolitan city, close to other beautiful European cities such as Prague and Vienna. Under the supervision of a UNH faculty member also in residence, students carry a four-course load, two of which are taught by the UNH faculty member. The program satisfies Historical Perspectives, World Cultures, and, depending on course selection, Humanities and Fine & Performing Arts Discovery Program Requirements. All courses are taught in English. The program is faculty directors are Sue Siggelakis and Stephen Trzaskoma. For more information, visit [cola.unh.edu/budapest](http://cola.unh.edu/budapest).

## Ireland

### ANSC 510 Integration of Culture and Agriculture in Ireland: Past, Present, and Future

What was the worst natural disaster in 19th century Europe? What characterizes Ireland's agriculture in the 21st century? In this interdisciplinary course, students examine the cultural, historical, political, economic, and religious influences on Ireland's agriculture. The crowning experience of the course, a 10-day study abroad in late May, provides students with a window to the world as they experience the culture, agriculture, and topography of Ireland. Students will immerse themselves in local Irish history and culture as they tour working agricultural farms and significant landmarks. For more information, contact [Patty Bedker](mailto:Patty.Bedker@unh.edu) ([patty.bedker@unh.edu](mailto:patty.bedker@unh.edu)).

### Study Abroad in Athletic Training

This UNH study abroad program is open to athletic training majors who are interested in expanding and enhancing their athletic training education while also gaining an appreciation of a different culture. Students will be taking courses in the bachelor of science (honours) in sports rehabilitation and athletic therapy program at the Institute of Technology at Carlow. The increased emphasis on manual therapy application and skill by therapists in Ireland will provide the visiting UNH student with a unique opportunity to develop abilities far-beyond what they may learn in the U.S. Students may earn up to 16 credits applicable to their UNH graduation requirements. Students pay their normal UNH tuition (in-state or out-of-state as appropriate) as the tuition to study in Ireland. Interested students should contact [Daniel Sedory](mailto:Daniel.Sedory@unh.edu) ([Dan.Sedory@unh.edu](mailto:Dan.Sedory@unh.edu)), (603) 862-1831.



## SW 785 Study Abroad: Comparative Social Welfare Systems / SW 885 Study Abroad

Students studying abroad on SW 785 Study Abroad: Comparative Social Welfare Systems/SW 885 Study Abroad, examine the historical development of social welfare in another country, including an analysis of the underlying values and attitudes that direct practice and policy decisions. This 4-credit class includes agency site visits, lectures, themed readings, and visits to important cultural sites. Prerequisites are SW 424 Introduction to Social Work and SW 525 Social Welfare Policy: History of Social and Economic Justice. Previous programs have visited Ireland, England, Scotland, and Latvia.

## LITERARY DUBLIN: ENGL 565 Literary Dublin: Short-Term Study Abroad

This two-week UNH managed program allows students to re-imagine what we mean by "Irish" and "Irish American." It introduces a racially diverse side of Dublin specifically, and Ireland broadly, in concert with Irish Americanness as racially other at one time, and subsequently racially white. Through writing, reading, on-site visits and tours, and a host of lectures, students will gain an appreciation of Ireland's many challenges of self- and other identity related to its location, conquest, colonization, emigration, religions, and recent global immigration. The course will provide students who identify as Irish an opportunity to research their genealogy. Student will earn 4 credits for this course, ENGL 565 Literary Dublin: Short-Term Study Abroad. The experience begins in the U.S. via Zoom meetings for one week (Monday through Friday, three hours daily), then moves overseas to Dublin for 10 days.

## Italy

### UNH-in-Italy Program

*Semester & Summer Programs.* In partnership with the UNH Department of Agriculture, Nutrition & Food Systems, the UNH-in-Italy Program offers students the opportunity to experience living abroad in the medieval city of Ascoli Piceno, for either a four-course, 13-week semester or a two-course, 5-week summer session. The curriculum focuses on the links between food culture, sustainably-focused agriculture, and the policies and issues impacting the food system. Experiential activities, field trips, and group excursions encourage students to immerse themselves in the unique educational opportunity. Students live in apartments in the historic center of the city and take UNH courses taught in English. The program is open to all UNH students and fulfills the International Experience requirement of the EcoGastronomy Dual major. For more information, please contact [Jesse Stabile Morrell](mailto:Jesse.Stabile.Morrell@unh.edu) ([jesse.morrell@unh.edu](mailto:jesse.morrell@unh.edu)).

## EcoGastronomy International Experience, FALL Semester in ASCOLI PICENO, ITALY

All students who declare the dual major in EcoGastronomy spend a full semester abroad, most likely during their junior year. The table is set fall semester in Ascoli Piceno, Italy, where students will study the links between food cultures, sustainably-focused agriculture, and the policies and issues impacting the food system. EcoGastronomy study abroad programs are open to all UNH students.

### Rome J-Term Program

The Rome Program provides the opportunity to take a January term course in Rome, Italy. Students earn 4 credits and the Fine and Performing Arts Discovery requirement through CLAS 510 Building Rome or 4 credits and the World Cultures Discovery requirement through ITAL 510J Rome: The Eternal City in Italian Culture. Experience the

history, architecture, and art history of the ancient Romans the way they did—in Rome itself! Six days of study in the eternal city followed by two days in Pompeii and other sites will give students a sense of the majesty and miracle that was the ancient Roman Empire. A five-day online component prepares students for the on-site portion so that they will be ready to soak in the monuments of the past. The program faculty director is Scott Smith. For more information, visit [cola.unh.edu/rome](http://cola.unh.edu/rome).

## Japan

### Saitama University Exchange Program

Accelerated Japanese language learning on Saitama University's park-like campus, just outside Tokyo. With its moderate size (9,000 students), generous scholarship opportunities, dynamic student life and recreation facilities, Saitama is an ideal fit for UNH students interested in Japanese language and culture. The university also has a wide variety of courses taught in English, which draws students from around the world. Saitama is known as the "Oasis of Tokyo"—a historic city whose forests were planted centuries ago by peace-loving Samurai who nurtured the land instead of living by the sword. Saitama is the famous backdrop for Japanese animated films. Tokyo is less than an hour away by train. Contact the Global Education Center, (603) 862-2398, email [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

### Waseda University Exchange Program

Study abroad at one of Japan's "Ivy League" universities while paying UNH tuition. Spend a semester or academic year studying in central Tokyo, with over 50,000 students, including 5,000 international students from more than 100 countries. UNH students can enroll in a wide range of courses in English in the liberal arts, business, social sciences, political science and economics, and of course, Japanese language and culture. Waseda has a unique volunteer center, which combines lectures with hands-on activities in the field. Contact the Global Education Center, (603) 862-2398, email [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

## The Netherlands

### Radboud University Nijmegen Exchange program

Nijmegen is the oldest city in the Netherlands: it was founded by the Romans more than two thousand years ago. It is a vibrant, green, and safe student town of about 175,000 people, just a few miles from the German border. It only takes a little over an hour by train to get to Amsterdam, and it has great international train connections to Brussels, Paris and Berlin. The city has a very active student life and is also a host to countless festivals and sports activities like the Four Day Marches. Radboud University Nijmegen has about 23,000 students (about 11% of them are international). The campus is beautiful, with lots of green space, incredible buildings and has a state-of-the-art sports center. This semester exchange is open to all Majors. General info can be found at [www.ru.nl/exchangestudents](http://www.ru.nl/exchangestudents). Contact the Global Education Center, (603) 862-2398, email [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

### Utrecht University Exchange Program

Open to undergraduate and graduate students in all fields, Utrecht University is one of the top research universities in Europe, with the largest undergraduate population and the largest research budget in the Netherlands. The size, status, and international population of the university ensure that courses in all areas of study are offered in English; these include the humanities, social and behavioral studies, law,

economics, governance, and geosciences. Utrecht is the fourth largest city in the Netherlands. It has a classically old-Dutch city center with 17th century buildings, a medieval church, several high-quality museums, and terraced canals that encircle the old city. A university town since the medieval period, Utrecht has long enjoyed a vibrant student culture. Utrecht is easily navigable by foot, bicycle, and bus; the center of the Dutch rail system, it enjoys easy access to other cities in the Netherlands and Europe (Amsterdam is 35 minutes away; Paris three hours; London a day trip by plane). Contact the Global Education Center, (603) 862-2398, e-mail [international.exchange@unh.edu](mailto:international.exchange@unh.edu), or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

## University College Utrecht Exchange Program

An honors exchange is available at the University College Utrecht (UCU), which is an international Liberal Arts and Sciences Honors College of Utrecht University. UCU's mission is to offer ambitious students an academic environment aimed at transforming their broad academic and social interests and their international orientation into academic excellence, intellectual independence, and world citizenship. UCU specializes in undergraduate education and students choose from courses in humanities, science, and social sciences. Among the special characteristics are the college's small classes and individual attention. Students have access to all academic, social, and recreational facilities that Utrecht University has to offer. Contact the Global Education Center, (603) 862-2398, email [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

## New Zealand

### UNH-ECOQUEST: Ecology in action

In partnership with COLSA's Department of Natural Resources and the Environment, the EcoQuest Education Foundation offers an intensive program of applied field studies in ecology, resource management, and environmental policy. New Zealand offers an ideal context for multidisciplinary, field-oriented studies, with its rich cultural traditions, diverse ecosystems, expansive natural areas, and history of innovative approaches to resource management. EcoQuest students engage hands-on in New Zealand's restoration ecology and sustainable resource management initiatives. Semester participants have the opportunity to carry out team oriented, directed research projects while working closely with a faculty mentor and in association with New Zealand research partners. The rural seaside campus is located about an hour's drive southeast of Auckland. Students travel throughout New Zealand's North and South Islands, from the mountains to the sea, to learn more about the unique ecosystems and local culture.

Students may choose either a four-course, 15-week fall or spring term for 16 credit hours, or a two-course, five-week summer session for eight credit hours. The UNH-EcoQuest Academic Coordinator is Kimberly Babbitt, Associate Dean of Academic Affairs, COLSA. Contact Donna Dowal, EcoQuest Director of Admissions, at (603) 862-2036 or [Eco.Quest@unh.edu](mailto:Eco.Quest@unh.edu).

### UNH-EcoQuest: Sustainable Agriculture and Food Systems Aotearoa (SAFSA)

In partnership with COLSA's Department of Agriculture, Nutrition, & Food Systems, the EcoQuest Education Foundation offers an intensive field studies program in sustainable agriculture, land management, systems thinking, and food production. Students will gain an in-depth understanding of global trends in agricultural sustainability and the challenges and manifestations of these trends in Aotearoa New Zealand.

Students engage with various agribusinesses in New Zealand and consider agriculture in an ecosystems framework, aligning land use with land use capability, while examining the political, economic and cultural context. The Maori agribusiness sector is distinctive and offers unique opportunities for collaborative models. The integration of people, communities, and values with primary production systems can ultimately result in vibrant and multi-cultural approaches to food systems.

Four fully integrated courses focus on land use capability and sustainability, agroecology and sustainable land management, and pathways to sustainable agriculture and food systems. Each semester, students will spend time in farm or agricultural placements. These practical, hands-on experiences will allow students to gain transferable skills and develop a comprehensive understanding of sustainability initiatives and practices in food systems. Program participants will gain life and professional skills to engage with sustainable food systems as pro-active, solution-focused practitioners.

Students may choose either a four-course, 15-week fall or spring semester term for 16 credit hours. The UNH-EcoQuest Academic Coordinator is Kimberly Babbitt, Associate Dean of Academic Affairs, COLSA. Contact Donna Dowal, EcoQuest Director of Admissions, at (603) 862-2036 or [Eco.Quest@unh.edu](mailto:Eco.Quest@unh.edu).

## Russia

### Russia Program

This is a four-week summer program in Russian language, culture, mythology, and propaganda in Moscow, St. Petersburg, and on the Trans-Siberian Railway. Studying in the current and former capitals of Russia and the largest city in Europe gives students a profound image of the country, its language, and culture, as well as an overview of recent and ancient history. It is an opportunity for an intensive dose of authentic Russian culture. Prior to departure, students will work on Blackboard with readings and films. In Moscow and St. Petersburg, there will be field trip classes and special lectures. Upon return, students will complete their work on Blackboard and on a project. The program faculty director is Arna Bronstein. For more information, visit [cola.unh.edu/russia](http://cola.unh.edu/russia).

## South Korea

### Pusan National University Hong Kong Exchange Program

Study abroad in Busan, South Korea's beautiful second city, known for its beaches, mountains, and temples. Pusan National University is one of Korea's leading research universities and provides a full curriculum of 600 courses offered in English for UNH students of most majors. Pusan is particularly well known for business, STEM fields, and global studies, as well as its campus life and extra-curricular opportunities. Summer study is available. Contact the Global Education Center, (603) 862-2398, email [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

## Spain

### Granada Program

The Granada Program is a spring semester program in Granada, Spain. The program is designed for those who have completed SPAN 631 Advanced Conversation and Composition I or its equivalent and have a B average in Spanish, but may be open to intermediate-level students by petition. Many of the courses taught by professors from the University of Granada fulfill requirements for the Spanish major and minor and UNH Discovery Program requirements. Students generally live with host

families and take courses at the Centro de Lenguas Modernas at the Universidad de Granada. The program faculty director is Lina Lee. For further information, visit [cola.unh.edu/granada](http://cola.unh.edu/granada).

## Universidad Carlos III de Madrid Exchange Program

Study abroad in Madrid, Spain's historic and artistic capital that never sleeps. Universidad Carlos III de Madrid, named after a former king of Spain, offers a dynamic campus of 18,000 students and the largest offering of courses taught in English in Spain. Courses are available in the areas of engineering, business (AACSB accredited), finance, accounting, economics, and political science. Contact the Global Education Center, (603) 862-2398, email [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

## U.S. Territories (Puerto Rico, U.S. Virgin Islands, and Guam)

### NATIONAL STUDENT EXCHANGE

Students may spend one or two semesters at one of 12 campuses in the U.S. territories of Puerto Rico, U.S. Virgin Islands, and Guam through the National Student Exchange (NSE) program. Participants maintain their status as UNH students, pay UNH tuition, and will be able to graduate from UNH on schedule. The exchange is open to students from all UNH majors. Participants must provide proof of proficiency in Spanish for all campuses in Puerto Rico. For more information contact, Paula DiNardo, Study Away USA office, Conant Hall 310G, (603) 862-3485, or visit [www.unh.edu/nse](http://www.unh.edu/nse).

## United Kingdom England

### Lancaster University Exchange Program

Lancaster University is a comprehensive university similar to UNH in size, setting, and program offerings. The program allows students to spend a semester or a year in Lancaster while still making normal progress toward their UNH degree. Lancaster enjoys a diverse campus and is centrally located for travel to Scotland, Wales, Ireland, and London. Contact the Global Education Center, (603) 862-2398, e-mail [international.exchange@unh.edu](mailto:international.exchange@unh.edu), or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

### London Program

The London Program offers students the chance to spend the spring semester at Regent's University in the heart of London, choosing from courses in British studies, the arts, humanities, social sciences, business, and a wide range of other basic subjects. Taught by British and American faculty members, many of the courses are specifically concerned with British studies or have a special British emphasis. The program faculty director is Sue Hertz. For more information, visit [cola.unh.edu/london](http://cola.unh.edu/london).

### The London Experience

This course provides a wonderful opportunity to learn about one of the greatest cities in the world. Travel to the United Kingdom for nine nights/ten days during the January term. See the many amazing historical and cultural sights and take in some of the best theatre in the English-speaking world. The course offers insight into the politics, society, and culture of London and the United Kingdom as students walk, tube, and double-decker bus their way through 2000 years of history. The 4-credit class fulfills the Fine and Performing Arts Discovery requirement.

This program faculty director is David Kaye. For more information, visit [cola.unh.edu/london-experience](http://cola.unh.edu/london-experience).

## London Travel Writing

Travel writing is for the adventurous. In three weeks, students will learn to navigate London, one of the world's greatest cities, and craft compelling, vivid essays about what they've discovered. Through curiosity, research, and writing they will transcend from tourist to traveler, gaining a confidence in their ability to master the unfamiliar as well as pen publishable stories about place. Prerequisite of ENGL 501 Introduction to Creative Nonfiction or permission of instructor. This program faculty director is Susan Hertz. For more information, visit [cola.unh.edu/london-writing](http://cola.unh.edu/london-writing).

## Northern Ireland, Scotland (& the Highlands), York and London

### HLS 656 Comparative Homeland Security Systems Lab/ HIST 600 Explorations, Emergent Topics

All UNH students are invited to enjoy this trip where they can combine their interests in security studies, history and culture, justice studies, sustainability & resilience, intelligence, emergency preparedness or terrorism studies with our nearly 3-week study abroad course to 5 cities in the UK: Belfast, Edinburgh, Pitlochry in the Highlands, York and London. The 18-day trip will explore domestic/civilian security and resilience challenges facing the UK while you explore Northern Ireland, Scotland, and England's rich history, pubs, people and culture. The trip is specifically designed for UNH students and is open to all majors. Our time in Belfast and the Northern Irish Coast will include meetings with real IRA and Loyalist members, a guided tour of the Northern Irish Assembly, the Titanic Museum and a tour of the Antrim Coast including Carrick Fergus Castle, Giant's Causeway and the Rede Rope Bridge; then on to Edinburgh that will include a special guest pass to see the First Minister's Q&A at the Scottish Parliament, and time to enjoy the ancient city as well as a weekend in the Highlands (including hiking Ben Vrackie and a distillery tour). The group will view Alnwyck Castle en route to York, where we are special guests at the UK's Emergency Planning College. A day trip to Bletchley Park (home of the WWII code breakers) precedes our arrival in London, where activities include a custom guided spy walk and visiting the underground Churchill War Rooms. To travel with us, students approved to study abroad will enroll in HLS 656 for 1 credit in the summer (usually mid-May -mid-June). Note that interested students can also (but don't need to) take HLS 555 which is only offered in the spring semester and is designated as a World Cultures Discovery course. HLS 555 focuses on the Troubles in Northern Ireland during the late 20th century, including the struggle for Irish independence, and the broader responses of the UK to domestic security threats from World War II to present times in Ireland and Northern Ireland. Students do not need to take HLS 555 to participate on the study abroad. For more information contact [James Ramsay](mailto:James.Ramsay@unh.edu) ([james.ramsay@unh.edu?subject=summer%20study%20abroad](mailto:james.ramsay@unh.edu?subject=summer%20study%20abroad)), Homeland Security Program Coordinator and Professor of Security Studies, or [Sonic Woytonik](mailto:sonic.woytonik@unh.edu) ([sonic.woytonik@unh.edu](mailto:sonic.woytonik@unh.edu)), Security Studies lecturer.

## Scotland

### Heriot-Watt University Exchange Program

College of Engineering and Physical Sciences students are eligible to participate in a spring semester exchange with Heriot-Watt University in Edinburgh, Scotland. Heriot-Watt is one of the UK's leading universities for business and industry and has a reputation for innovative education,

enterprise, and leading-edge research in science, business, engineering, and design. Often referred to as Scotland's international University, a third of on-campus students in Scotland come from outside the UK, there are campuses in Dubai and Malaysia, and 50 international academic learning partners in 30 countries. The current program is designed for civil and environmental engineering majors. Contact the Global Education Center, (603) 862-2398, e-mail [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

## Wales

### Cardiff University Exchange Program

Study abroad at one of the UK's "Ivy League" universities while paying UNH tuition. Founded in 1883, Cardiff University is recognized as one of the leading research and teaching universities in the UK and a member of the Russell Group, the UK's "Ivy League" of world-class universities. Spend a semester or academic year studying at Cardiff and benefit from learning with professors who are pioneers in their fields. Over 27,000 students have been drawn to Cardiff University, coming from Wales, the rest of the UK and more than 100 countries. UNH students can enroll in a wide range of courses and are guaranteed housing in student halls of residence, living among British and other international students. Cardiff is an excellent match for majors in music, computer science, communications, and journalism. The University boasts over one hundred clubs, sporting teams, and societies. Cardiff University is located in the center of the capital of Wales, an exciting and diverse city and the heart of Welsh history, culture, street life, and politics. There is something for everyone in the Welsh capital, with the excitement of the small city campus located just minutes from the beautiful coastlines, hills, walking trails, and green countryside for which Wales is famous. Contact the Global Education Center, (603) 862-2398, email [international.exchange@unh.edu](mailto:international.exchange@unh.edu) or visit <http://www.unh.edu/global/outgoing-international-exchange-students>.

<https://www.unh.edu/global/>

## Sustainability

Sustainability is about balancing environmental stewardship, social well-being, and economic vitality to meet our present needs while ensuring the ability of future generations to meet their needs. At its core, sustainability is a collective commitment to valuing human dignity for all people and ensuring ecological integrity of places that support us.

Students from any UNH college or major can pair the Sustainability Dual Major with their primary major. You'll learn to analyze, evaluate, and create new ideas and models around sustainability. As an interdisciplinary and applied field of study and practice, you'll make connections across issues of science and ethics, policy and technology, and culture and history to better understand and take action on pressing issues of our time. Solving real-life problems requires the skills and perspectives of people from multiple disciplines and backgrounds. The Sustainability Dual Major provides the skills and knowledge needed to understand these systems, identify relevant environmental and social issues, and become agents of change in a complex world.

Sustainability Dual Major (SDM) students will:

#### Comprehend grand challenges

Students will gain knowledge of the fundamental aspects of sustainability challenges, such that they understand the problems and develop solutions to complex issues.

#### Think in systems

Students will have an ability to analyze and synthesize the interconnections among environmental, social, and economic aspects of complex systems, as well as how problems manifest at different scales (local to global) and at different times (connections between past, present, and future).

#### Advocate for values

Students will be able to identify, assess, respect, and navigate the diverse values, interests, and types of knowledge inherent in sustainability challenges, while simultaneously addressing power imbalances and promoting social justice.

#### Apply knowledge to a lifetime of action

Personal practice: Students will understand how sustainability impacts their lives and can assess how their actions impact sustainability at personal, institutional, and societal levels.

Professional practice: All students will, regardless of major, understand how their professional work contributes to sustainable communities, and can apply disciplinary and other forms of knowledge to contribute to sustainable solutions.

Interpersonal practice: Students will learn how to collaborate across disciplines and across stakeholder groups to jointly determine project goals, create knowledge, and develop solutions to sustainability challenges.

<https://sustainableunh.unh.edu/>

## Programs

- [Sustainability Dual Major](#) (p. 392)

## Faculty

<https://sustainableunh.unh.edu/sdm>

## Sustainability Dual Major

<https://sustainableunh.unh.edu/sdm>

## Description

Students from any UNH college or major can pair the sustainability dual major with their first major. From local to global, you'll learn to analyze, evaluate, and create new ideas and models around sustainability. As a cross-disciplinary and applied field of study and practice, you'll make connections across issues of science and ethics, policy and technology, and culture and history to better understand and take action on pressing issues of our time. Solving real-life problems requires the skills and perspectives of people from multiple disciplines and backgrounds. A sustainability dual major provides the skills and knowledge needed to understand these systems, identify relevant environmental and social issues, and become agents of change in a complex world.



## Requirements

## Requirements

SUST consists of 32 credits, including core and elective courses, and a capstone experience.

Code	Title	Credits
Complete the following SUST courses (in order):		
SUST 401	Exploring Sustainability	4
SUST 501	Sustainability in Action	4
SUST 750	Sustainability Capstone	4
Select 20 credits of elective courses <sup>1</sup>		20
<b>Total Credits</b>		<b>32</b>

<sup>1</sup> All SUST majors will take at least one (1) elective course from the natural & biological sciences list and at least one (1) elective course from the social science and humanities list.

## Approved Electives

Code	Title	Credits
<b>Natural Biological Systems</b>		
BIOL 541	Ecology	4
CEE 520	Environmental Pollution and Protection: A Global Context	4
CEE 705	Introduction to Sustainable Engineering	3
CEE 706	Environmental Life Cycle Assessment	3
CEE 719	Green Building Design	3
ECOG 401	Introduction to Ecogastronomy	4
ESCI 405	Global Environmental Change	4
ESCI 765	Paleoclimatology	3
GEOG 572	Geography of the Natural Environment	4
HLS 580	Environmental and Human Security	4
MARI 705	Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy	3
MEFB 702	Sustainable Marine Fisheries	4
MEFB 772	Fisheries Biology: Conservation and Management	4
NR 435	Contemporary Conservation Issues and Environmental Awareness	4
NR 502	Forest Ecosystems and Environmental Change	4
NR 507	Introduction to our Energy System and Sustainable Energy	4
NR 650	Principles of Conservation Biology	4
NR 703	Watershed Water Quality Management	4
NR 785	Systems Thinking for Sustainable Solutions	4
NUTR 595	Mediterranean Diet and Culture	4
NUTR 730	From Seed to Sea: Examining Sustainable Food Systems	4
SAFS 405	Sustainable Agriculture and Food Production	4
SAFS 410	A Taste of the Tropics	4
SAFS 502	Agroecology	4
SAFS 510	Agriculture and Development in the Neotropics	4
SAFS 632	Urban Agriculture	4
SUST 600	Sustainability Independent Study	1-4
SUST 605	Sustainability Internship	1-4
<b>Social Systems &amp; Humanities</b>		
ADMN 444	Business for People, Planet, and Profits	4
ANTH 695	Globalization and Global Population Health	4
CLAS 540A	Environment, Technology and Ancient Society: Sustaining Ancient Rome Ecology and Empire	4
ECON 633	Microfinance	4
ECON 706	Economics of Climate Change	4
ENGL 521	Nature Writers	4
ENGL 736	Environmental Theory	4
ENGL 787	English Major Seminar	4
EREC 444	The New Pirates of the Caribbean	4
EREC 572	Introduction to Natural Resource Economics	4
EREC 760	Ecological-Economic Modeling for Decision Making	4
FIN 620	Topics in Finance I	2-4
Impact Finance		

GEOG 405	There Is No Planet B	4
GEOG 590	Field Research	4
GEOG 673	Political Ecology	4
GEOG 685	Population and Development	4
HMP 501	Epidemiology and Community Medicine	4
HMP 715	Environmental Health	4
INCO 505A	Semester in the City Becoming a Problem Solver	4
INCO 505B	Social Innovator's Toolbox	4
INCO 505I	Semester in the City: Boston and SITC @ UNH Internship	8
NAIS 400	Introduction to Native American and Indigenous Studies	4
NR 602	Natural Resources and Environmental Policy	4
NR 643	Economics of Forestry	4
NR #701	Ecological Sustainability and Values	4
NR 720	International Environmental Politics and Policies for the 21st Century	4
NR 724	Resolving Environmental Conflicts	4
NR 784	Sustainable Living - Global Perspectives	4
NR 787	Advanced Topics in Sustainable Energy	4
PHIL 431	Business Ethics	4
PHIL 450	Environmental Ethics	4
POLT #444	Politics and Policy in a Warming World	4
POLT 548	Drug Wars	4
POLT 750	Politics of Poverty	4
RMP 511	Issues of Wilderness and Nature in American Society	4
RUSS #425M	Topics in Russian Culture and Society in Moscow	4
SOC 444A	Honors/Society in the Arctic	4
SOC 565	Environment and Society	4
SOC 665	Environmental Sociology	4
SOC 730	Communities and the Environment	4
SUST 600	Sustainability Independent Study	1-4
SUST 605	Sustainability Internship	1-4
TOUR 767	Social Impact Assessment	4
WS 505	Survey in Women's Studies	4
WS 798	Colloquium	4
SUST #401A	Surveying Sustainability	2
SUST #401B	Surveying Sustainability Lab	2

## Student Learning Outcomes

### • Comprehend grand challenges

Students gain knowledge of the fundamental aspects of complex sustainability challenges.

### • Think in systems

Students have an ability to analyze and synthesize the interconnections among environmental, social, and economic aspects of complex systems, as well as how problems manifest at different scales (local to global) and at different times (connections between past, present, and future).

### • Advocate for values

Students can identify, assess, respect, and navigate the diverse values, interests, and types of knowledge inherent in sustainability challenges, while simultaneously addressing power imbalances and promoting social justice.

### • Apply knowledge to a lifetime of action

*Personal practice: Students understand how sustainability impacts their lives and can assess how their actions impact sustainability at personal, institutional, and societal levels.*

*Professional practice: All students, regardless of major, understand how their professional work contributes to sustainable communities, can apply disciplinary and other forms of knowledge and skills to contribute to sustainable solutions.*

*Collaborative practice: Students learn how to collaborate across disciplines and across sectors to jointly determine project goals,*



*create knowledge, and develop innovative and effective solutions to sustainability challenges.*

## Thompson School of Applied Science

The Thompson School of Applied Science (TSAS), established in 1895, is an academic unit of the College of Life Sciences and Agriculture (COLSA) offering the associate in applied science degree in three program areas. Curricula comprise a balance of professional, science-related, and general education courses that prepare students to meet the specific demands of a technical or applied profession, continuing education, and the general demands of life.

The Thompson School of Applied Science offers dedicated professional faculty who deliver a career-relevant education for students who want an associate degree; students who value a college education combining hands-on experiences and academic knowledge in a small learning environment within the campus of the University of New Hampshire.

Thompson School faculty and staff are committed to educate, train, and retain students to be entrepreneurs, to be solid in their knowledge, to be competent in acquired skills and to be aware of the communities they impact. This is accomplished through the development of mentorships with faculty and advisors, business and industry partnerships, unique programs of study with relevant facilities, and excellent job placement.

## Thompson School of Applied Science Overview

Faculty members at the Thompson School have significant work experience in industry and business; extensive and up-to-date knowledge of their specialties; ongoing contacts with practicing professionals; dedication to students and to excellence in teaching; and a commitment to practical, science-based education. They work closely with students, providing academic advising, career counseling, and special assistance, even outside the classroom, when needed.

Detailed information on our various program areas and concentrations follow.

- **Applied Animal Science** students pursuing this associate's degree prepare for a successful career in animal production and management, whether working on a farm or in a related business. Students handle farm animals starting week one, and develop a strong foundation in the science and business of animal agriculture, including breeding, feeding, health care, law and regulations, housing, and marketing. On-campus facilities include the [Thomas P. Fairchild Dairy Teaching and Research Center](#) and UNH's [Organic Dairy Research Farm](#).
- **Forest Technology** students integrate all aspects of forest management as they complete projects on more than [3,000 acres of University land](#). Using the school's sawmill and harvesting equipment, they contribute to the sustainable management of UNH lands. In the classroom and the forest, they develop skills and techniques critical to the future ecological and economic health and management of the natural resources of the state and region. Students are expected to enhance class work with an extensive work experience requirement. The educational program in Forest Technology leading to the Associate in Applied Science degree is accredited by the [Society of American Foresters](#) (SAF). The Thompson School's Forest Technology program was the first two-year program in the U.S. to complete the accreditation process.
- **Veterinary Technology** students have the unique opportunity to work with both small and large animals at UNH and have access to

professional facilities both on and off campus. On-campus facilities include the Thompson School PAWS Veterinary Clinic, [Thomas P. Fairchild Dairy Teaching and Research Center](#), UNH's [Organic Dairy Research Farm](#), and UNH's [equine facilities](#). The program also partners with the [New Hampshire SPCA](#) (Stratham, N.H.), [Cocheco Valley Humane Society](#) (Dover, N.H.), and [Pope Memorial SPCA](#) (Concord, NH). The program is accredited by the [American Veterinary Medical Association](#) (AVMA). Students who graduate from an accredited program are eligible to take the Veterinary Technician National Exam (VTNE) to become a credentialed veterinary technician.

## Associate in Applied Science

To graduate with an associate in applied science degree, a student must complete 20 credits of Discovery (general education) coursework with an overall grade-point average of no less than 2.0. In addition, students must earn a minimum of 64 credits (more than 64 credits may be required depending on the program of study).

## Admissions

The Thompson School welcomes applications from both recent high school graduates and non-traditional (adult) students.

Admission to an associate in applied science degree program is based upon successful completion of a secondary school program of college preparatory coursework or its equivalent. Primary consideration is given to the candidate's academic record, as demonstrated by secondary school course selections and achievement, recommendation, and the results of the SAT and/or ACT exam. Consideration is also given to the applicant's personal motivation, demonstrated interest in a career field, and leadership roles.

For most programs, candidates must, at a minimum, present a solid college preparatory program including at least four years of English, three years of mathematics (one of which must be Algebra I, Geometry, and/or Algebra II), two years of science (biology with a lab, being one of them), and three years of social science. The majority of students are admitted with three years of both college-prep mathematics and science. Some programs have more specific requirements, which are included in the appropriate sections of this catalog.

For a non-traditional student who graduated from high school several years ago, the Office of Admissions will consider not only his or her academic record but also accomplishments since high school. Important factors include professional work and advancement and motivation to succeed in Thompson School courses. In addition, applicants will be considered on the basis of any available test scores such as General Education Development (GED), SAT or ACT, and College Level Examination Program (CLEP) exams; letters of reference; previous college study; and military record (if applicable). Non-traditional students who have been out of high school for a number of years may request the Office of Admissions waive the SAT requirement.

Transfer students are welcome at the Thompson School. Upon admission to UNH, the Office of Admissions will complete an official credit evaluation and inform the student of the total credits transferred and any general education requirements that have been fulfilled. Please note that it is up to each Thompson School academic program to determine which courses from other institutions will be accepted towards fulfilling major requirements. Transfer students often fulfill program or general education requirements by transferring in credits of unequal value (i.e. transfer in a 3-credit class from elsewhere to meet the

requirements of a 4-credit UNH class). Students who do this must pay special attention to ensure they accrue at least the minimum 64 credits overall, meet general education requirements (20 credits), and meet technical concentration, grade point average, and elective requirements for their program.

## How to Apply

Most first-year and transfer applicants to UNH's Thompson School of Applied Science must submit the Common Application to be considered for admission. Veterans, non-traditional students, and N.H. community college transfer students have a slightly different application process.

Although UNH will accept the paper-version of the application, students are strongly encouraged to submit the application electronically through the Common Application website, [www.commonapp.org](http://www.commonapp.org), as this expedites the process (99 percent of students submit their applications electronically). These same options are available to students applying from countries other than the United States.

The electronic version of the Common Application may be submitted from August, once the Common Application opens, through April 1. The Early Action due date is November 15. Notice of admission to the Thompson School will normally be sent within 30 days following receipt of all required information. Housing may not be guaranteed if application is received after February 1. When applying from April 2 through July 15, the PDF (paper) application must be submitted.

Please note that priority due dates for students requesting UNH residential housing are February 1 for the fall semester and November 1 for the spring semester. Housing assignments are handled on a space-available basis. The UNH Financial Aid due date is March 1 for the following academic year.

## Campus Visits

Prospective students are encouraged to attend an open house, and/or take a tour of the Thompson School and the rest of the UNH campus. An open house/prospective student day is held in the fall, and campus tours can be arranged through the Office of Admissions.

## Expenses, Financial Aid, and Scholarships

Costs for students include tuition, fees, room and board, books and supplies, and personal and travel expenses. These costs are the same for any student enrolled at the University of New Hampshire (see Fees and Expenses), and students majoring at the Thompson School have access to the same student services. (See also Campus Life, Programs and Services for Students, and Health Services.)

Information about scholarships, loans, and work-study is located at <http://financialaid.unh.edu/> or by calling (603) 862-3600. A Free Application for Federal Student Aid (FAFSA) must be processed by the Financial Aid Office by March 1 of each year for a student to be considered for several scholarships for the following academic year. (See also Financial Aid.)

### New England Regional Student Program

The Thompson School at UNH participates in the New England Regional Student Program of the New England Board of Higher Education, through which each state university system in New England offers a number of regional curricula to students from other New England states. Under this program, students pay in-state tuition plus 75 percent. See the following table for Thompson School programs that are eligible in

2017-2018. Eligibility under this program may vary from year to year, so it is suggested that you obtain further information by contacting:

The New England Board of Higher Education  
45 Temple Place  
Boston, MA 02111  
(617) 357-9620

You may also contact the [UNH Office of Admissions](#) for more information.

Associate Degree Program	Available to Residents of
Applied Animal Science	MA, ME, RI, VT
Forest Technology	CT, MA, RI, VT
Veterinary Technology	RI

## Transfer Opportunities

Students completing an associate degree program often apply for transfer into a baccalaureate program. Two plus two articulations are in place for the associate degree programs offered. Forest Technology articulates with the Forestry B.S., and Applied Animal Science and Veterinary Technology articulate with the B.S. in Animal Science.

Thompson School students can also transfer into many other baccalaureate majors. A final cumulative grade-point average of at least 2.5 is required for transfer to most programs; some UNH baccalaureate programs require a higher cumulative grade-point average. Other colleges and universities, especially those within the University System of New Hampshire, also welcome graduates from the Thompson School.

<https://colsa.unh.edu/thompson-school-applied-science>

## Programs of Study

- [Applied Animal Science \(AAS\)](#) (p. 396)
- [Forest Technology \(FORT\)](#) (p. 398)
- [Veterinary Technology \(VTEC\)](#) (p. 400)

## Applied Animal Science (AAS)

Applied Animal Science (AAS) provides students with hands-on practical skills combined with knowledge and understanding of the latest technology. The core program offers a solid background in anatomy, physiology, nutrition, health, and animal breeding. The curriculum is focused on animal agriculture and emphasizes decision-making, technologies, and processes that address the realities of modern agriculture.

Practical learning experience is provided at the [Thomas P. Fairchild Dairy Teaching and Research Center](#) and the [UNH Organic Dairy Farm](#). The Thompson School also operates its own veterinary clinic and biology laboratories. The curriculum has a number of animal-related educational partnerships that include field trips to numerous animal-related businesses.

<https://colsa.unh.edu/thompson-school-applied-science>

## Programs

- [Applied Animal Science \(A.A.S.\)](#) (p. 397)

## Faculty

<https://colsa.unh.edu/thompson-school-applied-science/people>

## Applied Animal Science (A.A.S.)

<https://colsa.unh.edu/tsas/aas/animal-agriculture>

## Description

The production of meat, milk and fiber from animals is expected to continue to grow for decades to come. Students interested in working in the highly technical, rapidly changing field of farm animal production and management, must become well versed in the many species of farm animals, including breeding, feeding, health care, housing and marketing. In the animal agriculture concentration, students apply many of the skills learned in the classroom on farms in the first few semester of the program. Students learn to work safely with farm livestock and poultry. They visit farms and engage in hands-on activities with their instructors. Students will learn to balance rations, identify and treat diseases, learn to design appropriate buildings, fences, and properly take of the land and environment necessary to support farm animals. Students visit and interact with nearby farms with beef, sheep, goats and swine.

Students also have the opportunity to work and study at the University's farms. UNH maintains two modern and well-equipped dairy teaching and research centers, and as an option students interested in dairy cattle can also collaborate to manage the CREAM (Cooperative for Real Education in Agriculture) herd. All students will also study at the UNH Organic Dairy Research Farm. Students will have the chance to also work with horses, sheep, and poultry on campus.

Students learn the business of farming through field exercises in land management, forage production, financial management, and computer use on a farm as well as through continued practical experience with farm livestock, poultry and dairy cattle. The program prepares students to work both on the farm and in related businesses.

The Thompson School's Animal Agriculture program is in a unique position with the baccalaureate animal science major. Students may start with the Thompson School program, obtain their associate in applied science (A.A.S.) degree then transfer to a four-year major and obtain a B.S. in two to two additional years with a full-time course of study. This allows students to receive two degrees in as little as four years or obtain their A.A.S. degree and work in the field to later return for a B.S. Students wishing to follow this course of action need to work closely with their adviser and maintain a grade of C or better in key applied animal science courses.

## Career Opportunities

Herd manager, agricultural sales and/or service employee, farm manager, artificial insemination (AI) technician, crop manager, farm owner, or animal care professional.

## Requirements

## Admissions Requirements

Applicants to the applied animal science program area must present four years of college preparatory English and at least two years,

preferably three years of satisfactory work in college preparatory science (one of the sciences being biology, with a lab). One year of laboratory college preparatory chemistry is highly recommended. Also required are three years of Social Science, and three years of college preparatory Mathematics, and SAT/ACT.

## Applied Animal Science Curriculum Standards

Applied Animal Science (AAS) students must maintain a minimum 2.0 cumulative grade-point average. Students with averages lower than 2.0 must repeat classes with lower grades and raise their average to the required 2.0 before taking additional classes. Students must have a minimum cumulative 2.0 grade-point average in AAS classes to qualify for graduation from the program.

All Applied Animal Science students are required to take:

Code	Title	Credits
AAS 423	Dairy Selection	2
AAS 428	Anatomy and Physiology of Domestic Animals	4
AAS 432	Introduction to Forage and Grassland Management	3
AAS 434	Equipment and Facilities Management	3
AAS 597	Applied Animal Science Work Experience	0
ANSC 406	Careers in Animal Science	1
ANSC 421	Introduction to Animal Science	4
ANSC 543	Technical Writing in Animal Sciences	2
ANSC 546	Animal Business Applications	4
ANSC 548	Agricultural Business Management	4
ANSC 698	Cooperative for Real Education in Agricultural Management (CREAM) <sup>1</sup>	4
or ANSC 603	Introduction to Livestock Management	
or ANSC 605	Poultry Production and Health Management	
or ANSC 437	Equine Husbandry Techniques	
ENGL 401	First-Year Writing	4
PAUL 450	Personal Finance (or other Quantitative Reasoning Discovery)	4
VTEC 435	Animal Health and Laboratory Diagnostics	4
Discovery Social Science		4
Discovery Course		4
Electives		13
<b>Total Credits</b>		<b>64</b>

20 credits of Discovery courses are required, including Writing Skills (ENGL 401 First-Year Writing), Biological Science (VTEC 435 Animal Health and Laboratory Diagnostics), Quantitative Reasoning (PAUL 450 Personal Finance or other), Social Science, and Discovery elective.

<sup>1</sup> Students that wish to take ANSC 698 CREAM must take AAS 425 Introduction to Dairy Herd Management in their first semester. CREAM is a two semester course (fall/spring).

## Degree Plan

## Applied Animal Science Program of Study

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
AAS 428	Anatomy and Physiology of Domestic Animals	4
ANSC 421	Introduction to Animal Science	4
ENGL 401	First-Year Writing (DISC)	4

Discovery or AAS 425 <sup>1</sup>		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
AAS 423	Dairy Selection	2
AAS 434	Equipment and Facilities Management	3
VTEC 435	Animal Health and Laboratory Diagnostics	4
Discovery Course - Social Science		4
Discovery <sup>2</sup>		4
<b>Credits</b>		<b>17</b>
<b>Second Year</b>		
<b>Fall</b>		
AAS 432	Introduction to Forage and Grassland Management	3
AAS 597	Applied Animal Science Work Experience	0
ANSC 437 or ANSC 605 or ANSC 698	Equine Husbandry Techniques or Poultry Production and Health Management or Cooperative for Real Education in Agricultural Management (CREAM)	4
ANSC 543	Technical Writing in Animal Sciences	2
ANSC 546	Animal Business Applications	4
Discovery Course: Quantitative Reasoning, PAUL 450 or other		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
ANSC 406	Careers in Animal Science	1
ANSC 548	Agricultural Business Management	4
ANSC 698 or ANSC 603	Cooperative for Real Education in Agricultural Management (CREAM) or Introduction to Livestock Management	4
Elective		2
Elective or Discovery if AAS 425 was taken Freshman year <sup>1</sup>		3
<b>Credits</b>		<b>14</b>
<b>Total Credits</b>		<b>64</b>

<sup>1</sup> CREAM must be taken both fall and spring semesters

<sup>2</sup> 20 credits of Discovery required; including ENGL 401 First-Year Writing, VTEC 435 Animal Health and Laboratory Diagnostics, a Quantitative Reasoning course, a Social Sciences course, and 1 other Discovery course

## Student Learning Outcomes

- Students will be able to describe the significance and unique characteristics of animal agriculture in New England, including species and breeds most appropriate for various agricultural enterprises.
- Students will demonstrate they can handle and restrain a variety of domestic animals for routine care, health management practices and training purposes.
- Students will be able to identify and describe the significant anatomical parts of and differences between horses, cattle, small ruminants and poultry.
- Students will understand the basis of disease, major pathogens causing disease, the techniques used in identifying parasites and

pathogens, as well as keeping animals healthy through biosecurity measures.

- Students will gain an applied understanding of animal nutrition, animal selection and breeding and animal health practices through experiential coursework with dairy cattle, livestock and/or poultry.
- Students will be able to articulate the career opportunities available in the field of Animal Science.
- Students will be able to identify appropriate land, farm management strategies and forage crops in New England for farm animal feeding in the form of hay, silage and pasture.
- Students will demonstrate written and oral communication skills necessary for marketing animal products and services, information transfer, and animal related business development and promotion.
- Finally, students will demonstrate through the development of an animal related business plan that they understand the importance of market analysis, product promotion, sales techniques, labor management, financial statements, insurance and labor management.

## Forest Technology (FORT)

Students in the forest technology (FORT) program are uniquely prepared for careers in forestry, forest industries and natural resource management in New Hampshire and New England. Classroom lecture is supported by practical field work in each of the subject areas. The educational program in Forest Technology leading to the Associate in Applied Science degree is accredited by the Society of American Foresters (SAF) (the first two-year program in the U.S. to complete the accreditation application process) and reviewed by an advisory committee representing the full spectrum of forestry organizations in the region. There is a strong emphasis on leadership, safety, communication skills, accuracy of field work, data collection, and professional presentation. Unique facilities for teaching and learning include centrally located classroom and shop facilities; 3,000+ acres of University-owned forest land; a new sawmill and Forest Industries Training Center (FITC); logging equipment; technologically advanced navigation, data collection, and analysis equipment; and a faculty with vast field experience in the subject areas and who are dedicated to teaching.

<https://colsa.unh.edu/thompson-school-applied-science>

## Programs

- Forest Technology (A.A.S.) (p. 398)

## Faculty

<https://colsa.unh.edu/thompson-school-applied-science/people>

## Forest Technology (A.A.S.)

<https://colsa.unh.edu/thompson-school-applied-science/program/aas/forest-technology>

## Description

Forestry is an exciting and rewarding career field, in which practitioners work to solve today's pressing natural resource and environmental challenges. Graduates of the Forest Technology program can become



career-ready in two years and learn fundamental forestry skills, techniques, and science. Students are introduced to forest ecology, silviculture, wildlife ecology, forest mapping techniques, wood science, and timber harvesting practices. They learn how to inventory natural resources; design, plan, and supervise forest harvesting operations; harvest timber and mill lumber; map and survey forestland; develop a forest management plan; and identify and mitigate forest health issues – all while applying principles of conservation and sustainability. Students interact with a wide variety of professionals as part of their coursework and often go on to work in wood products-related industries, public forestland management agencies, private forestry consulting firms, urban tree care companies, and a range of conservation organizations. After obtaining an associate degree in forest technology, qualified students may then transfer to the university's accredited four-year forestry program and obtain a bachelor's degree in two additional years with a full-time course of study or move right into an exciting career.

## Career Opportunities

Forestry consultant, forest fire control and use technician, mapping technician, geographic information systems/global positioning systems (GIS/GPS) technician, timber and log buyer, log scaler, lumber grader, sawmill technician, arborist, urban tree care specialist, timber cruiser/forest inventory technician, or forestry equipment/products sales representative.

## Requirements

Candidates for a degree must take 20 credits of Discovery courses in addition to satisfying the requirements of the Forest Technology program. Forest Technology students are required to take:

Code	Title	Credits
BIOL 528 or MATH 420	Applied Biostatistics I Finite Mathematics	4
ENGL 401	First-Year Writing	4
FORT 470	Applied Silviculture	4
KIN 501	First Aid: Responding to Emergencies	1
FORT 527	Forest Ecology	4
FORT 564	Arboriculture	3
FORT 572	Mensuration	4
FORT 573	Management Operation & Analysis	4
FORT 576	Forest Products and Wood Science	4
FORT 577	Forest Harvesting Systems	4
FORT 578	Ecology and Management of Forest Stressors	4
FORT 579	Wildland Fire Ecology and Management	4
FORT 581	Applied Geospatial Techniques	4
FORT 597	Work Experience	0
NR 415	Natural Resources Field Methods	2
NR 425	Field Dendrology	4
NR 433	Wildlife Ecology	4
Social Science Discovery or Humanities Discovery		4
Discovery Course		4
<b>Total Credits</b>		<b>66</b>

## Degree Plan

## Forest Technology Program of Study

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ENGL 401	First-Year Writing (WS Discovery)	4

NR 425	Field Dendrology	4
FORT 527	Forest Ecology	4
NR 415	Natural Resources Field Methods	2
<b>Credits</b>		<b>14</b>

### Spring

BIOL 528 or MATH 420	Applied Biostatistics I (or other) or Finite Mathematics	4
FORT 470	Applied Silviculture	4
FORT 581	Applied Geospatial Techniques	4
Social Science or Humanities Discovery <sup>[RMP 511 Recommended]</sup>		4
KIN 501	First Aid: Responding to Emergencies	1
<b>Credits</b>		<b>17</b>

### Second Year

#### Fall

NR 433	Wildlife Ecology (BS Discovery)	4
FORT 572	Mensuration	4
FORT 577	Forest Harvesting Systems	4
FORT 597	Work Experience	0
Discovery Elective: FPA, HP, ETS, WC, PS		4
<b>Credits</b>		<b>16</b>

#### Spring

FORT 564	Arboriculture	3
FORT 573	Management Operation & Analysis	4
FORT 576	Forest Products and Wood Science	4
FORT 578	Ecology and Management of Forest Stressors	4
FORT 579	Wildland Fire Ecology and Management	4
<b>Credits</b>		<b>19</b>
<b>Total Credits</b>		<b>66</b>

## Student Learning Outcomes

- Identify the flora and fauna of regional forests and understand their role in ecological communities.
- Apply the concepts of forest and wildlife ecology to sustainable natural resource management for the benefit of society.
- Measure, collect, and analyze field data using appropriate technologies to make sound forest management decisions.
- Understand harvesting and processing of forest products.
- Navigate in forested settings, and locate and map property boundaries and natural resource features.
- Identify land cover types and incorporate spatial data to facilitate forest management.
- Identify and evaluate appropriate management strategies in the context of forest insects and pathogens.
- Lead field crews to safely and productively accomplish forest management goals.
- Communicate effectively and professionally in written and oral formats with clients, related agencies, and the general public.

# Veterinary Technology (VTEC)

## Overview

The program provides veterinary technology students with a broad understanding of veterinary medicine and the role of animals in society. Students are instructed in the methods and knowledge of veterinary technology such that they become veterinary technicians who are strong advocates for animals, capable of compassionate and accurate animal care; professional in their actions and judgments; and have a desire for lifelong learning and self-improvement.

The primary goal of the veterinary technology program is to provide students with exceptional technical and clinical reasoning skills and knowledge in veterinary technology such that graduates will be prepared to pass the Veterinary Technician National Exam (VTNE) and to be immediate and valuable members of a veterinary medical team. Additionally, the program aims to develop a firm foundation in both farm animal and companion animal veterinary practices. Courses in the program cover basic sciences, veterinary nursing, and veterinary practice management, with a strong focus on hands-on practical knowledge throughout the curriculum. Students gain basic knowledge and skills for the major domestic animal species (dog, cat, horse, and cow). Integration of knowledge in communication, veterinary ethical and legal issues, clinical reasoning skills, and hands-on technical skills allow students to become complete veterinary technicians, capable of providing high-quality, compassionate, and expert care to animals both small and large.

Practical learning experience is provided at the PAWS Veterinary Teaching Clinic, the UNH Equine Facilities, the Thomas P. Fairchild Dairy Teaching and Research Center and the UNH Organic Dairy Research Farm. The program has a number of animal-related educational partnerships, including those with the New Hampshire SPCA in Stratham, N.H., the Pope Memorial Humane Society of Cochecho Valley in Dover, N.H., and the Pope Memorial SPCA in Concord, N.H.

The program is accredited by the AVMA. Students who graduate from an accredited program are eligible to take the Veterinary Technician National Exam (VTNE) and pursue credentialing.

## Admissions Requirements

Applicants to veterinary technology must present four years of college preparatory English, and a minimum of three years of social sciences, college preparatory mathematics, and college preparatory sciences. Two of the three sciences should be college preparatory biology and chemistry with labs. It is recommended that applicants have some experience with animals in a professional setting, and applicants should include a statement in the student application describing their experience. Successful applicants have an overall minimum GPA of 3.0 on a weighted 4.0 scale.

<https://colsa.unh.edu/thompson-school-applied-science/program/aas/veterinary-technology>

## Programs

- [Veterinary Technology \(A.A.S.\)](#) (p. 400)

## Faculty

<https://colsa.unh.edu/thompson-school-applied-science/people>

## Veterinary Technology (A.A.S.)

<https://colsa.unh.edu/thompson-school-applied-science/program/aas/veterinary-technology>

## Description

### Veterinary Technology

The primary goal of the veterinary technology program is to provide students with exceptional technical and clinical reasoning skills and knowledge in veterinary technology such that graduates will be prepared to pass the Veterinary Technician National Exam (VTNE) and to be immediate and valuable members of a veterinary medical team. Additionally, the program aims to develop a firm foundation in both farm animal and companion animal veterinary practices. Courses in the program cover basic sciences, veterinary nursing, and veterinary practice management, with a strong focus on hands-on practical knowledge throughout the curriculum. Students gain basic knowledge and skills for the major domestic animal species (dog, cat, horse, and cow). Integration of knowledge in communication, veterinary ethical and legal issues, veterinary practice management, clinical reasoning skills, and hands-on technical skills allow students to become complete veterinary technicians, capable of providing high-quality, compassionate, and expert care to animals both small and large.

Practical learning experience is provided at the PAWS Veterinary Teaching Clinic, the UNH Equine Facilities and the Thomas P. Fairchild Dairy Teaching and Research Center. The program has a number of animal-related educational partnerships, including those with the New Hampshire SPCA in Stratham, N.H., the Pope Memorial Humane Society of Cochecho Valley in Dover, N.H., and the Pope Memorial SPCA in Concord, N.H.

The program is accredited by the AVMA. Students who graduate from an accredited program are eligible to take the Veterinary Technician National Exam (VTNE) and pursue credentialing.

## Requirements

### Veterinary Technology Curriculum Requirements

Students must demonstrate all of the following for retention in and completion of the veterinary technology program:

1. Courses must be completed in proper sequence, according to pre-requisites listed in the course catalog.
2. To progress in the program, students must:
  - a. Earn a minimum of 70% on their exam average in each VTEC course.
  - b. Earn a minimum of 80% on their skills grades in VTEC 579 and VTEC 580.
  - c. Receive a minimum grade of C+ (2.33 grade point) or better in all required AAS and VTEC courses.

3. Students who fail to meet retention requirements after 3 semesters will not be allowed to progress further in the program until retention requirements have been met.
  - a. Students are allowed to repeat any major course once. If the student does not meet the grade standard on the retake, they must repeat the class again before taking other major courses.
  - b. Students are allowed to repeat no more than two major courses.
  - c. Students who fail to meet program grade standards in a third course will not be allowed to proceed in the program.
4. Students must maintain a 2.5 GPA in major courses to take additional courses in major.
5. Students must have a minimum cumulative 2.5 GPA in major to qualify for graduation from the program.
6. Students must successfully complete all required skills listed in the Veterinary Technology Essential and Recommended Skills List developed by the AVMA (the accrediting body for this program).
7. All coursework in the veterinary technology curriculum should be completed within five years of initial program enrollment. If this cannot be accomplished, the student may be required to reapply to the program for a new admission status and all veterinary technology specific courses may have to be repeated.

Students must show proof of pre-exposure rabies immunization or adequate rabies titer prior to enrollment in practicum and internship coursework. Transportation is provided to students for practicum coursework. Students are responsible for providing their own transportation during internship experiences.

## Required Program Courses

Code	Title	Credits
AAS 421	Large Animal Behavior and Handling Techniques	2
AAS 428	Anatomy and Physiology of Domestic Animals	4
CHEM 411	Introductory Chemistry for Life Sciences	4
CMN 500	Public Speaking	4
VTEC 424	Introduction to Veterinary Technology	2
VTEC 430	Companion Animal Behavior and Handling Techniques	4
VTEC 435	Animal Health and Laboratory Diagnostics	4
VTEC 449	Clinical Animal Nursing Techniques I	4
VTEC 497	Veterinary Technology Work Experience	0
VTEC 550	Clinical Animal Nursing Techniques II	4
VTEC 565	Pharmacology for Veterinary Technicians	4
VTEC 575	Veterinary Anesthesia and Surgical Assisting	4
VTEC 579	Small Animal Practicum I	4
VTEC 580	Small Animal Practicum II	4
VTEC 583	Large Animal Practicum	2
VTEC 595	Veterinary Technology Internship	3
VTEC 599	Comprehensive VTNE Review	4
<b>Total Credits</b>		<b>57</b>

## Discovery requirements

Students must complete 20 credits within the Discovery program; with at least one course in the following categories: Writing Skills, Quantitative Reasoning, Biological Science, Physical Science, and Social Science.

Code	Title	Credits
<b>Writing Skills - Required Course</b>		
ENGL 401	First-Year Writing	4
<b>Biological Science - Required Course</b>		
VTEC 435	Animal Health and Laboratory Diagnostics	4
<b>Physical Science - Required Course</b>		
CHEM 411	Introductory Chemistry for Life Sciences	4
<b>Quantitative Reasoning Recommendations</b>		<b>4</b>

BIOL 528	Applied Biostatistics I (Recommended for students pursuing ANSC 2+2 articulation)
MATH 420	Finite Mathematics
MATH 424B	Calculus for Life Sciences (option for students pursuing ANSC 2+2 pre-vet track)
MATH 439	Statistical Discovery for Everyone
PAUL 450	Personal Finance
PSYC 402	Statistics in Psychology
SOC 402	Statistics
Social Science Category Recommendations	
NURS 535	Death and Dying
OT 520	Happy and Healthy at Work: Promoting Wellness, Diversity and Inclusion
PSYC 401	Introduction to Psychology
SOC 400	Introductory Sociology
SOC 450	Contemporary Social Problems
SW 444	You've Got Your Troubles, I've Got Mine
SW 550	Human Behavior and Social Environment I
SW 551	Human Behavior and Social Environment II

## Degree Plan

### Veterinary Technology Program of Study

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
AAS 428	Anatomy and Physiology of Domestic Animals	4
CHEM 411	Introductory Chemistry for Life Sciences	4
ENGL 401	First-Year Writing	4
VTEC 424	Introduction to Veterinary Technology	2
VTEC 430	Companion Animal Behavior and Handling Techniques	4
<b>Credits</b>		<b>18</b>
<b>Spring</b>		
VTEC 435	Animal Health and Laboratory Diagnostics	4
VTEC 449	Clinical Animal Nursing Techniques I	4
VTEC 565	Pharmacology for Veterinary Technicians	4
<b>Quantitative Reasoning</b>		<b>4</b>
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
AAS 421	Large Animal Behavior and Handling Techniques	2
VTEC 497	Veterinary Technology Work Experience	0
VTEC 550	Clinical Animal Nursing Techniques II	4
VTEC 575	Veterinary Anesthesia and Surgical Assisting	4
VTEC 579	Small Animal Practicum I	4
<b>Credits</b>		<b>14</b>
<b>Spring</b>		
VTEC 580	Small Animal Practicum II	4
VTEC 583	Large Animal Practicum	2
VTEC 595	Veterinary Technology Internship	3
VTEC 599	Comprehensive VTNE Review	4

Social Science	4
<b>Credits</b>	<b>17</b>
<b>Total Credits</b>	<b>65</b>

## Student Learning Outcomes

The primary goal of the veterinary technology program is to provide students with exceptional technical and clinical reasoning skills and knowledge in veterinary technology such that graduates will be prepared to pass the Veterinary Technician National Exam (VTNE) and to be immediate and valuable members of a veterinary medical team. Additionally, the program aims to develop a firm foundation in both farm animal and companion animal veterinary practices. Courses in the program cover basic sciences, veterinary nursing, and veterinary practice management, with a strong focus on hands-on practical knowledge throughout the curriculum. Students gain basic knowledge and skills for the major domestic animal species (dog, cat, horse, and cow). Integration of knowledge in communication, veterinary ethical and legal issues, veterinary practice management, clinical reasoning skills, and hands-on technical skills allow students to become complete veterinary technicians, capable of providing high-quality, compassionate, and expert care to animals both small and large.

Specific skills and decision making abilities are outlined by the AVMA accrediting body here: <https://www.avma.org/education/accreditation/programs/cvtea-accreditation-policies-and-procedures-appendix-i>

# University of New Hampshire at Manchester

Mike Decelle, Dean

Dan Reagan, Associate Dean of Academic Affairs

Lisa Enright, Assistant Dean of Student Success

Welcome to the University of New Hampshire at Manchester, the university's campus in the heart of Merrimack Valley. Our mission is to provide an affordable avenue for students in southern New Hampshire to earn the world-class UNH degree.

At UNH Manchester, we capitalize on our location in the revitalized millyard of New Hampshire's largest city. Our campus on the banks of the Merrimack River is a few blocks from the heart of the state's financial and corporate center and home to many of the region's non-profit and government offices. Led by faculty who are experts in their fields, our programs prepare students for the opportunities of tomorrow in the region's business, education, government, non-profit, service, and technology sectors.

UNH Manchester is uniquely equipped to support regional economic development, creating a campus environment in which students, faculty, business/industry, government, and non-profits collaborate on mutually beneficial projects and initiatives. As a community partner, we have a commitment to the region's economic vitality, respond to educational and economic opportunities, and support innovation and student access to programs designed and delivered for the future.

Bringing together career-driven programs, faculty talent and a focus on experiential learning, UNH Manchester prepares students for success in their chosen field — and connects them to the wealth of opportunities in the region.

## Accreditation

The University of New Hampshire at Manchester was established in 1985 as the sixth undergraduate college of the University of New Hampshire. The University of New Hampshire is accredited by the New England Commission of Higher Education (formerly the Commission on Institutions of Higher Education of the New England Association of Schools and Colleges, Inc.), which accredits schools and colleges in the six New England states. Accreditation by the association indicates that the institution has been carefully reviewed and found to meet or exceed standards agreed upon by nationally recognized educators.

## Faculty

The UNH Manchester faculty is its greatest asset. Residential faculty members have earned reputations for excellent teaching, scholarly achievement in their fields, and service to the community. They are recognized scholars and have acquired national and international reputations. Adjunct faculty members bring applied experience and a commitment to teaching to the classroom. Most importantly, UNH Manchester's dedicated faculty members are outstanding teachers who care about each individual student. Faculty members work closely with students as advisers and help students define their goals, plan career objectives, and develop an individualized program of study within each major.

<https://manchester.unh.edu/>

## Departments

- [Applied Engineering and Sciences](#)
- [Business and Public Affairs](#) (p. 425)
- [Communication Arts and Sciences](#)
- [Life Sciences](#)
- [Security Studies](#)

## Programs of Study

- [Analytics and Data Science](#) (p. 403)
- [ASL/English Interpreting](#) (p. 408)
- [Biological Sciences](#) (p. 410)
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- [Philosophy](#) (p. 457)
- [Psychology](#) (p. 457)
- [Public Service and Nonprofit Leadership](#) (p. 460)

## Analytics and Data Science

With an explosion of big data initiatives in organizations worldwide, the demand for data-savvy individuals has never been higher. Our Analytics and Data Science programs are specifically designed to prepare the next generation of innovative data scientists and analysts.

The Analytics and Data Science programs in the Applied Engineering and Sciences Department at UNH Manchester prepare students with cutting-edge technical skills they need to manage, distill, and interpret data for all economic sectors, from finance to healthcare to marketing and advertising. Through experiential learning that include real-world course projects, internship experiences, and capstone courses, students master programming languages and techniques using modern platforms to derive actionable information from data.

## Programs

- [Analytics and Data Science Major: Analytics Option \(B.S.\) Manchester](#) (p. 404)
- [Analytics and Data Science Major: Data Science Option \(B.S.\) Manchester](#) (p. 405)
- [Analytics Minor \(Manchester\)](#) (p. 407)
- [Data Science Minor \(Manchester\)](#) (p. 407)



## Faculty

### Analytics and Data Science Faculty

## Analytics and Data Science Major: Analytics Option (B.S.) Manchester

<https://manchester.unh.edu/program/bs/analytics-data-science-major-analytics-option>

## Description

The option in Analytics is intended for students interested in either heading into industry immediately upon graduation, or pursuing graduate work in a professionally oriented program such as the Master of Science in Analytics at UNH. The option in Analytics places its emphasis on applications of data science in industry.

This program has been designed to prepare students for professional careers working with data, with an emphasis on the extraction of meaning from data. The program is not targeted to any one industry; rather, it provides a flexible, practical skillset that can be applied widely. This skillset includes elements of computer science, applied mathematics and statistics, communication skills, and business savvy. During the course of the program, students will demonstrate their acquisition of these skills by successfully completing their program coursework, their internship experience, and their capstone project.

## Requirements

Successful completion of the program entails earning at least 128 credits, meeting the requirements of the University's Discovery program, completing all of the 21 required courses in the major as listed below, including the capstone course, the internship preparedness course, and an internship. In all major courses, the minimum allowable grade is a C-. The minimum overall GPA for graduation is 2.0. Transfer students may transfer up to a maximum of 32 credits to satisfy major requirements (not counting those courses used to satisfy Discovery requirements).

## Program Requirements

Code	Title	Credits
<b>Mathematics</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 545	Introduction to Linear Algebra	4
or MATH 645	Linear Algebra for Applications	
MATH 739	Applied Regression Analysis	4
<b>Computing</b>		
COMP 424	Applied Computing 1: Foundations of Programming	4
or CS 415	Introduction to Computer Science I	
COMP 430	Systems Fundamentals	4
COMP 520	Database Design and Development	4
or IT 505	Integrative Programming	
COMP 525	Data Structures Fundamentals	4
or CS 416	Introduction to Computer Science II	
COMP 570	Statistics in Computing and Engineering	4
or MATH 539	Introduction to Statistical Analysis	
or MATH 644	Statistics for Engineers and Scientists	
COMP 625	Data Structures and Algorithms	4
or CS 515	Data Structures and Introduction to Algorithms	
<b>Business</b> <sup>1</sup>		12

<b>Analytics &amp; DATA Courses</b>		
DATA 557	Introduction to Data Science and Analytics	4
or CS 457	Introduction to Data Science and Analytics	
DATA 674	Predictive and Prescriptive Analytics I	4
DATA 675	Predictive and Prescriptive Analytics II	4
DATA #757	Mining Massive Datasets	4
or COMP 721	Big Data for Data Engineers	
<b>Project and Professional Practice</b>		
DATA 690	Internship Experience	4
DATA #790	Capstone Project	4
or CS 791	Senior Project I	
or CS 792	Senior Project II	
<b>Other</b>		
ENGL 502	Professional and Technical Writing	4
UMST 582	Internship and Career Planning Seminar	1
<b>Total Credits</b>		<b>81</b>

- <sup>1</sup> In consultation with your advisor, select:
- 1 course (4 credits) in Introduction to Business
  - 1 course (4 credits) in Organizational Behavior
  - 1 course (4 credits) in Organizational Leadership

For additional information, contact program coordinator Jeremiah Johnson ([jeremiah.johnson@unh.edu](mailto:jeremiah.johnson@unh.edu)) or the UNH Manchester Office of Admissions ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)), (603) 641-4150.

## Degree Plan

### Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
COMP 424	Applied Computing 1: Foundations of Programming	4
or CS 415	or Introduction to Computer Science I	
ENGL 401	First-Year Writing	4
MATH 425	Calculus I	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
BUS A	<sup>1</sup>	4
COMP 525	Data Structures Fundamentals	4
or CS 416	or Introduction to Computer Science II	
DATA 557	Introduction to Data Science and Analytics	4
or CS 457	or Introduction to Data Science and Analytics	
MATH 426	Calculus II	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
COMP 625	Data Structures and Algorithms	4
or CS 515	or Data Structures and Introduction to Algorithms	
MATH 645	Linear Algebra for Applications	4
Discovery Course		4
Elective	<sup>2</sup>	4
<b>Credits</b>		<b>16</b>

**Spring**

COMP 430	Systems Fundamentals	4
COMP 520 or IT 505	Database Design and Development or Integrative Programming	4
COMP 570 or MATH 539 or MATH 644	Statistics in Computing and Engineering or Introduction to Statistical Analysis or Statistics for Engineers and Scientists	4
Discovery Course		4

**Credits** 16

**Third Year****Fall**

BUS B <sup>1</sup>		4
DATA 674	Predictive and Prescriptive Analytics I	4
MATH 739	Applied Regression Analysis	4
Discovery Course		4

**Credits** 16

**Spring**

DATA 675 or COMP 721	Predictive and Prescriptive Analytics II or Big Data for Data Engineers	4
ENGL 502	Professional and Technical Writing	4
UMST 582	Internship and Career Planning Seminar	1
Discovery Course		4
Discovery Course		4

**Credits** 17

**Fourth Year****Fall**

BUS C <sup>1</sup>		4
DATA #757	Mining Massive Datasets	4
Discovery Course		4
Elective		4

**Credits** 16

**Spring**

DATA #790 or CS 791 or CS 792	Capstone Project or Senior Project I or Senior Project II	4
Discovery Course		4
Elective		4
Elective		4

**Credits** 16

**Total Credits** 129

<sup>1</sup> In consultation with your advisor, select: Introduction to Business, Organizational Behavior, or Organizational Leadership.

<sup>2</sup> MATH 531 Mathematical Proof strongly encouraged

- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply theory, techniques, and tools throughout the data analysis lifecycle and employ the resulting knowledge to satisfy stakeholders' needs.

## Analytics and Data Science Major: Data Science Option (B.S.) Manchester

### Description

<https://manchester.unh.edu/program/bs/analytics-data-science-major-data-science-option>

The option in Data Science is intended for students interested in pursuing advanced degrees and conducting original research in data science. The option in data science places its emphasis on a rigorous introduction to the theoretical mathematical and computational underpinnings of modern data science.

### Program Objectives

This program has been designed to prepare students for professional careers working with data, with an emphasis on the extraction of meaning from data. The program is not targeted to any one industry; rather, it provides a flexible, practical skillset that can be applied widely. This skillset includes elements of computer science, applied mathematics and statistics, communication skills, and business savvy. Graduates of the bachelor of science in analytics and data science program are expected to have:

- An understanding of the role of data in guiding decision-making in industry
- An understanding of how data is generated, stored, and accessed
- An understanding of data security
- An understanding of the ethical use of data
- An understanding of structured vs. unstructured data
- An understanding of the methods, statistical and other, used to derive actionable information from data
- Experience with multiple programming languages
- Experience with multiple statistical and data analysis software programs
- The ability to communicate detailed, technical information to a variety of audiences clearly and concisely, without the use of jargon
- The ability to work effectively, both as an individual or as a member of a team
- The ability to successfully lead a team
- The ability to adapt to a dynamic, rapidly changing work environment
- Completed projects and other work experiences on a larger scale than is typical in a bachelor's degree program.

## Student Learning Outcomes

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.

During the course of the program, students will demonstrate their acquisition of these skills by successfully completing their program coursework, their internship experience, and their capstone project.

## Requirements

Successful completion of the program entails earning at least 128 credits, meeting the requirements of the University's Discovery program, and completing all of the 18 required courses in the major as listed below. In all major courses, the minimum allowable grade is a C-. The minimum overall GPA for graduation is 2.0. Transfer students may transfer up to a maximum of 32 credits to satisfy major requirements (not counting those courses used to satisfy Discovery requirements).

Students who enroll in the Data Science Option may need to take some required courses on the Durham campus.

## Program Requirements

Code	Title	Credits
<b>Mathematics</b>		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 528	Multidimensional Calculus	4
MATH 531	Mathematical Proof	4
COMP 570	Statistics in Computing and Engineering	4
MATH 645	Linear Algebra for Applications	4
MATH 755	Probability with Applications	4
MATH 756	Principles of Statistical Inference	4
<b>Computing</b>		
COMP 424 or CS 415	Applied Computing 1: Foundations of Programming Introduction to Computer Science I	4
COMP 525 or CS 416	Data Structures Fundamentals Introduction to Computer Science II	4
COMP 625 or CS 515	Data Structures and Algorithms Data Structures and Introduction to Algorithms	4
CS 420	Foundations of Programming for Digital Systems	4
CS 659	Introduction to the Theory of Computation	4
COMP 740 & MATH 738 or COMP 740 & DATA 674 or DATA 674 & DATA 675	Machine Learning Applications and Tools and Data Mining and Predictive Analytics Machine Learning Applications and Tools and Predictive and Prescriptive Analytics I Predictive and Prescriptive Analytics I and Predictive and Prescriptive Analytics II	8
CS 758	Algorithms	4
COMP 720	Database Systems and Technologies	4
<b>Analytics &amp; Data Science</b>		
DATA 557	Introduction to Data Science and Analytics	4
<b>English</b>		
ENGL 502	Professional and Technical Writing	4
<b>Analytics Course Capstone</b>		
DATA #790 or CS 791 & CS 792 or CS 799	Capstone Project Senior Project I and Senior Project II Thesis	4
<b>Select Approved Minor <sup>1</sup></b>		
<b>Total Credits</b>		<b>80</b>

<sup>1</sup> Select an approved minor in consultation with the minor supervisor. Must be in a discipline to which Analytics and Data Science can be applied (examples include: Economics, Applied Mathematics) for the Data Science Option.

For additional information about the Analytics and Data Science: Data Science Option, contact program coordinator [Jeremiah Johnson](mailto:jeremiah.johnson@unh.edu)

([jeremiah.johnson@unh.edu](mailto:jeremiah.johnson@unh.edu)) or the UNH Manchester Office of Admissions ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)) at (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
MATH 425	Calculus I	4
COMP 424 or CS 415	Applied Computing 1: Foundations of Programming or Introduction to Computer Science I	4
ENGL 401	First-Year Writing	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
MATH 426	Calculus II	4
COMP 525 or CS 416	Data Structures Fundamentals or Introduction to Computer Science II	4
DATA 557 or CS 457	Introduction to Data Science and Analytics or Introduction to Data Science and Analytics	4
CS 420	Foundations of Programming for Digital Systems	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
MATH 645	Linear Algebra for Applications	4
MATH 531	Mathematical Proof	4
COMP 625 or CS 515	Data Structures and Algorithms or Data Structures and Introduction to Algorithms	4
ENGL 502	Professional and Technical Writing	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
COMP 570 or MATH 644	Statistics in Computing and Engineering or Statistics for Engineers and Scientists	4
CS 659	Introduction to the Theory of Computation	4
MATH 528	Multidimensional Calculus	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
MATH 755	Probability with Applications	4
MATH 738	Data Mining and Predictive Analytics <sup>1</sup>	4
Minor Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>

**Spring**

MATH 756	Principles of Statistical Inference	4
CS 750	Machine Learning <sup>1</sup>	4
CS 755	Computer Vision	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

**Fourth Year****Fall**

CS 758	Algorithms	4
DATA #790	Capstone Project	4
Minor Course		
Discovery Course		
<b>Credits</b>		<b>8</b>

**Spring**

Minor Course		4
Minor Course		4
Minor Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>

**Total Credits** **120**

<sup>1</sup> Either MATH 738 and CS 750, or DATA 674 and DATA 675, or DATA 674 and CS 750

Transfer course approval for the minor is limited to at most, two relevant courses successfully completed at another accredited institution, subject to syllabi review and approval. Some preparation in MATH 425 Calculus I and programming (COMP 424 Applied Computing 1: Foundations of Programming, CS 414 From Problems to Algorithms to Programs or CS 415 Introduction to Computer Science I) is required.

**Requirements <sup>1</sup>**

Code	Title	Credits
DATA 557	Introduction to Data Science and Analytics	4
COMP 525	Data Structures Fundamentals	4
COMP 570	Statistics in Computing and Engineering	4
MATH 645	Linear Algebra for Applications	4
Select one of the following:		4
DATA 674	Predictive and Prescriptive Analytics I	
DATA 675	Predictive and Prescriptive Analytics II	
DATA 750	Neural Networks	
DATA #757	Mining Massive Datasets	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> See equivalent requirements for the minor if taken on the Durham campus

For more information, contact [Jeremiah Johnson](mailto:jeremiah.johnson@unh.edu) ([jeremiah.johnson@unh.edu](mailto:jeremiah.johnson@unh.edu)), minor supervisor.

**Data Science Minor (Manchester)**

<https://manchester.unh.edu/program/minor/data-science>

**Description**

The objective of this minor is to provide a basic background in data science for those who are more interested in the theoretical underpinnings of analytics and data science.

**Requirements**

Students must complete five courses (20 credits) with a cumulative minimum grade point average of 2.0 and with no grade below a C- grade. Transfer course approval for the minor is limited to at most, two relevant courses successfully completed at another accredited institution, subject to syllabi review and approval. Some preparation in MATH 425 Calculus I and programming (COMP 424 Applied Computing 1: Foundations of Programming, CS 414 From Problems to Algorithms to Programs or CS 415 Introduction to Computer Science I) is required.

**Requirements**

Code	Title	Credits
CS 515	Data Structures and Introduction to Algorithms	4
Select one of the following:		4
COMP 525	Data Structures Fundamentals	
CS 416	Introduction to Computer Science II	
Select three of the following: <sup>1</sup>		12
CS 730	Introduction to Artificial Intelligence	
CS 750	Machine Learning	
CS 753	Information Retrieval	
CS 775	Database Systems	
MATH 645	Linear Algebra for Applications	
MATH 736	Advanced Statistical Modeling	
MATH 738	Data Mining and Predictive Analytics	
MATH 739	Applied Regression Analysis	

**Student Learning Outcomes**

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply theory, techniques, and tools throughout the data analysis lifecycle and employ the resulting knowledge to satisfy stakeholders' needs.

**Analytics Minor (Manchester)**

<https://manchester.unh.edu/program/minor/analytics>

**Description**

The objective of this minor is to provide a basic background in analytics for those interested in applications of data science.

**Requirements**

Students must complete five courses (20 credits) with a cumulative minimum grade point average of 2.0 and with no grade below a C- grade.

DATA 750	Neural Networks
DATA #757	Mining Massive Datasets
<hr/>	
Total Credits	20

<sup>1</sup> Must select at least one CS and one MATH course. Must select CS 750 Machine Learning or MATH 738 Data Mining and Predictive Analytics.

For more information, contact [Jeremiah Johnson](mailto:Jeremiah.Johnson@unh.edu) ([jeremiah.johnson@unh.edu](mailto:Jeremiah.Johnson@unh.edu)), minor supervisor.

## ASL/English Interpreting

### Preparing skillful interpreters through interaction and immersion

In the nation's first accredited interpreting program and one of only 14 accredited programs in the country, you'll learn American Sign Language and the foundation of ASL/English interpreting from distinguished faculty, all of whom are native ASL signers and/or certified interpreters.

The demand for skilled interpreters is on the rise, with the Bureau of Labor Statistics projecting 18 percent growth in the interpreting field between 2016 and 2026. Our program prepares you to work with the Deaf community by teaching you the intricacies of American Sign Language and Deaf culture, as well as the skills you need to pursue a career as an ASL/English interpreter.

Members of the Deaf community are integrated with students into the learning experience, both inside and outside the classroom, which is a very unique feature of our ASL/English Interpreting program. During your senior year internship, you will be paired with a nationally certified mentor and use your interpretation and ASL skills within organizations throughout the state.

Our graduates have pursued careers in ASL/English interpreting, deaf education, rehabilitation, healthcare, audiology, social work, counseling and the media. From medicine to law, education to performing arts — your career opportunities as a bilingual and bicultural graduate are vast.

<https://manchester.unh.edu/academics/degree-programs/asl-english-interpreting>

## Programs

- [American Sign Language and Deaf Studies Minor](#) (p. 408)
- [ASL/English Interpreting Major \(B.S.\)](#) (p. 408)

## Faculty

[ASL/English Interpreting Faculty](#)

## American Sign Language and Deaf Studies Minor

<https://manchester.unh.edu/program/minor/american-sign-language-deaf-studies>

## Description

American Sign Language is a visual language that is predominately used by Deaf and hard of hearing communities in the United States and many parts of Canada. Developing fluency in American Sign Language and expertise in the community and culture provides a foundation for careers that work with the American Deaf community.

## Requirements

To earn a minor in American Sign Language and Deaf Studies, students must complete 24 credits, with no individual grade lower than C-.

Code	Title	Credits
<b>Required Courses</b>		
ASL 435	American Sign Language I	4
ASL 436	American Sign Language II	4
INTR 438	A Socio-cultural Perspective on the Deaf Community	4
<b>Electives</b>		
Select three courses from the following:		12
ASL 531	American Sign Language III	
ASL 532	American Sign Language IV	
ASL 621	Advanced American Sign Language Discourse I	
ASL 622	Advanced American Sign Language Discourse II	
INTR 539	Comparative Linguistic Analysis for Interpreters	
Total Credits		24

For more information, contact [Laurie Shaffer](mailto:Laurie.Shaffer@unh.edu) ([laurie.shaffer@unh.edu](mailto:Laurie.Shaffer@unh.edu)), minor supervisor.

## ASL/English Interpreting Major (B.S.)

<https://manchester.unh.edu/program/bs/aslenglish-interpreting-major>

## Description

The American Sign Language (ASL)/English Interpreting program at UNH Manchester is a specialized, in-depth program with a national reputation for quality. In 1999, the program became the first interpreting program in the country to be found in compliance with the National Interpreter Education Standards of the Conference of Interpreter Trainers (CIT). In 2007, the program became the first interpreting program in the nation to be accredited by the Commission on Collegiate Interpreter Education (CCIE), and, in 2017, the program became the first program to be re-accredited by CCIE. UNH Manchester also houses one of northern New England's most comprehensive collections of books and media materials on ASL/English Interpreting.

The program is guided by the premise that deaf people, as a linguistic minority, possess their own cultural values, literature, history, traditions, and social conventions. Interpretation requires bilingual and bicultural competence in spoken English and American Sign Language. The ASL/English Interpreting program at UNH Manchester provides students with a strong theoretical foundation as generalists in ASL/English Interpreting and helps prepare students for either state-level interpreter screening or national Registry of Interpreters for the Deaf (RID) interpreter certification, depending on students' skill level and experience.

Graduates may go on to pursue specialty areas in interpretation or related fields of study.



Students who complete the bachelor of science degree in ASL/English Interpreting graduate with a varied and flexible academic base. Interpreting requires skills such as sustained powers of concentration, versatility in dealing with a variety of people and content areas, fast-thinking and excellent communication skills in the respective languages. Students seeking to become interpreters receive a foundation in American Sign Language, Deaf culture, and the interpreting process, and their programs of study often include elective courses examining specific specialized settings such as Healthcare or on special topics such as theater and translation. Students also gain a thorough grounding in the liberal arts through the University's Discovery program.

Graduates of the ASL/English Interpreting program may pursue careers in ASL/English interpreting, deaf education, rehabilitation, health care, audiology, social work, counseling, and the media. The program provides students with a varied and flexible academic base. Graduates are prepared for further study in such fields as psychology, communication, linguistics, sociology, and anthropology.

## Requirements

Students must complete 64 credits in the major, 40 credits in the University's Discovery program, and 24 credits in elective courses. Students must complete 64 credits in the major with a grade of C or better. Students who earn less than a C on a particular course may repeat that course only once. Students must achieve a GPA of 2.5 or better in major courses and must pass both ASL 532 American Sign Language IV and INTR 630 Consecutive Interpretation I with at least a B- (or successfully demonstrate competence in American Sign Language and consecutive interpretation, respectively). Transfer students must complete a minimum of eight ASL/English Interpreting courses at UNH Manchester.

## Required Courses

Code	Title	Credits
<b>Language Courses</b>		
ASL 435	American Sign Language I	4
ASL 436	American Sign Language II	4
ASL 531	American Sign Language III	4
ASL 532	American Sign Language IV	4
ASL 621	Advanced American Sign Language Discourse I	4
ASL 622	Advanced American Sign Language Discourse II	4
<b>Culture and Linguistics Courses</b>		
INTR 438	A Socio-cultural Perspective on the Deaf Community <sup>1</sup>	4
INTR 539	Comparative Linguistic Analysis for Interpreters	4
<b>Interpreting Courses</b>		
INTR 430	Introduction to Interpretation	4
INTR 439	Ethics and Professional Standards for Interpreters	4
INTR 540	Translation	4
INTR 630	Consecutive Interpretation I	4
INTR 636	Consecutive Interpretation II	4
INTR 732	Simultaneous Interpretation	4
INTR 734	Field Experience and Seminar I	4
INTR 735	Field Experience and Seminar II	4
<b>Total Credits</b>		<b>64</b>

<sup>1</sup> ASL/English Interpreting majors cannot use this course to fulfill the SS Discovery requirement.

## Capstone Experience

The capstone experience in the bachelor of science degree program in ASL/English Interpreting is met by INTR 735 Field Experience and

Seminar II, which is a senior-level course and the last in the sequence of courses required for the major. In addition, students participate in a research experience. Starting in INTR 636 Consecutive Interpretation II and continuing in INTR 732 Simultaneous Interpretation, students identify an area of interest, conduct a literature review, and design and complete a research project. At the end of INTR 732 Simultaneous Interpretation, they submit a completed paper and present on their findings. These courses meet the following two criteria of the capstone experience for this major:

1. the capstone synthesizes and applies disciplinary knowledge and skills
2. the capstone demonstrates emerging professional competencies.

For more information, contact [Laurie Shaffer \(laurie.shaffer@unh.edu\)](mailto:laurie.shaffer@unh.edu), program director, or the [UNH Manchester Office of Admissions \(unhm.admissions@unh.edu\)](mailto:unhm.admissions@unh.edu) at (603) 641-4150.

## Degree Plan

### Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ASL 435	American Sign Language I	4
ENGL 401	First-Year Writing	4
INTR 438	A Socio-cultural Perspective on the Deaf Community	4
UMST 401	First Year Seminar	1
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
ASL 436	American Sign Language II	4
INTR 430	Introduction to Interpretation	4
Discovery Course		4
Quantitative Reasoning Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
ASL 531	American Sign Language III	4
INTR 439	Ethics and Professional Standards for Interpreters	4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ASL 532	American Sign Language IV	4
INTR 540	Translation	4
INTR 539	Comparative Linguistic Analysis for Interpreters	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

**Third Year****Fall**

ASL 621	Advanced American Sign Language Discourse I	4
INTR 630	Consecutive Interpretation I	4
Discovery Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>

**Spring**

ASL 622	Advanced American Sign Language Discourse II	4
INTR 636	Consecutive Interpretation II	4
Discovery Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>

**Fourth Year****Fall**

INTR 732	Simultaneous Interpretation	4
INTR 734	Field Experience and Seminar I	4
Elective Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>

**Spring**

INTR 735	Field Experience and Seminar II	4
Elective Course		4
Elective Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>129</b>

## Student Learning Outcomes

- Development of language competency in both American Sign Language and English to foster entry into the field of interpreting.
- Development of competencies needed for meaning transfer.
- Development of skills for self-assessment for process and product of interpreting.
- Development of decision-making skills and critical thinking to assess an interpreted situation and the source language, target language, setting and participants.

## Biological Sciences

### Explore the living world through hands-on experience in the lab and in the field

Discover the inner workings of living organisms from molecules to ecosystems in our Biological Sciences program. As our largest and most popular major, the Biological Sciences program is designed to give you the degree you want — through self-designed concentrations, independent study, research projects, internships, job shadows, study abroad, and more.

You'll work with faculty mentors to customize your degree around your interests, allowing you to focus your learning in these diverse areas of study:

- Biology Teaching
- Biomaterials
- Cancer biology
- Ecology
- Genomics
- Microbiology
- Pre-Professional Health (Dental, Medical, Optometry, Pharmacy, Physician Assistant, Physical/Occupational Therapy, Veterinary, etc.)

All students, in consultation with their faculty advisor, develop a self-designed concentration where they select a group of upper-level courses that represents their interest.

Research is central to this program, empowering you to explore, question and invent. Side-by-side with your classmates and professors, you'll conduct experiments in our state-of-the-art labs: general biology, advanced biology, microbiology, general chemistry and organic chemistry, as well as the cell culture research lab, microbiology research lab, and molecular biology research lab.

You'll also have the opportunity to apply your skills in the real world through experiential learning, including:

- robust job shadows at the Elliot Hospital Laboratory and other local medical facilities
- internships at Manchester Water Works, ARMI (Advanced Regenerative Manufacturing Institute), and biotechnology firms on campus in our Biotechnology Innovation Center as well as in the nearby Millyard
- summer research courses at Shoals Marine Laboratory
- study away opportunities such as investigating biological diversity in Belize or microbial ecology in Iceland

Through diverse areas of study, faculty experts and hands-on experience, you'll be prepared for success in graduate, medical or professional studies, and careers in industries from healthcare to agriculture to education.

<https://manchester.unh.edu/academics/degree-programs/biological-sciences>

## Programs

- [Biological Sciences \(A.S.\)](#) (p. 410)
- [Biological Sciences Major \(B.A.\)](#) (p. 412)
- [Biological Sciences Minor](#) (p. 414)

## Faculty

[Biological Sciences Faculty](#)

## Biological Sciences (A.S.)

<https://manchester.unh.edu/program/as/biological-sciences>

## Description

Biology is the study of living organisms in both laboratory and field conditions. It concerns itself with questions of understanding the living world, its complex interrelationships, and the role of human beings within it.

The associate of science in biological sciences program at UNH Manchester is designed to serve either as a terminal degree or as a springboard for students interested in the life sciences, which include majors in biology, biotechnology, microbiology, zoology, plant biology, wildlife management, environmental conservation, biochemistry, and animal sciences. Employment opportunities in the public and private sectors include education; food, water, wastewater and other industrial laboratories; clinical laboratories; biotechnology; environmental research and monitoring; and health careers.

## Requirements

Students must complete a minimum of 64 credits to graduate. There are two tracks in the A.S. degree program at UNH Manchester: biology and microbiology.

### Biology Track Requirements

Code	Title	Credits
MATH 425 or MATH 424B	Calculus I Calculus for Life Sciences	4
PSYC 402	Statistics in Psychology <sup>1</sup>	4
BIOL 413	Principles of Biology I	4
BIOL 414	Principles of Biology II	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BIOL 541	Ecology	4
GEN 604	Principles of Genetics	0 or 4
<b>Total Credits</b>		<b>43-47</b>

<sup>1</sup> Other statistics courses such as BIOL 528 Applied Biostatistics I or BUS 430 Introduction to Business Statistics may be used to satisfy this requirement.

### Microbiology Track Requirements

Students opting for the microbiology track must complete all courses listed in the biological sciences program with the exception of BIOL 541 Ecology. In addition, students must complete the following courses. From time to time, other microbiology courses may be offered. With approval of the Program Coordinator, they may substitute for courses within the Microbiology Track.

Code	Title	Credits
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS #601	Bacteriology of Food	5
<b>Total Credits</b>		<b>10</b>

Note: Students preparing for professional or graduate programs may need to complete: CHEM 651 Organic Chemistry I/CHEM 653 Organic Chemistry Laboratory and CHEM 652 Organic Chemistry II/CHEM 654 Organic Chemistry Laboratory. These courses may substitute for CHEM 545 Organic Chemistry/CHEM 546 Organic Chemistry Laboratory and BMCB 658 General Biochemistry/BMCB 659 General Biochemistry Lab. Please consult your academic advisor.

For more information, contact [Kyle MacLea](mailto:Kyle.MacLea@unh.edu) (Kyle.MacLea@unh.edu), program coordinator, or contact the [Office of Admissions](mailto:unhm.admissions@unh.edu) (unhm.admissions@unh.edu), (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

### Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
BIOL 413	Principles of Biology I	4
CHEM 403	General Chemistry I	4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 425	Calculus I	4
BIOL 414	Principles of Biology II	4
CHEM 404	General Chemistry II	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
PSYC 402	Statistics in Psychology	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BIOL 541	Ecology	4
HUMA 411 or HUMA 412	Humanities I or Humanities II	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
Discovery Course		4
<b>Credits</b>		<b>18</b>
<b>Total Credits</b>		<b>68</b>

## Student Learning Outcomes

A student successfully completing the Biological Sciences program will be able to:

- Understand the fundamentals of basic biological principles, concepts, and theories.
- Demonstrate the ability to evaluate, apply, and synthesize biological information and ideas.
- Be competent in basic biology and chemistry laboratory skills and with the use of common laboratory equipment and instrumentation.
- Demonstrate the ability to communicate technical information related to biological sciences related topics in scientific writing and oral presentations.
- Understand, analyze, and evaluate primary research literature involving biological sciences related topics.
- Understand and apply the process of the scientific method, including being able to formulate hypotheses, design and conduct experiments with adequate controls to test hypotheses, interpret and evaluate data, and draw conclusions.
- Gather, analyze, organize, evaluate, and present scientific data, including the use of technology to solve problems and communicate information.
- Demonstrate the ability to function as a member of a team.
- Compete effectively for entry-level employment and for admission to baccalaureate schools in their chosen area and be successful in these endeavors.

## Biological Sciences Major (B.A.)

<https://manchester.unh.edu/program/ba/biological-sciences-major>

### Description

Biology is the study of living organisms in both laboratory and field conditions. It concerns itself with questions of understanding the living world, its complex interrelationships, and the role of human beings within it.

The B.A. in biological sciences at UNH Manchester is designed to:

1. allow students to earn a baccalaureate degree in biology at UNH Manchester;
2. allow students to combine study in biology with other programs and disciplines by completing a second major, a minor, or a self-designed set of elective courses along with their biology degree;
3. provide an opportunity for students to complete a baccalaureate degree in biology while preparing to pursue a Master's degree in biology, biotechnology, or other fields. These degree programs could be undertaken after completion of the B.A. Alternatively, UNH offers several accelerated Master's programs where excellent senior students in the Biological Sciences major can complete coursework towards their undergraduate and graduate degrees at the same time;
4. allow students to complete a major in biology while taking required courses in education in preparation for the five-year M.A.T. or M.Ed. programs and state certification in secondary science education; or alternative state certification pathway;
5. provide an opportunity for students to complete a baccalaureate degree in biology while completing the required courses for

admission to medical, dental, veterinary, physician assistant, pharmacy, physical therapy, optometry, and other professional or graduate programs.

Employment opportunities in the public and private sectors include education; industrial, clinical, and research laboratories; biotechnology; and environmental field research.

## Requirements

Students must complete a minimum of 128 credits and satisfy the University's Discovery Program and foreign language requirements. Each course required in the major must be completed with a minimum grade of C-. Students must attain a minimum GPA in the major of 2.0. Transfer students must complete at least 24 credits in the major at UNH. BIOL 413 Principles of Biology I, BIOL 414 Principles of Biology II may be used to satisfy the biological sciences Discovery requirement and CHEM 403 General Chemistry I, CHEM 404 General Chemistry II may be used to satisfy the Physical Sciences Discovery requirement. PSYC 402 Statistics in Psychology may be used to satisfy the Quantitative Reasoning Discovery requirement; however, students interested in graduate or professional programs are encouraged to take MATH 425 Calculus I, or MATH 424B Calculus for Life Sciences, to satisfy the Quantitative Reasoning requirement.

The UNH Manchester B.A. in biological sciences program is structured with three levels of coursework.

## Biology Core Curriculum

Code	Title	Credits
<b>Biology Courses</b>		
BIOL 411 or BIOL 413	Introductory Biology: Molecular and Cellular Principles of Biology I	4
BIOL 412 or BIOL 414	Introductory Biology: Evolution, Biodiversity and Ecology Principles of Biology II	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
BIOL 541	Ecology	4
GEN 604	Principles of Genetics	4
<b>Chemistry Courses</b>		
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	8
<b>Mathematics Courses</b>		
Select one of the following:		4
MATH 418	Analysis and Applications of Functions	
MATH 425	Calculus I	
MATH 424B	Calculus for Life Sciences	
<b>Statistics Course</b>		
PSYC 402	Statistics in Psychology <sup>1</sup>	4
<b>Total Credits</b>		<b>37</b>

<sup>1</sup> Other statistics courses such as BIOL 528 Applied Biostatistics I or BUS 430 Introduction to Business Statistics may be used to satisfy this requirement.

Depending on their specific academic and career goals, in particular, students preparing for professional or graduate programs, may, in consultation with their advisor, elect to take additional supporting science courses such as:

Code	Title	Credits
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory (one semester)	5

CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory (two semesters)	5
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory (two semesters)	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
MATH 426	Calculus II	4
PHYS 401	Introduction to Physics I	4
PHYS 402	Introduction to Physics II	4

These courses are often required for admission to medical, professional, and other graduate programs. Medical and dental graduate schools also require PSYC 401 Introduction to Psychology and SOC 400 Introductory Sociology.

## Self-Designed Concentration in Biology

Students will select, in consultation with their advisor, four biology courses at the 600-700 level to be taken at UNH Manchester or UNH Durham.

## Capstone Experience

Code	Title	Credits
BSCI 701	Senior Seminar I (during either semester of senior year)	1
In consultation with your academic advisor, select a capstone experience:		4
BSCI 792	Research	
BSCI 793	Internship	
BSCI #794	Clinical Microbiology Internship	
BSCI 795	Independent Study	
<b>Total Credits</b>		<b>5</b>

BSCI 701 Senior Seminar I will meet weekly during either semester of the senior year in a seminar format. Students will share information about capstone experiences, listen to presentations on timely issues in biology, develop career preparation skills, and receive training in poster production. Other methods of oral presentation and scientific writing are explored as students prepare to present the results of their capstone activities at the Undergraduate Research Conference or other venues.

In addition, all students will take elective courses to fulfill the 128-credit requirement for a B.A. degree. These elective courses could fulfill the requirements for a major or minor in another program or they could fulfill a self-designed interdisciplinary concentration. Where appropriate, they could include some of the biology-related supporting science courses listed above. These courses would be selected in consultation with the advisor and the appropriate faculty advisor in another program.

For more information, contact [Kyle MacLea](mailto:Kyle.MacLea@unh.edu) ([Kyle.MacLea@unh.edu](mailto:Kyle.MacLea@unh.edu)), Program Coordinator, or contact the [Office of Admissions](mailto:unhm.admissions@unh.edu) ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)), (603) 641-4150.

## Degree Plan

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
BIOL 413	Principles of Biology I	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing	4
MATH 418	Analysis and Applications of Functions	4

UMST 401	First Year Seminar	1
<b>Credits</b>		<b>17</b>

### Spring

BIOL 414	Principles of Biology II	4
CHEM 404	General Chemistry II	4
PSYC 402	Statistics in Psychology	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

### Second Year

#### Fall

BIOL 541	Ecology	4
Foreign Language I		4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>

#### Spring

BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4
Foreign Language II		4
Discovery Course		4
<b>Credits</b>		<b>17</b>

### Third Year

#### Fall

600/700 Biological Concentration		4
Discovery Course		4
Elective Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>

#### Spring

600/700 Biological Concentration		4
Discovery Course		4
Elective Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>

### Fourth Year

#### Fall

600/700 Biological Concentration		4
Capstone		4
Elective Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>

#### Spring

600/700 Biological Concentration		4
BSCI 701	Senior Seminar I	1
Elective Course		4
Elective Course		4
Elective Course		1
<b>Credits</b>		<b>14</b>
<b>Total Credits</b>		<b>128</b>



## Student Learning Outcomes

A student successfully completing the Biological Sciences program will be able to:

- Understand the fundamentals of basic biological principles, concepts, and theories.
- Demonstrate the ability to evaluate, apply, and synthesize biological information and ideas.
- Be competent in basic biology and chemistry laboratory skills and with the use of common laboratory equipment and instrumentation.
- Demonstrate the ability to communicate technical information related to biological sciences related topics in scientific writing and oral presentations.
- Understand, analyze, and evaluate primary research literature involving biological sciences related topics.
- Understand and apply the process of the scientific method, including being able to formulate hypotheses, design and conduct experiments with adequate controls to test hypotheses, interpret and evaluate data, and draw conclusions.
- Gather, analyze, organize, evaluate, and present scientific data, including the use of technology to solve problems and communicate information.
- Demonstrate the ability to function as a member of a team.
- Compete effectively for entry-level employment and for admission to graduate or professional schools in their chosen area and be successful in these endeavors.

## Biological Sciences Minor

<https://manchester.unh.edu/program/minor/biological-sciences>

### Description

The minor in biological sciences will introduce students to the field of biological sciences in a five-course sequence that will provide substantial education and training in scientific concepts, science communication, and laboratory skills, as well as the central content areas of biology, including biomolecules, cell biology, genetics, metabolism, physiology, phylogenetics, ecology, and evolution. Students adding the biological sciences minor will be adding a valuable credential to their major indicating a substantial additional skillset in the biosciences.

### Requirements

The minor requires students to complete five courses (20-21+ credits, depending on the courses chosen). The minimum acceptable grade in these courses is a C-, and the average grade for these courses must be a C or better.

Courses for non-majors (for example, BMS 507 Human Anatomy and Physiology I/BMS 508 Human Anatomy and Physiology II; BIOT 422 Biotechnology and Society, BSCI #406 Human Organism, BSCI 410 Contemporary Health Issues, BSCI 421 Diseases of the 21st Century, BSCI 432 Medical Terminology; BIOL 520 Our Changing Planet) will not count towards the minor.

Students are advised that to take some upper-level courses; BMS 503 General Microbiology/BMS 504 General Microbiology Laboratory and GEN 604 Principles of Genetics are frequently pre-requisite courses.

Code	Title	Credits
<b>Required courses</b>		
Select one of the following		8
BIOL 411 & BIOL 412	Introductory Biology: Molecular and Cellular and Introductory Biology: Evolution, Biodiversity and Ecology	
BIOL 413 & BIOL 414	Principles of Biology I and Principles of Biology II	
Select one of the following		4-5
BIOL 541	Ecology	
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	
GEN 604	Principles of Genetics	
Select two courses <sup>1</sup>		8
<b>Total Credits</b>		<b>20-21</b>

<sup>1</sup> Must be majors-level courses in the biological sciences

To ensure a course counts in the minor, it is required that students consult the minor coordinator, [Dr. Patricia Halpin](mailto:Dr.Patricia.Halpin), ([Patricia.Halpin@unh.edu](mailto:Patricia.Halpin@unh.edu)) before enrolling in the course.

## Biotechnology

### Channeling scientific curiosity to fuel discovery and innovation

You're a scientist at heart — curious about how everything works, right down to the smallest detail. Exploring topics like biochemistry, molecular biology and genetics, our Biotechnology program puts you at the heart of one of the newest and fastest-growing scientific fields.

Whatever your scientific passion, studying biotechnology can bring you to its doorstep — preparing you to create advancements that can change lives and improve the world around you.

<https://manchester.unh.edu/academics/degree-programs/biotechnology>

### Programs

- [Biotechnology Major \(B.S.\)](#) (p. 414)
- [Biotechnology Minor](#) (p. 417)

### Faculty

[Biotechnology Faculty](#)

## Biotechnology Major (B.S.)

<https://manchester.unh.edu/program/bs/biotechnology-major>

### Description

Biotechnology is the use of living organisms, biological systems, and small chemicals and biomolecules in technology. Biotechnology has applications in the treatment of diseases, the production of food, the protection of ecosystems, and the generation of energy, as well as in the basic science study of many biological questions.

The B.S. in biotechnology at UNH Manchester is designed to:

1. allow students to earn a baccalaureate degree in biotechnology at UNH;
2. allow students to combine study in biotechnology with other programs and disciplines by completing a minor, or a self-designed set of elective courses along with their biotechnology degree;
3. provide an opportunity for students to complete a baccalaureate degree in biology while preparing to pursue a Master's degree in biology, biotechnology, or other fields. These degree programs could be undertaken after completion of the B.A. Alternatively, UNH offers several accelerated Master's programs where excellent senior students in the Biological Sciences major can complete coursework towards their undergraduate and graduate degrees at the same time;
4. allow students to complete a major in biotechnology while taking required courses in education in preparation for the five-year M.A.T. or M.Ed. programs and state certification in secondary science education; or alternative state certification pathway;
5. provide an opportunity for students to complete a baccalaureate degree in biotechnology while completing the required courses for admission to medical, dental, veterinary, physician assistant, pharmacy, physical therapy, optometry, and other professional or graduate programs.
6. allow students to complete a baccalaureate degree in biotechnology while completing the required courses for admission to graduate research programs (M.S. or Ph.D.) in the life sciences and related fields.

Employment opportunities in the public and private sectors include biotechnology research, development, and manufacturing; education; research laboratories; clinical laboratories; forensic laboratories; jobs in diverse areas from research to quality control to sales in the pharmaceutical industry; industrial positions in the food industry; water and wastewater laboratories and facilities; and environmental research and monitoring.

## Requirements

Students must complete a minimum of 128 credits and satisfy the University's Discovery Program and writing requirement. Each course required in the major must be completed with a minimum grade of C-. Students must attain a minimum GPA in the major of 2.0. Transfer students must complete at least 24 credits in the major at UNH.

BIOL 413 Principles of Biology I, BIOL 414 Principles of Biology II can be used to satisfy the biological sciences Discovery requirement and CHEM 403 General Chemistry I, CHEM 404 General Chemistry II may be used to satisfy the Physical Sciences Discovery requirement. PSYC 402 Statistics in Psychology or MATH 424B Calculus for Life Sciences/MATH 425 Calculus I may be used to satisfy the Quantitative Reasoning Discovery requirement.

The UNH Manchester B.S. in biotechnology program is structured with three levels of coursework.

Code	Title	Credits
<b>Core Courses</b>		
BIOL 411 or BIOL 413	Introductory Biology: Molecular and Cellular Principles of Biology I	4
BIOL 412 or BIOL 414	Introductory Biology: Evolution, Biodiversity and Ecology Principles of Biology II	4
BIOT 501	Ethical Issues in Biology	4

BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
CHEM 403 & CHEM 404	General Chemistry I and General Chemistry II	8
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5
GEN 604	Principles of Genetics	4
MATH 424B or MATH 425	Calculus for Life Sciences Calculus I	4
PHYS 401 or PHYS 407	Introduction to Physics I General Physics I	4
PSYC 402	Statistics in Psychology	4
<b>Advanced Biology Courses (600/700 level)</b>		
Select five courses (at least one course from each of the three categories)		
<b>I. Advanced Biology courses</b>		
BMS 702	Endocrinology	
BMS 705 or BMS 705 & BMS 715	Immunology <sup>1</sup> Immunology and Immunology Laboratory	
BSCI 620	Global Science Exploration	
BSCI 670	Clinical Pathophysiology	
BSCI 680	Pharmacology	
BSCI 692	Evolutionary Medicine	
BSCI 695	Exploring Biology Teaching (1-4 credits)	
BSCI #735	Cell Biology	
BSCI 750	Cancer Biology: From Benchtop Research to Therapeutic Interventions	
GEN 711 or GEN 711W	Genomics and Bioinformatics Genomics and Bioinformatics	
GEN 714	Personal Genomics	
GEN 771	Molecular Genetics	
<b>II. Laboratory Techniques courses</b>		
BIOT 765	Nucleic Acid Techniques	
BIOT 766	Protein and Immunologic Techniques	
BIOT 777	Molecular Biology and Biotechnology	
BMCB 753	Cell Culture	
CHE 651	Biotech Experience/Biomanufacturing (BTEC 220 GBCC)	
GEN 774	Techniques in Plant Genetic Engineering and Biotechnology	
ZOOL 625 & ZOOL 626	Principles of Animal Physiology and Animal Physiology Laboratory	
<b>III. Advanced Microbiology courses</b>		
BIOT 747	Industrial Microbiology and Fermentation	
BMS #601	Bacteriology of Food	
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	
BMS 706 & BMS 708	Virology and Virology Laboratory	
BSCI 737	Microbial Genomics	
BSCI 740	Aquatic Microbiology	
<b>Total Credits</b>		<b>76</b>

- <sup>1</sup> BMS 705 Immunology, may optionally be taken with or without BMS 715 Immunology Laboratory.

Depending on their specific academic and career goals and in consultation with their advisor, students may elect to take additional supporting science courses and a full year of physics (e.g., take PHYS 402 Introduction to Physics II in addition to PHYS 401 Introduction to Physics I; or PHYS 408 General Physics II in addition to PHYS 407 General Physics I). These courses are often required for admission to medical, veterinary, and other professional and graduate programs.

Code	Title	Credits
<b>Capstone Experience</b>		
BSCI 701	Senior Seminar I (during either semester of the senior year)	1

Select a capstone experience:	4
BSCI 792 Research	
BSCI 793 Internship	
BSCI #794 Clinical Microbiology Internship	
BSCI 795 Independent Study	
<b>Total Credits</b>	<b>5</b>

BSCI 701 Senior Seminar I will meet weekly during either semester of the senior year in a seminar format. Students will share information about capstone experiences, listen to presentations on timely issues in biology, develop career preparation skills, and receive training in poster production. Other methods of oral presentation and scientific writing are explored as students prepare to present the results of their capstone activities at the Undergraduate Research Conference or other venues.

In addition, all students will take elective courses to fulfill the 128-credit requirement for a B.S. degree. These elective courses could fulfill the requirements for a major or minor in another program or they could fulfill a self-designed interdisciplinary concentration. These courses would be selected in consultation with the advisor and the appropriate faculty advisor in another program.

For more information, contact [Kyle MacLea](mailto:Kyle.MacLea@unh.edu) ([Kyle.MacLea@unh.edu](mailto:Kyle.MacLea@unh.edu)), program coordinator, or the [Office of Admissions](mailto:unhm.admissions@unh.edu) ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)), (603) 641-4150.

## Degree Plan

### Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
BIOL 413	Principles of Biology I	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing	4
MATH 425	Calculus I	4
UMST 401	First Year Seminar	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
BIOL 414	Principles of Biology II	4
CHEM 404	General Chemistry II	4
PSYC 402	Statistics in Psychology	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
BIOT 501	Ethical Issues in Biology	4
CHEM 651 & CHEM 653	Organic Chemistry I and Organic Chemistry Laboratory	5
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
CHEM 652 & CHEM 654	Organic Chemistry II and Organic Chemistry Laboratory	5

GEN 604	Principles of Genetics	4
Discovery Course		4
<b>Credits</b>		<b>18</b>

#### Third Year

##### Fall

600/700 Biotechnology Concentration		4
PHYS 401	Introduction to Physics I	4
Discovery Course		4
Elective Course		4

**Credits 16**

##### Spring

600/700 Biotechnology Concentration		4
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
Discovery Course		4
Elective Course		4

**Credits 17**

#### Fourth Year

##### Fall

600/700 Biotechnology Concentration		4
600/700 Biotechnology Concentration		4
Capstone		4
Elective Course		4

**Credits 16**

##### Spring

600/700 Biotechnology Concentration		4
BSCI 701	Senior Seminar I	1
Elective Course		4
Elective Course		4

**Credits 13**

**Total Credits 130**

## Student Learning Outcomes

A student successfully completing the Biotechnology program will be able to:

- Understand the fundamentals of basic biological principles, concepts, and theories.
- Demonstrate the ability to evaluate, apply, and synthesize biological information and ideas.
- Be competent in basic biology and chemistry laboratory skills and with the use of common laboratory equipment and instrumentation.
- Be competent in advanced laboratory techniques and microbiological methods.
- Understand the professional and ethical responsibilities involved with current and emerging topics in biology.
- Demonstrate the ability to communicate technical information related to biological sciences and biotechnology related topics in scientific writing and oral presentations.
- Understand, analyze, and evaluate primary research literature involving biological sciences and biotechnology related topics.
- Understand and apply the process of the scientific method, including being able to formulate hypotheses, design and conduct experiments

with adequate controls to test hypotheses, interpret and evaluate data, and draw conclusions.

- Gather, analyze, organize, evaluate, and present scientific data, including the use of technology to solve problems and communicate information.
- Demonstrate the ability to function as a member of a team.
- Understand current and emerging topics in biotechnology.
- Compete effectively for entry-level biotechnology industry employment and for admission to graduate or professional schools in their chosen area and be successful in these endeavors.

## Biotechnology Minor

<https://manchester.unh.edu/program/minor/biotechnology>

### Description

The Minor in Biotechnology will introduce students to the field of biotechnology in a five-course sequence that will provide substantial education and training in bioethics, as well as the central content areas of biology and biotechnology, with a focus on modern genetics and laboratory techniques. Students adding the biotechnology minor will be adding a valuable credential to their major, indicating a substantial additional skill set in the laboratory-focused and forward-looking field of biotechnology.

### Requirements

Students must complete five courses (20-21 credits, depending on the courses chosen). A minimum acceptable grade in these courses is a C-, and the average grade for these courses must be a C or better. Transfer course approval for the minor is limited to, at most, two relevant courses successfully completed at another accredited institution, subject to syllabi review and approval. Courses for non-majors will not count towards the minor.

#### Required Courses

Code	Title	Credits
BIOT 501	Ethical Issues in Biology	4
GEN 604	Principles of Genetics <sup>1,3</sup>	4
Biotechnology lab techniques course <sup>1,2</sup>		4-5
Select one of the following:		8
BIOL 411 & BIOL 412	Introductory Biology: Molecular and Cellular and Introductory Biology: Evolution, Biodiversity and Ecology	
or BIOL 413 & BIOL 414	Principles of Biology I and Principles of Biology II	
Total Credits		20-21

<sup>1</sup> Biotechnology majors-level course.

<sup>2</sup> BMS 503 General Microbiology/BMS 504 General Microbiology Laboratory may be an additional pre-requisite course.

<sup>3</sup> Students in majors with 3+ course overlap (e.g., Neuropsychology) will need a different course than GEN 604 Principles of Genetics within the Biotechnology major. BMS 503 General Microbiology/BMS 504 General Microbiology Laboratory is a recommended alternative.

To ensure a course counts in the minor, it is required that students consult the minor coordinator, [Dr. Kristen Johnson](mailto:Dr.Kristen.Johnson) ([Kristen.johnson@unh.edu](mailto:Kristen.johnson@unh.edu)), before enrolling in the course.

## Business

### Leadership Through Innovation, Collaboration and Real-World Experience.

Located in the economic heart of New Hampshire, our Business program gives you the skills, resources and connections to become a successful, innovative leader. Small class sizes offer you individualized attention from faculty, while our vast network of business partners gets you the practical experience employers want.

Our faculty members bring years of industry experience to the classroom, and this approach means you'll apply concepts and theories to real, hands-on work. Senior capstone experience brings your learning to life through: an internship or project at a local business, case studies, business ethics study, and developing your professional self. Another internship is required to be taken junior or senior year to support career decision-making.

This highly interdisciplinary program is designed to explore your interests and prepare you for a lucrative career, offering areas of focus in:

- accounting & finance
- business economics
- management and human resources
- marketing and sales

Working hand-in-hand with local businesses through internships, capstone experience, and involvement in our Students Consulting Organizations program, you'll get the real-world experience and leadership skills that today's employers look for.

<https://manchester.unh.edu/academics/degree-programs/business>

### Programs

- [Business Administration \(A.S.\) Manchester](#) (p. 417)
- [Business Major \(B.A.\) Manchester](#) (p. 419)
- [Business Major: Accounting Option \(B.A.\) Manchester](#) (p. 421)
- [Business Minor \(Manchester\)](#) (p. 423)
- [Accounting Minor](#) (p. 423)
- [Entrepreneurship Minor \(Manchester\)](#) (p. 423)
- [Forensic Accounting Minor](#) (p. 424)
- [Political Economy Minor](#) (p. 424)

### Faculty

[Business Faculty](#)

## Business Administration (A.S.) Manchester

<https://manchester.unh.edu/program/as/business-administration>

### Description

Our Associate in Science degree in Business Administration is designed to provide students with a stepping stone to a career. Graduates of the

program are prepared for entry-level employment opportunities or to continue their education at the baccalaureate level.

## Requirements

Students must complete a minimum of 64 credits to graduate with an associate of science degree in business administration. A minimum cumulative GPA of 2.0 is required for graduation. In addition to completing eight Discovery Program courses and one Inquiry or Inquiry-attribute course within their first 48 earned credits, students must complete six courses (24 credits) in the major and one elective course.

Code	Title	Credits
<b>Required Courses</b>		
BUS 400	Introduction to Business	4
BUS 532	Introduction to Financial Accounting	4
BUS 533	Introduction to Managerial Accounting	4
ECN 412	Introduction to Microeconomic Principles	4
<b>Business Administration Electives</b>		
Select two of the following courses: <sup>1,2</sup>		8
BUS 430	Introduction to Business Statistics	
BUS 601	Financial Management	
BUS 610	Marketing Principles and Applications	
BUS 620	Organizational Behavior	
CA 450	Introduction to Public Speaking	
CMN 457	Introduction to Language and Social Interaction	
COMP 405	Introduction to Web Design and Development	
ECN 411	Introduction to Macroeconomic Principles	
ECN 640	Business Law and Economics	
ECN 650	Economics for Managers	
Other 600-level ECN or BUS courses by permission of instructor		
<b>Electives</b>		
Select one elective		4
<b>Total Credits</b>		<b>28</b>

<sup>1</sup> Students may select electives from 600-level ECN or BUS courses with advisor permission.

<sup>2</sup> Students planning to pursue the B.A. in business should select BUS 430 Introduction to Business Statistics and ECN 411 Introduction to Macroeconomic Principles.

For more information, contact [Yvette Lazdowski](mailto:yvette.lazdowski@unh.edu) (yvette.lazdowski@unh.edu), program coordinator, or contact the [Office of Admissions](mailto:unhm.admissions@unh.edu) (unhm.admissions@unh.edu), (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
Discovery Course		4
BUS 400	Introduction to Business	4

ECN 412	Introduction to Microeconomic Principles	4
<b>Credits</b>		<b>17</b>

### Spring

Quantitative Reasoning Course		4
Discovery Course		4
BUS 532	Introduction to Financial Accounting	4
HUMA 411 or HUMA 412	Humanities I or Humanities II	4
<b>Credits</b>		<b>16</b>

### Second Year

#### Fall

BUS 533	Introduction to Managerial Accounting	4
Business Administration Elective		4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>

#### Spring

Business Administration Elective		4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>65</b>

## Student Learning Outcomes

At the conclusion of the Business program, students should be able to demonstrate:

- Breadth of knowledge about business, accounting, and economic concepts, theories and methodologies.
- Ability to apply business concepts to case based and situations in order to craft workable solutions that will yield to increased success for the company.
- Information literacy (ability to find, retrieve and analyze information) in the fields of business, economics, and accounting/finance through use of proven and reliable private and public sector resources, including: articles, studies and research reports using UNH library resources such as ebscohost.
- Ability to lead discussion groups and project teams to effective conclusions – written and oral, delivered in or out of the classroom.
- Adeptness at multiple kinds of qualitative and quantitative analysis of data, particularly data found in, but not limited to, private and public sector reports.
- Effective writing skills in all types of business and professional writing: memoranda, case studies, analytical and project reports.
- Essential grasp of cogent presentation methods and techniques in the classroom, in front of visitors and peers.
- Sensitivity to cultural differences and an appreciation for the diversity of human experience and perspectives.
- An understanding of the importance of engaged citizenship in building healthy communities at every level (local, national and global).



# Business Major (B.A.) Manchester

<https://manchester.unh.edu/program/ba/business-major>

## Description

The bachelor of arts in business has a strong interdisciplinary focus. The curriculum adheres to a philosophy that effective decision making requires a broad understanding of the institutional and cultural climate within which businesses are operating. The program uses the resources of Manchester's business community and its economic strengths to provide students with skills, knowledge, and opportunities.

The business program offers areas of focus in accounting, business economics, management (including human resources), and marketing/sales. Students with a unique interest can create a self-designed concentration with approval of their advisor and the coordinator of the business program.

The culminating capstone experience enables students to apply their knowledge in the form of an internship or applied senior project. Because this is a bachelor of arts program, students fulfill the foreign language requirement. Students have the opportunity to enhance their knowledge through community experiences and internships. Graduates of UNH Manchester's business program are in demand because they offer future employers a portfolio of practical skills and theoretical knowledge, coupled with applied experiences through internships, leading to effective communication and leadership.

## Requirements

Students must complete 128 credits to graduate. Each required course must be completed with a minimum grade of C-. Students must attain a minimum GPA of 2.0 in major courses required for graduation. Majors cannot use BUS 430 Introduction to Business Statistics, ECN 411 Introduction to Macroeconomic Principles, or ECN 412 Introduction to Microeconomic Principles to satisfy both Discovery Program and major requirements. Transfer students must complete at least half of their credits in the major and the 8-credit capstone experience (BUS 705 Business Ethics and either BUS 750 Business Capstone Senior Seminar - Internship or BUS 760 BUS SR SEM - Research Project) in residence at UNH Manchester.

Code	Title	Credits
<b>Introductory Business Core Courses</b>		
BUS 400	Introduction to Business	4
BUS 405	Introduction to Business Computer Applications	4
BUS 430	Introduction to Business Statistics	4
BUS 532	Introduction to Financial Accounting	4
BUS 533	Introduction to Managerial Accounting	4
ECN 411	Introduction to Macroeconomic Principles	4
ECN 412	Introduction to Microeconomic Principles	4
ENGL 401	First-Year Writing	4
MATH 420	Finite Mathematics	4
or MATH 422	Mathematics for Business Applications	
or MATH 425	Calculus I	
PTC 500	Business Communication	4
<b>Select one of the following:</b>		
COMP 405	Introduction to Web Design and Development	4
COMP 415	Mobile Computing First and For Most	4
COMP #425	Introduction to Programming	4
COMP 430	Systems Fundamentals	4

### Intermediate Business Core

BUS 601	Financial Management	4
BUS 610	Marketing Principles and Applications	4
BUS 620	Organizational Behavior	4
BUS 690	Business Program Internship <sup>1</sup>	1-4
<b>Capstone</b>		
BUS 705	Business Ethics <sup>2</sup>	4
BUS 750	Business Capstone Senior Seminar - Internship <sup>2</sup>	4
or BUS 760	BUS SR SEM - Research Project	
<b>Area of Study</b>		
Select an area of study		16
<b>Total Credits</b>		<b>81-84</b>

## Areas of Study

Code	Title	Credits
<b>Business Economics</b>		
Select four of the following courses (including at least one course at 600 level or above):		16
BUS 690	Business Program Internship	
BUS 695	Independent Study in Business	
DATA 557	Introduction to Data Science and Analytics	
ECN 640	Business Law and Economics	
ECN 650	Economics for Managers	
<b>Total Credits</b>		<b>16</b>

Code	Title	Credits
<b>Management</b>		
Select four of the following courses:		16
BUS 453	Leadership for Managers	
BUS 455	Management of Human Resources	
BUS 520	Training and Development	
BUS 575	Students Consulting Organizations	
BUS 640	Business Communication and Conflict	
BUS 690	Business Program Internship	
BUS 695	Independent Study in Business	
ECN 640	Business Law and Economics	
ECN 650	Economics for Managers	
<b>Total Credits</b>		<b>16</b>

Code	Title	Credits
<b>Marketing</b>		
Select three of the following courses:		12
BUS 565	Selling and Sales Management	
BUS 661	Integrated Marketing Communication	
BUS 662	Digital Marketing Applications	
BUS 663	Services Marketing and Operations Management	
BUS 665	International Marketing Strategy Management	
Select one of the following courses or one course not taken from the list above:		4
BUS 675	Special Topics in Business Administration	
BUS #685	Applications in Business Management	
BUS 690	Business Program Internship (in Marketing or Communication)	
BUS 695	Independent Study in Business (Marketing/Communication Project)	
COMP 405	Introduction to Web Design and Development	
COMP 415	Mobile Computing First and For Most	
<b>Total Credits</b>		<b>16</b>

Code	Title	Credits
<b>Self-Designed</b>		
Select four courses (or 16 credit hours) with faculty approval, including at least one course at 500 level or above		16
<b>Total Credits</b>		<b>16</b>

<sup>1</sup> Experiential learning is required prior to the last semester at the University. BUS 690 Business Program Internship as an internship course satisfies this requirement. Most students will take two internships at UNH Manchester - (BUS 690 Business Program Internship and BUS 750 Business Capstone Senior Seminar - Internship.)

<sup>2</sup> Business Capstone Experience (two courses: BUS 705 Business Ethics and one senior business seminar [BUS 750 Business Capstone Senior Seminar - Internship or BUS 760 BUS SR SEM - Research Project], fulfills the Discovery Program capstone requirement for business majors and is taken during the senior year).

Note: Because this is a bachelor of arts program, students must fulfill a language requirement. Efforts will be made to enhance fluency through subsequent courses and community experiences.

For more information, contact [Yvette Lazdowski](mailto:yvette.lazdowski@unh.edu) ([yvette.lazdowski@unh.edu](mailto:yvette.lazdowski@unh.edu)), program coordinator or the [Office of Admissions](mailto:unhm.admissions@unh.edu) ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)), (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
BUS 400	Introduction to Business	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 422	Mathematics for Business Applications	4
ECN 411	Introduction to Macroeconomic Principles	4
Discovery Course		4
BUS 405	Introduction to Business Computer Applications	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
Foreign Language		4
ECN 412	Introduction to Microeconomic Principles	4
BUS 430	Introduction to Business Statistics	4
BUS 532	Introduction to Financial Accounting	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Foreign Language		4
BUS 533	Introduction to Managerial Accounting	4
PTC 500	Business Communication	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

### Third Year

COMP 405 or COMP 415	Introduction to Web Design and Development or Mobile Computing First and For Most	4
BUS 601	Financial Management	4
BUS 610	Marketing Principles and Applications	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
BUS 620	Organizational Behavior	4
BUS 690	Business Program Internship	4
Discovery Course		4
Major Area of Study Course		4
<b>Credits</b>		<b>16</b>

### Fourth Year

<b>Fall</b>		
BUS 705	Business Ethics	4
Discovery Course		4
Major Area of Study Course		4
Major Area of Study Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
BUS 750 or BUS 760	Business Capstone Senior Seminar - Internship or BUS SR SEM - Research Project	4
Major Area of Study Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>129</b>

## Student Learning Outcomes

At the conclusion of the Business program, students should be able to demonstrate:

- Breadth and depth of knowledge about business and economic concepts, theories and methodologies, especially in the sub-field concentrations of: accounting/finance (full option), management/organizational behavior/ human relations, marketing/sales, and business economics, and how these varying fields are inter-related and complementary.
- Ability to analyze the effects of economic, social and political forces on changing local, national and global business by employing a multidisciplinary and interdisciplinary approach rooted in the social sciences and ethics.
- Ability to apply business and economic social science research to real-world, case based, situations in order to craft workable solutions that will yield to increased success and profit.
- Information literacy (ability to find, retrieve and analyze information) in the fields of business, economics, accounting/finance, marketing through use of proven and reliable private and public sector resources, including: articles, studies and research reports using UNH library resources such as ebscohost.

- Ability to lead discussion groups and project teams to effective conclusions – written and oral, delivered in or out of the classroom.
- Adeptness at multiple kinds of qualitative and quantitative analysis of data, particularly data found in, but not limited to, private and public sector reports.
- Effective writing skills in all types of business and professional writing: memoranda, case studies, analytical and project reports.
- Essential grasp of cogent presentation methods and techniques in the classroom, in front of visitors and peers.
- Sensitivity to cultural differences and an appreciation for the diversity of human experience and perspectives.
- An understanding of the importance of engaged citizenship in building healthy communities at every level (local, national and global).
- Display professionalism in the workplace, in both service learning and internship contexts.

## Business Major: Accounting Option (B.A.) Manchester

<https://manchester.unh.edu/program/ba/business-major-accounting-option>

### Description

The Accounting Option is offered in response to the growing demand for Accounting graduates in public accounting firms as well as in industry. Many local public accounting firms have expressed that with an expected high retirement rate among “baby boomers”, there appears to be a need for graduates with robust accounting credentials. Representatives from well-known CPA exam prep course firms expressed the opinion that accountants are in high demand and the unemployment rate in this industry is very low.

The Accounting Option offers students the necessary courses to enable them to sit for the CPA exam, which is one of the major steps in obtaining a CPA license. The requirements for sitting for the CPA exam in the State of New Hampshire are a bachelor's degree, 24 credits in business subjects, and 30 credits in accounting subjects. The Accounting Option within the Business program provides these required credits.

This program also provides the students an opportunity to seek professional accounting positions in corporate environments. Students would be encouraged to take the CMA (Certified Management Accountant) exam, leading to this desirable certification.

### Requirements

Students must complete 128 credits to graduate. Each required course must be completed with a minimum grade of C-. Students must attain a minimum GPA of 2.0 in major courses required for graduation. Majors cannot use BUS 430 Introduction to Business Statistics, ECN 411 Introduction to Macroeconomic Principles, or ECN 412 Introduction to Microeconomic Principles to satisfy both Discovery Program and major requirements. Transfer students must complete at least half of their credits in the major and the 8-credit capstone experience (BUS 705 Business Ethics and either BUS 750 Business Capstone Senior Seminar

- Internship or BUS 760 BUS SR SEM - Research Project) in-residence at UNH Manchester.

Code	Title	Credits
<b>Introductory Business Core Courses</b>		
BUS 400	Introduction to Business	4
BUS 405	Introduction to Business Computer Applications	4
BUS 430	Introduction to Business Statistics	4
BUS 532	Introduction to Financial Accounting	4
BUS 533	Introduction to Managerial Accounting	4
ECN 411	Introduction to Macroeconomic Principles	4
ECN 412	Introduction to Microeconomic Principles	4
ENGL 401	First-Year Writing	4
MATH 420	Finite Mathematics	4
or MATH 422	Mathematics for Business Applications	
or MATH 425	Calculus I	
PTC 500	Business Communication	4
<b>Select one of the following:</b>		
COMP 405	Introduction to Web Design and Development	
COMP 415	Mobile Computing First and For Most	
COMP #425	Introduction to Programming	
COMP 430	Systems Fundamentals	
<b>Intermediate Business Core</b>		
BUS 601	Financial Management	4
BUS 610	Marketing Principles and Applications	4
BUS 620	Organizational Behavior	4
BUS 690	Business Program Internship <sup>1</sup>	1-4
or BUS #691	VITA Internship	
<b>Capstone</b>		
BUS 705	Business Ethics <sup>2</sup>	4
BUS 750	Business Capstone Senior Seminar - Internship <sup>2</sup>	4
or BUS 760	BUS SR SEM - Research Project	
<b>Total Credits</b>		<b>65-68</b>

<sup>1</sup> Experiential learning is required prior to the last semester at the University. BUS 690 Business Program Internship or BUS #691 VITA Internship satisfy this experiential learning requirement.

<sup>2</sup> Business Capstone Experience (two courses: BUS 705 Business Ethics and one senior business seminar [BUS 750 Business Capstone Senior Seminar - Internship or BUS 760 BUS SR SEM - Research Project] fulfills the Discovery Program capstone requirement for business majors and is taken during the senior year).

Note: Because this is a bachelor of arts program, students must fulfill a language requirement. Efforts will be made to enhance fluency through subsequent courses and community experiences.

Code	Title	Credits
<b>Accounting Option Requirements</b>		
BUS 535	Federal Taxation	4
BUS 603	Intermediate Financial Accounting I	4
BUS 615	Intermediate Financial Accounting II	4
BUS 720	Auditing	4
<b>Select two of the following courses:</b>		
BUS 629	Adv Managerial Accounting	
BUS 712	Accounting Information Systems	
BUS #715	Forensic Accounting/Fraud Examination	
BUS 725	Financial Statement Analysis	
HLS 640	Forensic Accounting	
<b>Total Credits</b>		<b>24</b>

For more information, contact [Yvette Lazdowski](mailto:yvette.lazdowski@unh.edu) (yvette.lazdowski@unh.edu), program coordinator or contact the [Office of Admissions](mailto:unhm.admissions@unh.edu) (unhm.admissions@unh.edu), (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH. Please note the accounting courses are not offered every semester or academic year.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
BUS 400	Introduction to Business	4
BUS 532 or BUS 533	Introduction to Financial Accounting or Introduction to Managerial Accounting	4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 422	Mathematics for Business Applications	4
Discovery Course		4
BUS 532 or BUS 533	Introduction to Financial Accounting or Introduction to Managerial Accounting	4
ECN 411 or ECN 412	Introduction to Macroeconomic Principles or Introduction to Microeconomic Principles	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
Foreign Language		4
ECN 411 or ECN 412	Introduction to Macroeconomic Principles or Introduction to Microeconomic Principles	4
BUS 430	Introduction to Business Statistics	4
BUS 603	Intermediate Financial Accounting I	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Foreign Language		4
BUS 615	Intermediate Financial Accounting II	4
PTC 500	Business Communication	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
COMP 405 or COMP 415	Introduction to Web Design and Development or Mobile Computing First and For Most	4
BUS 601	Financial Management	4
BUS 610	Marketing Principles and Applications	4

Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
BUS 405	Introduction to Business Computer Applications	4
BUS 620	Organizational Behavior	4
BUS 690	Business Program Internship	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
BUS 705	Business Ethics	4
Discovery Course		4
BUS 535	Federal Taxation	4
Accounting Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
BUS 750	Business Capstone Senior Seminar - Internship	4
BUS 720	Auditing	4
Discovery Course		4
Accounting Elective		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>129</b>

## Student Learning Outcomes

At the conclusion of the Business program, students should be able to demonstrate:

- Breadth and depth of knowledge about business and economic concepts, theories and methodologies, especially in the sub-field concentrations of: accounting/finance (full option), management/organizational behavior/ human relations, marketing/sales, and business economics, and how these varying fields are inter-related and complementary.
- Ability to analyze the effects of economic, social and political forces on changing local, national and global business by employing a multidisciplinary and interdisciplinary approach rooted in the social sciences and ethics.
- Ability to apply business and economic social science research to real-world, case based, situations in order to craft workable solutions that will yield to increased success and profit.
- Information literacy (ability to find, retrieve and analyze information) in the fields of business, economics, accounting/finance, marketing through use of proven and reliable private and public sector resources, including: articles, studies and research reports using UNH library resources such as ebscohost.
- Ability to lead discussion groups and project teams to effective conclusions – written and oral, delivered in or out of the classroom.
- Adeptness at multiple kinds of qualitative and quantitative analysis of data, particularly data found in, but not limited to, private and public sector reports.
- Effective writing skills in all types of business and professional writing: memoranda, case studies, analytical and project reports.

- Essential grasp of cogent presentation methods and techniques in the classroom, in front of visitors and peers.
- Sensitivity to cultural differences and an appreciation for the diversity of human experience and perspectives.
- An understanding of the importance of engaged citizenship in building healthy communities at every level (local, national and global).
- Display professionalism in the workplace, in both service learning and internship contexts.

## Business Minor (Manchester)

<https://manchester.unh.edu/program/minor/business>

### Description

The minor in business allows students to pursue their interests in the liberal arts and sciences while building a foundation of business skills and adding a valuable credential to their portfolio and resume. The minor in business requires successful completion of five business courses or 20 credit hours from the courses listed in the requirements.

### Requirements

Students must complete five courses (20 credits) with a cumulative minimum grade point average of 2.0 and with no grade below a C- grade. Transfer course approval for the minor is limited to at most, two relevant courses successfully completed at another accredited institution, subject to syllabi review and approval. Students must complete a minimum of 20 credits for the minor, with a maximum of 8 credits transferred from accredited institutions and a minimum of 12 credits completed in residence at UNH.

Code	Title	Credits
<b>Required Courses</b>		
BUS 400	Introduction to Business	4
BUS 532	Introduction to Financial Accounting	4
ECN 412	Introduction to Microeconomic Principles	4
or ECN 411	Introduction to Macroeconomic Principles	
<b>Electives</b>		
Select two of the following (at least one of which must be at the 600 level or above):		8
BUS 430	Introduction to Business Statistics	
BUS 533	Introduction to Managerial Accounting	
BUS 601	Financial Management	
BUS 610	Marketing Principles and Applications	
BUS 620	Organizational Behavior	
<b>Total Credits</b>		<b>20</b>

Other 600- or 700-level courses in business (BUS) or economics (ECN) may be substituted for courses listed above with permission of the business program coordinator. This may include an Internship course (BUS 690 Business Program Internship), Special Topics courses (BUS 675 Special Topics in Business Administration/BUS #685 Applications in Business Management), or an Independent Study in Business (BUS 695 Independent Study in Business).

For more information, contact **Bill Troy** ([Bill.Troy@unh.edu](mailto:Bill.Troy@unh.edu)), minor supervisor.

## Accounting Minor

<https://manchester.unh.edu/program/minor/accounting>

### Description

Opportunities for growth in the field of accounting continue at an impressive rate, with solid employment opportunities for anyone who qualifies for, and wants a job in the field of accounting. Students will find value in adding this minor to a major of their choice. Upon completion of the Accounting Minor, students should be able to:

- demonstrate an understanding of skills and techniques to be able to recognize transactions and how to record them
- explain and analyze the impact of transactions on an entity's status
- pursue an expanded use of the UNH degree with options to specialize in financial recording and the ability to understand financial statements
- consider the pursuit of certifications that supplement their career potentials, such as the Certified Public Accountant (CPA) or Certified Management Accountant (CMA)

The Accounting Minor can also be used to gain financial skills in all career paths or entrepreneurial aspirations. While the minor is not all-inclusive to train or qualify students to take the CPA exam, it can be used to expose students to the basics of accounting, and may lead to further study of specialization areas in accounting. Faculty assigned to these courses offer expertise and/or certifications in the specific content areas, adding a professional distinction to the program.

### Requirements

All five courses (20 credits) applied to the Accounting minor must be completed with a minimum grade of C- and an overall GPA of 2.0.

Code	Title	Credits
<b>Required Courses</b>		
BUS 532	Introduction to Financial Accounting	4
BUS 533	Introduction to Managerial Accounting	4
BUS 712	Accounting Information Systems	4
<b>Select two from the following:</b>		<b>8</b>
BUS 535	Federal Taxation	
BUS 629	Adv Managerial Accounting	
BUS 720	Auditing	
<b>Total Credits</b>		<b>20</b>

For more information, contact Jeanne Gerard, minor supervisor, at [Jeanne.Gerard@unh.edu](mailto:Jeanne.Gerard@unh.edu). ([jeanne.gerard@unh.edu](mailto:jeanne.gerard@unh.edu))

## Entrepreneurship Minor (Manchester)

<https://manchester.unh.edu/program/minor/entrepreneurship>

### Description

The entrepreneurship minor is designed for those students who are interested in starting their own business or enhancing a business in which they are currently working.

The course content of the minor is designed to meet the objective of developing the mindset, skills, competencies, and experiential learning



that enable students to function as entrepreneurs or as productive members of emerging, entrepreneurial firms.

The entrepreneurship program integrates the knowledge and experiences gained in other disciplines, as well as from the field of entrepreneurship, into an understanding of the process of new venture creation and the management of entrepreneurial businesses. With the minor presenting entrepreneurial concepts from a generalist perspective, students will acquire knowledge to conceive, develop, and launch new ventures and to turn innovative ideas into products that can be brought to market. Emphasis is placed on the managerial, legal, and marketing aspects of start-up businesses. The program culminates with a juried business plan competition for financial backing and start-up funding support.

*Ethical and legal*—In addition to exploring legal issues associated with a small business, students will examine their own personal values and aspirations to help guide their entrepreneurial careers.

*Knowing the numbers*—Entrepreneurs must be intimately familiar with the financial health of their businesses, particularly in regard to cash flow and other limited resource management and forecasting.

*Business model*—Students will be expected to develop a full understanding of how to create and utilize a business model and transform it into a fundable business plan.

*Selling the idea*—Students must not only understand how to identify and evaluate potential investors, but also how to sell their business idea when the opportunity presents itself.

*Managing growth in entrepreneurial companies*—Students will learn the unique set of leadership and communication skills necessary to guide a company through its most perilous time period: rapid growth.

## Requirements

Code	Title	Credits
<b>Required Courses</b>		
BUS #410	Introduction to Entrepreneurship	4
BUS 453	Leadership for Managers	4
BUS 565	Selling and Sales Management	4
BUS #600	New Venture Creation	4
ECN 640	Business Law and Economics	4
<b>Total Credits</b>		<b>20</b>

Students will be encouraged to take advantage of internship opportunities through the [Career and Professional Success \(CaPS\) office](#).

For more information, contact [Bill Troy \(Bill.Troy@unh.edu\)](#), minor supervisor.

## Forensic Accounting Minor

<https://manchester.unh.edu/program/minor/forensic-accounting>

### Description

Opportunities for growth in the field of Forensic Accounting continue at an impressive rate. Career options for students who add the minor in Forensic Accounting can include investigative and litigation support to accounting firms, banks, police departments, government agencies and other organizations. The knowledge attained in this minor can help a homeland security expert or accountant investigate the rampant fraud

that is often tied to homeland security or business threats, including non-accounting fraud issues.

In addition to following the knowledge content of the Certified Fraud Examiner (CFE) certification exam offered by the Association of Certified Fraud Examiners, the skills attained in the Forensic Accounting minor will augment the students' potential in a variety of career opportunities in homeland security and fraud investigation. The CFE consists of four parts: Fraud Prevention and Deterrence, Financial Transactions and Fraud Schemes, Investigation, and Law. This credential is highly regarded in the security industry, corporate risk management, law offices, and in government agencies such as the Federal Bureau of Investigation.

The Forensic Accounting minor will appeal to students who would like to add specialized skills to their Homeland Security degree. In addition, the Forensic Accounting minor can be used as a minor in other degree paths (except for the B.A. in Business, Accounting option). While it is not training students to pursue the CPA or careers more focused in traditional accounting, it can be used to expose students to the field of accounting.

## Requirements

All five courses applied to the Forensic Accounting minor must be completed with a minimum grade of C- and an overall GPA of 2.0. Students must take at least three 500-level or above courses to complete the minor.

Code	Title	Credits
<b>Required Courses</b>		
BUS 532	Introduction to Financial Accounting	4
or ADMN 502	Financial Accounting	
ECN 640	Business Law and Economics <sup>1</sup>	4
or HLS 520	Homeland Security Law and Policy	
HLS 540	Prevention and Detection of Fraud	4
HLS 615	Introduction to Fraud Investigation	4
HLS 640	Forensic Accounting	4
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> ECN 640 Business Law and Economics for Business majors; HLS 520 Homeland Security Law and Policy for Homeland Security majors

For more information, contact [Yvette Lazdowski \(yvette.lazdowski@unh.edu\)](#), minor supervisor.

## Political Economy Minor

<https://manchester.unh.edu/program/minor/political-economy>

### Description

Students interested in pursuing a career in government, business, communications, or the law can add a breadth of perspective through the political economy minor.

## Requirements

The political economy minor consists of five courses (20 credits total). The minimum grade requirement is C- per course. Any grade lower than a C- will not count toward the minor.

Code	Title	Credits
Select five courses from the following: <sup>1</sup>		20
ECN 410	History of Literary Economics	
ECN 411	Introduction to Macroeconomic Principles	
ECN 412	Introduction to Microeconomic Principles	
ECN #505	Contemporary Economic Issues	
ECN 640	Business Law and Economics	
ECN 650	Economics for Managers	
POLT 403	United States in World Affairs	
PS 500	Wicked Problems: Puzzles in Public Policy	
PS 501	Social and Political-Economic Theory	
PS 509	Political and Social Change in Developing Countries	
PS 510	Politics of Food	
PS 520	Globalization: Politics, Economics and Culture	
PS 750	Poverty & Inequality Past and Present	
Total Credits		20

<sup>1</sup> No more than three courses from the same subject prefix area and no more than three 400-level courses may count towards the minor.

Substitutions are permitted with permission of the minor supervisors.

For more information, contact minor supervisors [Stephen Pimpare](mailto:Stephen.Pimpare@unh.edu) ([Stephen.Pimpare@unh.edu](mailto:Stephen.Pimpare@unh.edu)) or [Tom Birch](mailto:Tom.Birch@unh.edu) ([Tom.Birch@unh.edu](mailto:Tom.Birch@unh.edu)).

## Business and Public Affairs

The Department of Business and Public Affairs offers undergraduate programs in Business, Accounting, and Public Service & Non-Profit Leadership. The Department also offers a variety of concentrations and minors that help you specialize in certain areas of study.

### Business (B.A.)

The Bachelor of Arts in Business (BUS) has a strong interdisciplinary focus. The curriculum adheres to a philosophy that effective decision making requires a broad understanding of the institutional and cultural climate within which businesses are operating. The program uses the resources of Manchester's business community and its economic strengths to provide students with skills, knowledge, and opportunities.

The business program offers areas of focus in accounting, business economics, management (including human resources), and marketing/sales. Students with a unique interest can create a self-designed concentration with approval of their advisor and the coordinator of the business program.

### Public Service and Non-Profit Leadership (B.S.)

The Bachelor of Science degree in Public Service and Non-Profit Leadership (PS) provides an interdisciplinary, applied approach to the study of public and not-for-profit institutions and actors. Students explore the ways that leaders and citizens work in and around governments to address the complex problems confronted by New Hampshire and the United States today.

## Programs

- [Business](#) (p. 417)
- [Public Service and Nonprofit Leadership](#) (p. 460)

## Faculty

### [Business and Public Affairs Faculty](#)

## Communication Arts

### Shaping skilled communicators through creativity, technology and hands-on experience

With expert faculty, state-of-the-art studios and a vast network of internship opportunities, our Communication Arts program gives you the skills and experience to turn your passion into a profession. Our highly adaptable program opens doors to limitless career possibilities – shaping the next generation of filmmakers, journalists, HR specialists, marketers and beyond.

Recent data from the American Academy of Arts & Sciences shows that Communication Arts is the largest and most popular of the humanities disciplines. Part of this interest is because we live in a world where communication is a vital part of daily life, regardless of career or industry. But another part, potentially even more important, is the inherent flexibility that students find – not only during college, but in the job market after graduation.

Your interests inspire what you study, allowing you to focus your degree in areas like [Advertising and Public Relations](#), [Cinema and Media Arts](#), [Digital Media](#), and [Human Relations](#). Students can also further their professional and creative interests by doing real-world internships for credit.

Through hands-on learning in our classrooms, in the field and in our audio, video and editing studios, you'll shape the social, creative, analytical, and technical communication skills you need for success in industries from media to business, healthcare, education, and more.

<https://manchester.unh.edu/communication-arts-sciences>

## Programs

- [Communication Arts Major \(B.A.\)](#) (p. 425)
- [Communication Arts Major: Advertising and Public Relations Option \(B.A.\)](#) (p. 428)
- [Communication Arts Major: Cinema and Media Arts Option \(B.A.\)](#) (p. 429)
- [Communication Arts Major: Digital Media Option \(B.A.\)](#) (p. 430)
- [Communication Arts Major: Human Relations Option \(B.A.\)](#) (p. 432)
- [Communication Arts Minor](#) (p. 433)

## Faculty

### [Communication Arts Faculty](#)

## Communication Arts Major (B.A.)

<https://manchester.unh.edu/program/ba/communication-arts-major>

## Description

Communication Arts majors explore the creativity, artistry, and impact of human communication. The program offers a rich variety of learning experiences, including:

- Working with cutting-edge digital media in state-of-the-art sound and video production studios and a high-definition editing suite with full Adobe creative cloud access.
- Discovering how communication theories and practices shape personal identity, social skills, professional relationships, and human relations.
- Enhancing your media writing, social media, public relations, and strategic communication skills.
- Exploring the history of media using a super-tech screening room with surround sound.
- Developing hands-on research activities, creative media projects, and internship experiences that link students with businesses, nonprofits, and the community.

To complete the major, students can take courses from across the Communication Arts curriculum, or they may choose to focus their coursework in one of four suggested areas of study: [Advertising and Public Relations\\*](#), [Cinema and Media Arts\\*](#), [Digital Media\\*](#), or [Human Relations\\*](#).

A degree in Communication Arts prepares students for today's communication-driven society. The program offers students the knowledge and skills they need to succeed as professional communicators, media artists, and entrepreneurs working in a variety of careers. Our alumni have gone on to work in fields such as radio, television, film, web, digital video, corporate communications, journalism, public relations, social media, advertising, sales, strategic communication, audience research, counseling, conflict mediation, human resources, and more. A Communication Arts degree also creates pathways to careers in government, social services, public education, and community affairs, where employers seek graduates who can think creatively and communicate effectively to a variety of audiences and constituents.

Communication Arts faculty bring exceptional expertise to the classroom and are actively engaged in their own creative and scholarly work. They regularly share their knowledge with audiences around the state, the country, and the world. Some are also experienced professionals who bring current, real-world knowledge from the workplace to the classroom. In addition to classroom instruction, the program also provides students with exceptional access to experiential learning opportunities (internships, community-based research, service learning, and media production projects) that occur within real-life settings.

- \* Advertising and Public Relations, Cinema and Media Arts, Digital Media, and Human Relations are **Degree Options** that appear on the official UNH transcript and diploma. The specific requirements for each Degree Option are presented elsewhere in this catalog. Students are encouraged to contact the Communication Arts program coordinator or their academic advisor to discuss whether a Degree Option is the right choice for them.

## Requirements

### Degree Requirements

Students must complete a minimum of 128 credits and satisfy the University's Discovery Program and foreign language requirements. Communication Arts (CA) majors must complete 10 courses (40 credits) and maintain a minimum overall grade point average of 2.0 in the major. Transfer students must complete at least 20 credits in the Communication Arts major at UNH. Communication Arts majors may use up to two CMN and/or CA courses toward both the Communication Arts major and UNH Discovery Program requirements.

Code	Title	Credits
<b>I. Required Core Courses</b> <sup>1</sup>		
CMN 455	Introduction to Media Studies	4
CMN 456	Propaganda and Persuasion	4
CMN 457	Introduction to Language and Social Interaction	4
<b>II. Selected Coursework</b>		
Select three courses from area A, two from area B, two from area C <sup>2</sup>		28
<b>Total Credits</b>		<b>40</b>

<sup>1</sup> Students must earn a "C" or better in each course to satisfy CA degree requirements.

<sup>2</sup> Students must earn a "C-" or better in each course to satisfy CA degree requirements.

### A. Communication Practices

Code	Title	Credits
<b>Select three of the following:</b>		<b>12</b>
CA 450	Introduction to Public Speaking	
CA 500	Media Writing	
CA 501	Internship/Communication in the Urban Community	
CA 502	Image and Sound	
CA 508	Conflict in Relational Communication	
CA 512	Screenwriting	
CA 514	Fundamentals of Video Production	
CA 515	Advanced Video Production	
CA 517	Fundamentals of Audio Prod	
CA 518	Advanced Topics in Digital Media Production	
CA 519	Advanced Screenwriting	
CA #520	Special Topics in Applied Communication	
CA 522	Graphic Design I	
CA 523	Graphic Design II	
PSYC 762	Counseling	
<b>Total Credits</b>		<b>12</b>

### B. Communication Practices: Organization, History, and Policy

Code	Title	Credits
<b>Select two of the following:</b>		<b>8</b>
CA 527	History of Film	
CA 531	History and Organization of Advertising	
CA 532	Typography I	
CA 536	LGBT Images and Perspectives	
CA 538	Gender	
CA 539	Communicating in Families	
CA 540	Public Relations	
CA 542	Social Media for Organizations and Business	
CA 550	Special Topics in Communication Organization, History, and Policy	
COMP 560	Ethics and the Law in the Digital Age	
ENGL 534	21st Century Journalism: How the News Works	
<b>Total Credits</b>		<b>8</b>

## C. Communication Practices: Theory and Research

Code	Title	Credits
Select two of the following:		8
CA 610	Communication Technologies and Culture	
CA 612	Narrative	
CA 615	Film History/Theory and Method	
CA 618	Documentary	
CA 720	Seminar	
CA 795	Independent Study	
Total Credits		8

## Capstone Requirement

The capstone requirement will be satisfied in a student's senior year by completion of a specific four-credit capstone course at the 600 or 700 levels. Students may not enroll in a capstone course until they have completed all three CA program core courses (CMN 455 Introduction to Media Studies, CMN 456 Propaganda and Persuasion, and CMN 457 Introduction to Language and Social Interaction) and all CA Area A and Area B requirements. The capstone course can also fulfill an Area C course requirement.

The capstone experience offers seniors an opportunity to synthesize and apply knowledge and skills gained throughout their communication arts major coursework. The capstone course requires students to conduct an original research study, a creative media project, an internship, community-based research, or an advanced service learning project in communication arts under the close supervision of a communication arts faculty member. Students are strongly encouraged to share their capstone projects with the larger UNH community through participation in the Undergraduate Research Conference, a presentation in the Brown Bag lunch series, publication in the UNH undergraduate journal *Inquiry*, or presentation in some other public venue. Students should work closely with their advisors to make sure the capstone requirement has been satisfied.

Courses that satisfy this requirement include, but are not limited to:

Code	Title	Credits
Capstone Courses		
CA 612	Narrative	4
CA 615	Film History/Theory and Method	4
CA 720	Seminar	4
CA 795	Independent Study	4

For more information, contact [Jeff Klenotic \(jeffrey.klenotic@unh.edu\)](mailto:jeffrey.klenotic@unh.edu), program coordinator or contact the [UNH Manchester Office of Admissions \(unhm.admissions@unh.edu\)](mailto:unhm.admissions@unh.edu), (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1

ENGL 401	First-Year Writing	4
CMN 455	Introduction to Media Studies	4
Discovery Course		4
Elective		4

**Credits 17**

### Spring

Quantitative Reasoning		4
CMN 456	Propaganda and Persuasion	4
Discovery Course		4
Elective		4

**Credits 16**

### Second Year

#### Fall

Foreign Language		4
CMN 457	Introduction to Language and Social Interaction	4
Major Elective		4
Discovery Course		4

**Credits 16**

#### Spring

Foreign Language		4
Major Elective		4
Major Elective		4
Discovery Course		4

**Credits 16**

### Third Year

#### Fall

Major Elective		4
Discovery Course		4
Elective		4
Elective		4

**Credits 16**

#### Spring

Major Elective		4
Discovery Course		4
Elective		4
Elective		4

**Credits 16**

### Fourth Year

#### Fall

Major Elective		4
Discovery Course		4
Elective		4
Elective		4

**Credits 16**

#### Spring

Major Elective		4
Discovery Course		4
Elective		4

Elective	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>129</b>

## Student Learning Outcomes

Upon completion of the Communication Arts program, students will be able to:

- Analyze how creativity, artistry, narrative, identity, persuasion, and ethics shape messages and relationships produced within a variety of social, organizational, and industry contexts.
- Demonstrate knowledge and skills that give them expertise and proficiency in areas such as human relations, social media, digital video, audio production, graphic design, writing, and speaking.
- Know the history of communication practices and understand how media technologies and messages have impacted societies, cultures, organizations, and businesses.
- Effectively research and creatively explore communication practices, experiences, and trends using high quality sources of information, multiple modes of inquiry, and multiple presentation formats.
- Identify professional interests or career paths by working with the Internship and Career Planning Office and by engaging with communication settings outside the classroom through internships, service learning, field trips, and independent studies.

## Communication Arts Major: Advertising and Public Relations Option (B.A.)

<https://manchester.unh.edu/program/ba/communication-arts-major-advertising-public-relations-option>

### Description

Students in the Advertising and Public Relations option develop knowledge and skills relating to the use of strategic communication practices within a variety of settings such as ad agencies, commercial businesses, and nonprofit organizations. A dynamic mix of historical, social, ethical, organizational, creative, analytical, and experiential perspectives is used to create a strong foundation for professional success and graduate study. Coursework covers topics such as earned and paid media, social media, graphic design, media writing, data analytics, and audience research. Some courses use field trips and guest speakers to keep students up-to-date with current trends. An internship in advertising and public relations is required.

### Requirements

#### Option Requirements

Students must complete all of the [Communication Arts major requirements](#) (p. 426) and will work with their academic advisor to select courses that also satisfy option requirements.

The option in Advertising and Public Relations consists of 24 credits as distributed below. Note that some courses may also be used to fulfill the requirements of the Communication Arts major. Courses applied to the

option must be completed with a minimum grade of C- and overall GPA of 2.0. Transfer students must complete a minimum of 12 credits, including the Advertising and Public Relations Internship, at UNH Manchester.

Code	Title	Credits
<b>I. Select two of the following courses:</b>		<b>8</b>
CA 531	History and Organization of Advertising	
CA 540	Public Relations	
CA 542	Social Media for Organizations and Business	
CA 550	Special Topics in Communication Organization, History, and Policy <sup>1</sup>	
<b>II. Select two of the following courses:</b>		<b>8</b>
CA 450	Introduction to Public Speaking	
CA 500	Media Writing	
CA 514	Fundamentals of Video Production	
CA #520	Special Topics in Applied Communication <sup>1</sup>	
CA 522	Graphic Design I	
CA 523	Graphic Design II	
CA 532	Typography I	
DATA 557	Introduction to Data Science and Analytics	
<b>III. Select one of the following courses:</b>		<b>4</b>
CA 610	Communication Technologies and Culture	
CA 720	Seminar <sup>1</sup>	
CA 795	Independent Study <sup>1</sup>	
<b>IV. Select one of the following courses:</b>		<b>4</b>
CA 501	Internship/Communication in the Urban Community <sup>1</sup>	
UMST 500	Internship <sup>1</sup>	
<b>Total Credits</b>		<b>24</b>

<sup>1</sup> Topic must be related to advertising and public relations, and approved by advisor.

For more information, contact [Jeff Klenotic \(jeffrey.klenotic@unh.edu\)](mailto:jeffrey.klenotic@unh.edu), program coordinator or contact the [UNH Manchester Office of Admissions \(unhm.admissions@unh.edu\)](#) at (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
CMN 455	Introduction to Media Studies	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
Quantitative Reasoning		4
CMN 456	Propaganda and Persuasion	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>



**Second Year****Fall**

Foreign Language	4
CMN 457 Introduction to Language and Social Interaction	4
Major Elective	4
Discovery Course	4
<b>Credits</b>	<b>16</b>

**Spring**

Foreign Language	4
Major Elective	4
Major Elective	4
Discovery Course	4
<b>Credits</b>	<b>16</b>

**Third Year****Fall**

Major Elective	4
Discovery Course	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>

**Spring**

Major Elective	4
Discovery Course	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>

**Fourth Year****Fall**

Major Elective	4
Discovery Course	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>

**Spring**

Major Elective	4
Discovery Course	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>

**Total Credits 129**

- Know the history of communication practices and understand how media technologies and messages have impacted societies, cultures, organizations, and businesses.
- Effectively research and creatively explore communication practices, experiences, and trends using high quality sources of information, multiple modes of inquiry, and multiple presentation formats.
- Identify professional interests or career paths by working with the Internship and Career Planning Office and by engaging with communication settings outside the classroom through internships, service learning, field trips, and independent studies.

## Communication Arts Major: Cinema and Media Arts Option (B.A.)

<https://manchester.unh.edu/program/ba/communication-arts-major-cinema-media-arts-option>

### Description

Students choosing the Cinema & Media Arts Option study the creative media industries with a focus on developing professional skills and knowledge relating to careers in film, television and radio. Courses cover topics such as narrative, screenwriting, audio and video production, film history and criticism, documentary, and audience research methods. Students may elect to take an internship in the area of cinema and media arts to help fulfill requirements for the Option.

### Requirements

### Option Requirements

**Students must complete all of the Communication Arts major requirements (p. 426) and will work with their academic advisor to select courses that also satisfy option requirements.**

Students must complete all of the Communication Arts major requirements. The option in Cinema and Media Arts consists of 24 credits as distributed below. Courses may be used toward the Communication Arts Degree requirements as well as the Cinema and Media Arts option. Courses applied to the option must be completed with a minimum grade of C- and overall GPA of 2.0. Transfer students must complete a minimum of 12 credits at UNH Manchester.

Code	Title	Credits
<b>I. Select three of the following:</b>		<b>12</b>
CA 500	Media Writing	
CA 512	Screenwriting	
CA 514	Fundamentals of Video Production	
CA 515	Advanced Video Production	
CA 517	Fundamentals of Audio Prod	
CA 518	Advanced Topics in Digital Media Production <sup>1</sup>	
CA 519	Advanced Screenwriting	
CA #520	Special Topics in Applied Communication <sup>1</sup>	
<b>II. Select two of the following:</b>		<b>8</b>
CA 501	Internship/Communication in the Urban Community <sup>1</sup>	
CA 502	Image and Sound	
CA 527	History of Film	
CA 550	Special Topics in Communication Organization, History, and Policy <sup>1</sup>	
<b>III. Select one of the following:</b>		<b>4</b>
CA 612	Narrative	
CA 615	Film History/Theory and Method	
CA 618	Documentary	

## Student Learning Outcomes

Upon completion of the Communication Arts program, students will be able to:

- Analyze how creativity, artistry, narrative, identity, persuasion, and ethics shape messages and relationships produced within a variety of social, organizational, and industry contexts.
- Demonstrate knowledge and skills that give them expertise and proficiency in areas such as human relations, social media, digital video, audio production, graphic design, writing, and speaking.

CA 795

Independent Study <sup>1</sup>

Total Credits

24

<sup>1</sup> Topic must be related to cinema and media arts.

For more information, contact Jeff Klenotic ([jeffrey.klenotic@unh.edu](mailto:jeffrey.klenotic@unh.edu)), program coordinator or contact the [UNH Manchester Office of Admissions](mailto:unhm.admissions@unh.edu) ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)), (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
CMN 455	Introduction to Media Studies	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
	Quantitative Reasoning	4
CMN 456	Propaganda and Persuasion	4
	Discovery Course	4
	Elective	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
	Foreign Language	4
CMN 457	Introduction to Language and Social Interaction	4
	Major Elective	4
	Discovery Course	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
	Foreign Language	4
	Major Elective	4
	Major Elective	4
	Discovery Course	4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
	Major Elective	4
	Discovery Course	4
	Elective	4
	Elective	4
<b>Credits</b>		<b>16</b>

### Spring

Major Elective	4
Discovery Course	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>

### Fourth Year

#### Fall

Major Elective	4
Discovery Course	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>

#### Spring

Major Elective	4
Discovery Course	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>129</b>

## Student Learning Outcomes

Upon completion of the Communication Arts program, students will be able to:

- Analyze how creativity, artistry, narrative, identity, persuasion, and ethics shape messages and relationships produced within a variety of social, organizational, and industry contexts.
- Demonstrate knowledge and skills that give them expertise and proficiency in areas such as human relations, social media, digital video, audio production, graphic design, writing, and speaking.
- Know the history of communication practices and understand how media technologies and messages have impacted societies, cultures, organizations, and businesses.
- Effectively research and creatively explore communication practices, experiences, and trends using high quality sources of information, multiple modes of inquiry, and multiple presentation formats.
- Identify professional interests or career paths by working with the Internship and Career Planning Office and by engaging with communication settings outside the classroom through internships, service learning, field trips, and independent studies.

## Communication Arts Major: Digital Media Option (B.A.)

<https://manchester.unh.edu/program/ba/communication-arts-major-digital-media-option>

### Description

Students choosing the Digital Media option use coursework and hands-on learning to explore the intersections of technology, creativity and artistry with a focus on audio, video and web-based media. Students gain a comprehensive overview of the different stages of a digital media

project, from writing and pre-production through production and post-production. Courses cover topics such as web authoring and multimedia, audio and video production, social media and public relations, ethics and law in the digital age, and motion graphics. An internship in the area of digital media is required.

## Requirements

### Option Requirements

Students must complete all of the [Communication Arts major requirements](#) (p. 426) and will work with their academic advisor to select courses that also satisfy option requirements.

Students must complete all of the Communication Arts major requirements. The option in Digital Media consists of 24 credits as distributed below. Note that some courses may also be used to fulfill the requirements of the Communication Arts major. Courses applied to the option must be completed with a minimum grade of C- and overall GPA of 2.0. Transfer students must complete a minimum of 12 credits, including the Digital Media Internship, at UNH Manchester.

Code	Title	Credits
<b>I. Select three of the following (one must be COMP):</b>		<b>12</b>
COMP 405	Introduction to Web Design and Development	
COMP 415	Mobile Computing First and For Most	
CA 500	Media Writing	
CA 514	Fundamentals of Video Production	
CA 515	Advanced Video Production	
CA 517	Fundamentals of Audio Prod	
CA 518	Advanced Topics in Digital Media Production	
<b>II. Select one of the following:</b>		<b>4</b>
CA 531	History and Organization of Advertising	
CA 540	Public Relations	
CA 542	Social Media for Organizations and Business	
COMP 560	Ethics and the Law in the Digital Age	
<b>III. Select one of the following:</b>		<b>4</b>
CA 610	Communication Technologies and Culture	
CA 795	Independent Study <sup>1</sup>	
CA 720	Seminar <sup>1</sup>	
<b>IV. Complete one, four-credit Digital Media Internship with advisor approval</b>		
CA 501	Internship/Communication in the Urban Community <sup>1</sup>	4
<b>Total Credits</b>		<b>24</b>

<sup>1</sup> Topic must be related to digital media

For more information, contact [Jeff Klenotic \(jeffrey.klenotic@unh.edu\)](mailto:jeffrey.klenotic@unh.edu), program coordinator or contact the [UNH Manchester Office of Admissions \(unhm.admissions@unh.edu\)](#), (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
CMN 455	Introduction to Media Studies	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
Quantitative Reasoning		4
CMN 456	Propaganda and Persuasion	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
Foreign Language		4
CMN 457	Introduction to Language and Social Interaction	4
Major Elective		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Foreign Language		4
Major Elective		4
Major Elective		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
Major Elective		4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Major Elective		4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
Major Elective		4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>

**Spring**

Major Elective	4
Discovery Course	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>129</b>

## Student Learning Outcomes

Upon completion of the Communication Arts program, students will be able to:

- Analyze how creativity, artistry, narrative, identity, persuasion, and ethics shape messages and relationships produced within a variety of social, organizational, and industry contexts.
- Demonstrate knowledge and skills that give them expertise and proficiency in areas such as human relations, social media, digital video, audio production, graphic design, writing, and speaking.
- Know the history of communication practices and understand how media technologies and messages have impacted societies, cultures, organizations, and businesses.
- Effectively research and creatively explore communication practices, experiences, and trends using high quality sources of information, multiple modes of inquiry, and multiple presentation formats.
- Identify professional interests or career paths by working with the Internship and Career Planning Office and by engaging with communication settings outside the classroom through internships, service learning, field trips, and independent studies.

## Communication Arts Major: Human Relations Option (B.A.)

<https://manchester.unh.edu/program/ba/communication-arts-major-human-relations-option>

### Description

Students choosing the Communication Arts Human Relations option explore practical, theoretical, and historical perspectives on the study of human relationships in professional and personal contexts. With so many of today's employers emphasizing the value of human communication skills in potential employees, the Human Relations Option offers students the knowledge and hands-on learning they need to develop their oral and written communication skills, as well as their ability to work in teams. Coursework covers topics such as verbal and nonverbal communication, perception, identity, conflict, human resource management, power, health, social psychology, human development, and counseling. An internship in the area of human relations is required.

### Requirements

### Option Requirements

Students must complete all of the [Communication Arts major requirements](#) (p. 426) and will work with their academic advisor to select courses that also satisfy option requirements.

The option in Human Relations consists of 24 credits as distributed below. Note that some courses may also be used to fulfill the requirements of the Communication Arts major. Courses applied to the option must be completed with a minimum grade of C- and overall GPA of 2.0. Transfer students must complete a minimum of 12 credits, including the Human Relations Internship, at UNH Manchester.

Code	Title	Credits
Select four of the following courses: <sup>1</sup>		16
ANTH 411	Global Perspectives on the Human Condition: An Introduction to Anthropology	
BUS 455	Management of Human Resources	
CA #507	Relational Violence	
CA 508	Conflict in Relational Communication	
CA #520	Special Topics in Applied Communication <sup>2</sup>	
CA 538	Gender	
CA 539	Communicating in Families	
CA 542	Social Media for Organizations and Business	
CA 550	Special Topics in Communication Organization, History, and Policy <sup>2</sup>	
INTR 438	A Socio-cultural Perspective on the Deaf Community	
PSYC 401	Introduction to Psychology	
PSYC 552	Social Psychology	
PSYC 581	Child Development	
PSYC 762	Counseling	
PSYC 791	Special Topics (Adult Development and Aging)	
Select one of the following courses:		4
CA 612	Narrative	
CA 795	Independent Study <sup>2</sup>	
CA 720	Seminar <sup>2</sup>	
Select one of the following courses:		4
CA 501	Internship/Communication in the Urban Community <sup>2</sup>	
UMST 500	Internship <sup>2</sup>	
<b>Total Credits</b>		<b>24</b>

<sup>1</sup> At least two courses must be above the 400 level.

<sup>2</sup> Topic must be related to Human Relations.

For more information, contact [Jeff Klenotic \(jeffrey.klenotic@unh.edu\)](mailto:jeffrey.klenotic@unh.edu), program coordinator or contact the [UNH Manchester Office of Admissions \(unhm.admissions@unh.edu\)](#), (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
CMN 455	Introduction to Media Studies	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
Quantitative Reasoning		4

CMN 456	Propaganda and Persuasion	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
Foreign Language		4
CMN 457	Introduction to Language and Social Interaction	4
Major Elective		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Foreign Language		4
Major Elective		4
Major Elective		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
Major Elective		4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Major Elective		4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
Major Elective		4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Major Elective		4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>129</b>

- Analyze how creativity, artistry, narrative, identity, persuasion, and ethics shape messages and relationships produced within a variety of social, organizational, and industry contexts.
- Demonstrate knowledge and skills that give them expertise and proficiency in areas such as human relations, social media, digital video, audio production, graphic design, writing, and speaking.
- Know the history of communication practices and understand how media technologies and messages have impacted societies, cultures, organizations, and businesses.
- Effectively research and creatively explore communication practices, experiences, and trends using high quality sources of information, multiple modes of inquiry, and multiple presentation formats.
- Identify professional interests or career paths by working with the Internship and Career Planning Office and by engaging with communication settings outside the classroom through internships, service learning, field trips, and independent studies.

## Communication Arts Minor

<https://manchester.unh.edu/program/minor/communication-arts>

### Description

The communication arts minor allows students in other majors to broaden their understanding of human communication while also developing deeper knowledge and practical skills that can enhance their professional lives and complement their major field of study.

### Requirements

The communication arts minor requires completion of five courses (20 credits), according to the requirements below. A minimum GPA of 2.0 in minor courses is required, with no individual grade lower than a C-. Courses taken on a pass/fail basis may not be used for the minor. Students should work with their major advisor to ensure that any prerequisites for CA courses have been met, or that permission to enter the course has been granted by the course instructor. Courses used to satisfy Discovery Program requirements may be used to satisfy CA minor requirements. No more than 8 credits used by a student to satisfy major requirements may be used for the minor. At the discretion of the minor coordinator, transfer credits may be used to satisfy minor requirements, but no more than 8 credits (or 2 of 5 classes) should be transfer credits.

Code	Title	Credits
<b>I. Breadth Courses</b>		
Select any two of the following, as long as they are NOT from the same category:		8
<b>Category A:</b>		
CMN 457	Introduction to Language and Social Interaction	
<b>Category B:</b>		
CMN 455	Introduction to Media Studies	
CA 502	Image and Sound	
<b>Category C:</b>		
CMN 456	Propaganda and Persuasion	
CA 450	Introduction to Public Speaking	
<b>II. Depth Courses</b>		
Select any three 500-level (or above) CA courses: <sup>1</sup>		12
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Except CA 501 Internship/Communication in the Urban Community

## Student Learning Outcomes

Upon completion of the Communication Arts program, students will be able to:



Note: Students who use CA 502 Image and Sound as a "breadth" course may not use it as a "depth" course.

For more information, contact [Jeff Klenotic \(Jeffrey.Klenotic@unh.edu\)](mailto:Jeffrey.Klenotic@unh.edu), minor supervisor.

## Computing

The undergraduate computing programs in the Applied Engineering and Sciences Department at UNH Manchester prepare students for successful careers in computer science and information technology and further education in computing-related graduate studies. In our computing programs, students learn computing principles and computational practices to understand how computing machineries, including networks and clouds, work; design and build efficient systems; and apply computations and tools to develop and operate next generation of computing applications.

### Programs

- [Computer Information Systems Major \(B.S.\)](#) (p. 434)
- [Computer Science Major \(B.A.\) Manchester](#) (p. 435)
- [Applied Computing Minor](#) (p. 437)

### Faculty

[Computing Faculty](#)

## Computer Information Systems Major (B.S.)

<https://manchester.unh.edu/program/bs/computer-information-systems-major>

### Description

The computer information systems (CIS) or information technology (IT) field, in its broadest sense, encompasses all aspects of computing technology. During their program of study, students develop a strong skillset to effectively select, develop, apply, integrate, and administer secure computing technologies to accomplish user goals.

The bachelor of science degree in Computer Information Systems prepares graduates with knowledge, skills, and professional practices to work in the highly integrated field of computing and to grow into leadership positions. The program also enables graduates to further their studies at the graduate level and pursue research in a computing-related discipline.

Career opportunities for students with an undergraduate CIS degree are varied, but may include such areas as software applications developer, data security specialist, database developer/administrator, e-commerce analyst/programmer, help desk manager, multimedia developer, network/system administrator, technical writer, technology trainer, user support specialist, testing and quality assurance specialist, or web developer. Career options exist in a wide range of organizations as all businesses, industries, and nonprofits continue to use, develop, and integrate information technology solutions.

## Program Educational Objectives

Within five years of graduation, a CIS student should be able to:

- Apply knowledge and skills in core and advanced information technologies to help an organization achieve its goals.
- Advocate for users of information technologies, whether they are end users of information systems, managers of enterprise applications, developers of IT solutions, or customers of IT-reliant work systems.
- Develop, manage, and evaluate computing and communication systems and services.
- Live and work as contributing, well-rounded members of society.

### Requirements

Students majoring in computer information systems must complete 128 credits to graduate, satisfy the University's Discovery Program, and complete 81 credits in the major with a minimum of C- in each course. Students must maintain an overall cumulative GPA of 2.0 or better.

Transfer students who elect to major in computer information systems must earn 81 approved credits for completion of the their major, of which at least 24 credits must be completed at UNH Manchester.

### Program Requirements

Code	Title	Credits
<b>Required Mathematics Course<sup>1</sup></b>		
Select one of the following:		4
MATH 420	Finite Mathematics	
MATH 422	Mathematics for Business Applications	
MATH 424B	Calculus for Life Sciences	
MATH 425	Calculus I	
COMP 500	Discrete Structures	
<b>Computing Core</b>		
COMP 405	Introduction to Web Design and Development	4
COMP 424	Applied Computing 1: Foundations of Programming	4
COMP 430	Systems Fundamentals	4
COMP 520	Database Design and Development	4
COMP 525	Data Structures Fundamentals	4
COMP 530	Machine and Network Architecture	4
COMP 550	Networking Concepts	4
COMP 560	Ethics and the Law in the Digital Age	4
<b>Project and Professional Practice<sup>2</sup></b>		
COMP 715	Information Security	4
COMP 730	Software Development	4
UMST 582	Internship and Career Planning Seminar	1
COMP 690	Internship Experience	4
COMP 790	Capstone Project	4
or COMP 791	Senior Thesis	
<b>Computing Topics<sup>3</sup></b>		
Select three computing courses		12
<b>Concentration to Broaden and Advance Student Learning of Computing Innovations<sup>4</sup></b>		
Select four courses		16
<b>Total Credits</b>		<b>81</b>

<sup>1</sup> Any of these courses, except for COMP 500 Discrete Structures, may be used to satisfy the Quantitative Reasoning Discovery requirement.

<sup>2</sup> The program prepares students for the workforce and further education in a holistic way by emphasizing communication, collaboration, team work, initiative, appreciation for diversity, and self-direction and responsibility.

<sup>3</sup> Advisor permission required.

<sup>4</sup> Majors can creatively design a concentration of courses that meet their academic and professional goals and career plans. Four courses can be selected across a wide university curriculum, reflecting majors' interests in a liberal arts, scientific, engineering, interdisciplinary, or professional area of study. The concentration must be approved by the student's advisor before the student's junior year.

For additional information about the computer information systems program, contact [Michael Jonas \(michael.jonas@unh.edu\)](mailto:michael.jonas@unh.edu) or the [UNH Manchester Office of Admissions \(unhmanchester.admissions@unh.edu\)](mailto:unhmanchester.admissions@unh.edu), (603) 641-4150.

## Degree Plan

### Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
COMP 405	Introduction to Web Design and Development	4
ENGL 401	First-Year Writing	4
MATH 420	Finite Mathematics	4
or MATH 422	or Mathematics for Business	
or MATH 425	Applications	
or COMP 500	or Calculus I	
	or Discrete Structures	
UMST 401	First Year Seminar	1
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
COMP 424	Applied Computing 1: Foundations of Programming	4
COMP 520	Database Design and Development	4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
COMP 430	Systems Fundamentals	4
COMP 550	Networking Concepts	4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
COMP 525	Data Structures Fundamentals	4
COMP 530	Machine and Network Architecture	4
Concentration Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
COMP 560	Ethics and the Law in the Digital Age	4
UMST 582	Internship and Career Planning Seminar	1
Concentration Course		4

Elective Course		4
Elective Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
COMP 690	Internship Experience	4
COMP 730	Software Development	4
Concentration Course		4
COMP Topic Course		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
COMP 715	Information Security	4
Concentration Course		4
COMP Topic Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
COMP 790	Capstone Project	4
COMP Topic Course		4
Elective Course		4
Elective Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>130</b>

### Student Learning Outcomes

- Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Use systemic approaches to select, develop, apply, integrate, and administer secure computing technologies to accomplish user goals.

The student learning outcomes are aligned with criteria for accrediting information technology programs as recommended by the ABET Computing Accreditation Commission and the ACM Computing Curricula – IT 2017 Information Technology guidelines.

## Computer Science Major (B.A.) Manchester

<https://manchester.unh.edu/program/ba/computer-science-major>

### Description

The computer science program combines a solid foundation in computing necessary to succeed in today's start-up and high-tech

environments. The program is designed in response to market demand for students proficient in computer science.

Students in the computer science program gain real-world experience through extensive project work and opportunities to interact with industry experts through internships and sponsored research.

Career prospects for students with an undergraduate computer science degree are varied, and may include such areas as applications developer, computer and information research scientist, data security specialist, database administrator, database developer, multimedia developer, network architect, product development manager, quality assurance analyst, software systems developer, user experience designer, or web developer.

## Program Educational Objectives

Within five years of graduation, a CS student should be able to:

- Demonstrate mastery of the core areas of computer science
- Invent, develop, manage, and evaluate computing systems and services
- Exercise professional responsibility and have appreciation of the social, legal, ethical, and cultural issues inherent in the computing field.

## Requirements

Students majoring in computer science must complete 128 credits to graduate, satisfy the University's Discovery Program, and complete 69 credits in the major with a minimum of C- in each course. Students must maintain an overall cumulative GPA of 2.0 or better.

Transfer students who elect to major in computer science must earn 69 approved credits for completion of the major, of which at least 24 credits must be completed at UNH Manchester.

### PROGRAM REQUIREMENTS

Code	Title	Credits
<b>Mathematics and Science <sup>1</sup></b>		
COMP 500	Discrete Structures	4
COMP 570	Statistics in Computing and Engineering	4
MATH 425	Calculus I	4
MATH 645	Linear Algebra for Applications	4
PHYS 407	General Physics I	4
<b>Computing Core</b>		
COMP 415	Mobile Computing First and For Most	4
COMP 424	Applied Computing 1: Foundations of Programming	4
COMP 430	Systems Fundamentals	4
COMP 525	Data Structures Fundamentals	4
COMP 530	Machine and Network Architecture	4
COMP 560	Ethics and the Law in the Digital Age	4
COMP 625	Data Structures and Algorithms	4
COMP 630	Systems Software	4
<b>Project and Professional Practice <sup>2</sup></b>		
COMP 690	Internship Experience	4
COMP 790	Capstone Project	4
or COMP 791	Senior Thesis	
UMST 582	Internship and Career Planning Seminar	1
<b>Computing Topics <sup>3</sup></b>		
Select two from the following:		
COMP 705	Full Stack Development	
COMP 715	Information Security	
COMP 720	Database Systems and Technologies	
COMP 725	Programming Languages	

COMP 740	Machine Learning Applications and Tools
Total Credits	69

- <sup>1</sup> The program requires four mathematics courses and one physics course.
- <sup>2</sup> The program prepares students for the workforce and further education in a holistic way by emphasizing communication, collaboration, team work, initiative, appreciation for diversity, and self-direction and responsibility.
- <sup>3</sup> Advisor permission required.

For additional information about the computer science program, contact [Michael Jonas \(michael.jonas@unh.edu\)](mailto:michael.jonas@unh.edu) or contact the [UNH Manchester Office of Admissions \(unhm.admissions@unh.edu\)](mailto:unhm.admissions@unh.edu), (603) 641-4150.

## Degree Plan

### Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
COMP 424	Applied Computing 1: Foundations of Programming	4
ENGL 401	First-Year Writing	4
MATH 425	Calculus I	4
UMST 401	First Year Seminar	1
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
COMP 415	Mobile Computing First and For Most	4
COMP 430	Systems Fundamentals	4
COMP 570	Statistics in Computing and Engineering	4
PHYS 407	General Physics I	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
COMP 500	Discrete Structures	4
COMP 525	Data Structures Fundamentals	4
Discovery Course		4
Foreign Language		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
COMP 530	Machine and Network Architecture	4
COMP 560	Ethics and the Law in the Digital Age	4
MATH 645	Linear Algebra for Applications	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
COMP 625	Data Structures and Algorithms	4
UMST 582	Internship and Career Planning Seminar	1
Discovery Course		4
Elective Course		4

Elective Course	4
<b>Credits</b>	<b>17</b>
<b>Spring</b>	
COMP 630 Systems Software	4
COMP 690 Internship Experience	4
Discovery Course	4
Elective Course	4
<b>Credits</b>	<b>16</b>
<b>Fourth Year</b>	
<b>Fall</b>	
COMP Topic Course	4
COMP Topic Course	4
Elective Course	4
Elective Course	4
<b>Credits</b>	<b>16</b>
<b>Spring</b>	
COMP 790 Capstone Project	4
Elective Course	4
Elective Course	4
Elective Course	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>130</b>

## Student Learning Outcomes

- Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.

The student learning outcomes are aligned with criteria for accrediting computer science programs as recommended by the ABET Computing Accreditation Commission and the ACM Computing Curricula – CS 2013 Computer Science guidelines.

## Applied Computing Minor

<https://manchester.unh.edu/program/minor/applied-computing>

### Description

The minor requires five COMP courses (20 credit hours). Students must earn grades of at least C- in each course and maintain an overall GPA of 2.0 in minor courses. Transfer students may transfer up to two courses, subject to the approval of the minor supervisor. Courses taken on a pass/

fail basis may not be used for the minor. No more than 8 credits used by the student to satisfy major requirements may be used in the minor.

## Requirements

Code	Title	Credits
<b>Required Courses</b>		
COMP 405	Introduction to Web Design and Development	4
or COMP 415	Mobile Computing First and For Most	
COMP 424	Applied Computing 1: Foundations of Programming	4
COMP 574	Applied Computing 2: Foundations of Machine Learning	4
<b>Select two of the following</b>		<b>8</b>
COMP 430	Systems Fundamentals	
COMP 500	Discrete Structures	
COMP 520	Database Design and Development	
COMP 525	Data Structures Fundamentals	
COMP 530	Machine and Network Architecture	
COMP 625	Data Structures and Algorithms	
<b>Total Credits</b>		<b>20</b>

For more information, contact [Michael Jonas \(michael.jonas@unh.edu\)](mailto:michael.jonas@unh.edu), minor supervisor.

## Education

### Programs

- [Education Minor \(Manchester\)](#) (p. 437)

## Education Minor (Manchester)

<https://manchester.unh.edu/program/minor/education>

### Description

Five courses (20 credits) comprise the minor in Education. A [Certification of Completion of Minor form](#) needs to be completed at the beginning of a student's final undergraduate semester at UNH.

### Requirements

A minor in Education consists of 20 credits in Education Department courses. A methods course located in another department may be counted for four of these 20 credits, e.g., ARTS 791 Art Education (Elementary) or ARTS 792 Art Education (Secondary), ENGL 792 Teaching Literature and Literacy, MATH #708 Teaching Mathematics in Grades K-8, MATH 709 Teaching of Mathematics in Grades 6-12.

No more than 8 credits used to satisfy major requirements may be used for the minor.

Courses used in obtaining a minor in Special Education cannot be used towards a minor in Education.

EDUC 500 Exploring Teaching can only be counted once (four credits) towards the minor.

No more than two transferred courses in education or a closely-related area from another college or university may be used towards a minor in Education. A three-credit course transferred from another school will count for three credits at UNH, not four credits.

For more information, contact Christine Wolczko, Administrative Coordinator, at [Christine.Wolczko@unh.edu](mailto:Christine.Wolczko@unh.edu) ([christine.wolczko@unh.edu](mailto:christine.wolczko@unh.edu)).

## Engineering Technology

With topics including communications theory, digital signal processing, analog systems, and digital systems. The ABET-accredited **Electrical Engineering Technology** program gives you the practical experience to meet both industry demand and your career goals. Small class sizes mean opportunities to collaborate with faculty who are industry experts, giving you one-on-one attention to excel in the dynamic, highly rewarding field of electronics.

From advanced manufacturing concepts to complex machine design, the ABET-accredited **Mechanical Engineering Technology** program will ignite your fascination with how things work. You'll work alongside faculty experts to learn mechanical design, fluid/thermal technology, production systems, automation engineering and more.

Through hands-on experience in the classroom and in the field, this applied degree program gives you the practical experience to turn your passion into a career.

### Programs

- [Electrical Engineering Technology Major \(B.S.\)](#) (p. 438)
- [Mechanical Engineering Technology Major \(B.S.\)](#) (p. 439)

### Faculty

[Engineering Technology Faculty](#)

## Electrical Engineering Technology Major (B.S.)

<https://manchester.unh.edu/program/bs/electrical-engineering-technology-major>

### Description

Engineering technology requires the application of engineering and scientific knowledge and methods combined with technical skills in support of engineering activities. Graduates may work in a variety of areas including engineering design, manufacturing, field service, testing, and sales and may work in management positions related to engineering, manufacturing, and computer technology.

The UNH Manchester BS in Electrical Engineering Technology is accredited by the Engineering Technology Accreditation Commission (ETAC) of ABET, [www.abet.org](http://www.abet.org).

The programs at UNH Manchester are designed to meet the needs of both full- and part-time students with a mix of classes scheduled during the day and in the evening.

### Requirements

Each course required in the major must be completed with a minimum grade of C-. Students must attain a minimum GPA in the major of 2.0.

Students must complete a minimum of 128 credits and satisfy the University's Discovery Program.

## Electrical Engineering Technology (EET) Program Requirements

Code	Title	Credits
CHEM 405	Chemical Principles for Engineers	4
COMP 424	Applied Computing 1: Foundations of Programming	4
COMP 560	Ethics and the Law in the Digital Age	4
ECN 411	Introduction to Macroeconomic Principles	4
ET 421	Digital Electronics I	4
ET 431	Circuit Analysis I	4
ET 432	Circuit Analysis II	4
ET 522	Digital Electronics II	4
ET 541	Electronic Devices	4
ET 542	Analog Electronics	4
ET 590	Embedded Microcontrollers	4
ET 625	Technical Communications	4
ET 671	Digital Systems	4
ET 674	Control Systems and Components	4
ET 677	Analog Systems	4
ET 680	Communications and Fields	4
ET 781	Introduction to Automation Engineering	4
ET 788	Introduction to Digital Signal Processing	4
ET 790	Microcomputer Technology	4
ET 791	Electrical Engineering Technology Project (Senior Capstone Project) <sup>1</sup>	8
MATH 425	Calculus I	4
MATH 426	Calculus II	4
PHYS 407	General Physics I	4
Discovery Program Requirements, Writing Intensive (WI) Requirement, and electives		
<b>Total Credits</b>		<b>96</b>

<sup>1</sup> Senior Capstone Project, two semesters; satisfies the Discovery Senior Capstone Experience requirement.

For information about the electrical engineering technology program (EET), contact the B.S. engineering technology program coordinator, [Sean Tavares](mailto:Sean.Tavares@unh.edu) ([sean.tavares@unh.edu](mailto:sean.tavares@unh.edu)). For admissions information, contact the [Office of Admissions](mailto:unhm.admissions@unh.edu) ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)) at (603) 641-4150.

### Degree Plan

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ENGL 401	First-Year Writing	4
MATH 418	Analysis and Applications of Functions	4
COMP 424	Applied Computing 1: Foundations of Programming	4
ET 431	Circuit Analysis I	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
PHYS 407	General Physics I	4
ET 421	Digital Electronics I	4
MATH 425	Calculus I	4
ET 432	Circuit Analysis II	4
<b>Credits</b>		<b>16</b>



**Second Year****Fall**

CHEM 405	Chemical Principles for Engineers	4
MATH 426	Calculus II	4
ET 522	Digital Electronics II	4
ET 541	Electronic Devices	4

**Credits** 16

**Spring**

ET 542	Analog Electronics	4
ET 590	Embedded Microcontrollers	4
Discovery Course		4
Elective Course		4

**Credits** 16

**Third Year****Fall**

ET 671	Digital Systems	4
ET 674	Control Systems and Components	4
ET 680	Communications and Fields	4
Discovery Course		4

**Credits** 16

**Spring**

ET 625	Technical Communications	4
ET 677	Analog Systems	4
Discovery Course		4
Discovery Course		4

**Credits** 16

**Fourth Year****Fall**

COMP 560	Ethics and the Law in the Digital Age	4
ET 790	Microcomputer Technology	4
ET 791	Electrical Engineering Technology Project	4
Discovery Course		4

**Credits** 16

**Spring**

ECN 411	Introduction to Macroeconomic Principles	4
ET 781	Introduction to Automation Engineering	4
ET 788	Introduction to Digital Signal Processing	4
ET 791	Electrical Engineering Technology Project	4

**Credits** 16

**Total Credits** 128

- An ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
- An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and
- An ability to function effectively as a member as well as a leader on technical teams.

## Mechanical Engineering Technology Major (B.S.)

<https://manchester.unh.edu/program/bs/mechanical-engineering-technology-major>

### Description

Engineering technology requires the application of engineering and scientific knowledge and methods combined with technical skills in support of engineering activities. Graduates may work in a variety of areas including engineering design, manufacturing, field service, testing, and sales and may work in management positions related to engineering, manufacturing, and computer technology.

The UNH Manchester BS in Mechanical Engineering Technology is accredited by the Engineering Technology Accreditation Commission (ETAC) of ABET.

The programs at UNH Manchester are designed to meet the needs of both full- and part-time students with a mix of classes scheduled during the day and in the evening.

### Requirements

Each course required in the major must be completed with a minimum grade of C-. Students must attain a minimum GPA in the major of 2.0. Students must complete a minimum of 128 credits and satisfy the University's Discovery Program.

### Mechanical Engineering Technology (MET) Program Requirements

Code	Title	Credits
COMP 424	Applied Computing 1: Foundations of Programming	4
COMP 560	Ethics and the Law in the Digital Age	4
ECN 411	Introduction to Macroeconomic Principles	4
ET 405	Engineering Design	4
ET 411	Manufacturing and Materials Processing	4
ET 450	Statics and Strength of Materials	4
ET 502	Measurement and Control	4
ET 505	Material Science	4
ET 529	Introduction to Thermodynamics	4
ET 550	Dynamics and Machine Design I	4
ET 560	Machine Design II	4
ET 625	Technical Communications	4
ET 635	Fluid Technology and Heat Transfer	4
ET 641	Production Systems	4
ET 644	Mechanical Engineering Technology Concepts in Analysis and Design	4
ET 645	Fluid Technology and Heat Transfer II	4
ET 674	Control Systems and Components	4
ET 675	Electrical Technology	4
ET 751	Mechanical Engineering Technology Project	8
ET 781	Introduction to Automation Engineering	4
PHYS 407	General Physics I	4

## Student Learning Outcomes

Engineering Technology program, the student outcomes must include, but are not limited to, the following learned capabilities:

- An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;
- An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;

PHYS 408	General Physics II	4
Discovery Program Requirements, Writing Intensive (WI) Requirement, and electives		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
CHEM 405	Chemical Principles for Engineers	4
Total Credits		104

For information about the mechanical engineering technology program (MET), contact Program Coordinator [Sean Tavares](mailto:Sean.Tavares@unh.edu) ([Sean.Tavares@unh.edu](mailto:Sean.Tavares@unh.edu)). For admissions information, contact the [Office of Admissions](mailto:unhm.admissions@unh.edu) ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)) at (603) 641-4150.

## Degree Plan

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ENGL 401	First-Year Writing	4
CHEM 405	Chemical Principles for Engineers	4
ET 405	Engineering Design	4
MATH 418	Analysis and Applications of Functions	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
PHYS 407	General Physics I	4
ET 411	Manufacturing and Materials Processing	4
MATH 425	Calculus I	4
ET 450	Statics and Strength of Materials	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
PHYS 408	General Physics II	4
MATH 426	Calculus II	4
ET 502	Measurement and Control	4
ET 550	Dynamics and Machine Design I	4
Discovery Course		4
<b>Credits</b>		<b>20</b>
<b>Spring</b>		
ET 505	Material Science	4
ET 529	Introduction to Thermodynamics	4
ET 560	Machine Design II	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
COMP 424	Applied Computing 1: Foundations of Programming	4
ET 635	Fluid Technology and Heat Transfer	4
ET 641	Production Systems	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ET 625	Technical Communications	4
ET 645	Fluid Technology and Heat Transfer II	4

ET 675	Electrical Technology	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

### Fourth Year

#### Fall

ECN 411	Introduction to Macroeconomic Principles	4
ET 674	Control Systems and Components	4
ET 751	Mechanical Engineering Technology Project	4
Discovery Course		4
<b>Credits</b>		<b>16</b>

#### Spring

COMP 560	Ethics and the Law in the Digital Age	4
ET 644	Mechanical Engineering Technology Concepts in Analysis and Design	4
ET 751	Mechanical Engineering Technology Project	4
ET 781	Introduction to Automation Engineering	4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>132</b>

## Student Learning Outcomes

The Engineering Technology program student outcomes include, but are not limited to, the following learned capabilities:

- An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;
- An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;
- An ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
- An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; and
- An ability to function effectively as a member as well as a leader on technical teams.

## English Studies

The majors in English Studies offer students a digital-age curriculum that focuses on the five skills considered most important for success on the job market: critical thinking, creative thinking, written communication, oral communication, and the ability to collaborate as part of a team. Our English Studies majors help students develop these critical skill-sets by offering a regionally distinctive and transmedia curriculum that is innovative, cross-disciplinary, and entrepreneurial. As part of their studies in one of our two majors—Professional and Technical Communications and Literary Studies—students are required to complete upper-level seminars, capstones, and internships in areas of specialization that are tailored to their own career ambitions and focused on the applied skills that employers particularly value.

## Programs

- [English Studies: Literary Studies Major \(B.A.\)](#) (p. 441)
- [English Studies: Professional and Technical Communications Major \(B.A.\)](#) (p. 442)
- [English Minor \(UNHM\)](#) (p. 443)
- [Professional Writing Minor](#) (p. 444)

## Faculty

[English Studies Faculty](#)

## English Studies: Literary Studies Major (B.A.)

<https://manchester.unh.edu/program/ba/literary-studies-major>

## Description

Students in the English Studies: Literary Studies program advance their power to analyze keenly and write incisively by studying leading-edge and foundational literary works in print, graphic and digital forms. Gaining a mastery of aesthetics and genre, literary theory and cultural history, our students learn to see how language shapes the world on every scale. English Studies: Literary Studies students take an array of literature classes as well as core courses in digital creative writing and professional and technical communication, making them just the sort of versatile, critically aware graduates prized in workplaces today.

## Requirements

For the English Studies: Literary Studies program at UNH Manchester, students must complete a minimum of 128 credits and satisfy the University's Discovery Program and foreign language requirements, and complete a minimum of 40 credits in major coursework with a minimum grade of C-. The major requirements consist of a minimum of 10 courses. These 10 courses (40 credits) must include the capstone requirement.

Students in the major must earn C or higher to pass ENGL 419 How to Read Anything, [ENGL 502](#) Professional and Technical Writing, and [ENGL 595](#) Literary Topics: Digital Creative Writing. One literary theory/poetics course is required. Two pre-1800 literature courses are required.

## PROGRAM REQUIREMENTS

Code	Title	Credits
<b>Core Courses</b>		
ENGL 419	How to Read Anything	4
ENGL 502	Professional and Technical Writing	4
ENGL 595	Literary Topics (Digital Creative Writing)	4
<b>Development/Extension</b> <sup>1</sup>		
Select three courses of the following:		12
Any 500 or 600-level ENGL courses in literature, literary theory, poetics, or narrative		
<b>Specialization/Practice</b> <sup>1</sup>		
ENGL 787	English Major Seminar <sup>2</sup>	4
ENGL 797	Special Studies in Literature <sup>3</sup>	4
Select two courses of the following:		8
Any 600 or 700 level ENGL electives in literature, literary theory, poetics, or narrative		
<b>Total Credits</b>		<b>40</b>

<sup>1</sup> Students must take a *total* of two pre-1800 literature courses in the major. These courses can be taken either in Development/Extension OR Specialization/Practice categories OR from both categories.

<sup>2</sup> Capstone course. Students must have earned 90 credits before taking the course.

<sup>3</sup> Variable topic seminar colloquium

For more information, contact Susanne Paterson, Associate Professor and Program Coordinator, at [Susanne.Paterson@unh.edu](mailto:Susanne.Paterson@unh.edu) ([susanne.paterson@unh.edu](mailto:susanne.paterson@unh.edu)) or the [UNH Manchester Office of Admissions](#) ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)) at (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
Discovery Course		4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
	Quantitative Reasoning	4
ENGL 419	How to Read Anything	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
	Foreign Language	4
ENGL 502	Professional and Technical Writing	4
Major Elective		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
	Foreign Language	4
ENGL 595	Literary Topics (Digital Creative Writing)	4
Elective		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
Any 500 or 600-level ENGL courses in literature, literary theory, poetics, or narrative		4

Any 600 or 700-level ENGL electives in literature, literary theory, poetics, or narrative	4
Discovery Course	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Spring</b>	
Any 500 or 600-level ENGL courses in literature, literary theory, poetics, or narrative	4
Any 600 or 700-level ENGL electives in literature, literary theory, poetics, or narrative	4
Discovery Course	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Fourth Year</b>	
<b>Fall</b>	
Any 500 or 600-level ENGL courses in literature, literary theory, poetics, or narrative	4
ENGL 787 English Major Seminar	4
Discovery Course	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Spring</b>	
ENGL 797 Special Studies in Literature	4
Elective	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>129</b>

## Student Learning Outcomes

### English Studies Program Learning Outcomes

- Produce clear, contextually appropriate, and well-supported writing
- Read and analyze texts—literary and non-literary—from diverse time periods, genres, and authorial perspectives
- Engage with writing as a rhetorical, collaborative, and recursive process from invention to product
- Practice writing and speaking for a variety of academic and professional exigencies, audiences, and platforms (including professional and vocational contexts in the form of internships and/or capstone projects)
- Recognize language as culturally, historically, and socially constructed
- Develop information and technology literacy skills

## English Studies: Professional and Technical Communications Major (B.A.)

<https://manchester.unh.edu/program/ba/professional-technical-communications-major>

## Description

Students in the English Studies: Professional and Technical Communications program study to become accomplished digital-age communicators. You'll develop transferable skill-sets in oral and written communication that prepare you to excel in any professional environment. In addition, you'll learn to communicate and collaborate in specializations of your choice — including, among others, new media journalism, creative nonfiction, business writing, and technical writing.

## Requirements

For the English Studies: Professional and Technical Communications program at UNH Manchester, students must complete a minimum of 128 credits and satisfy the University's Discovery Program and foreign language requirements, and complete a minimum of 40 credits in major coursework with a grade of C- or higher. The major requirements consist of a minimum of 10 courses. These 10 courses (40 credits) must include the internship requirement. Students in the major must earn C or higher to pass ENGL 419 How to Read Anything, ENGL 502 Professional and Technical Writing, and ENGL 595 Literary Topics: Digital Creative Writing.

## PROGRAM REQUIREMENTS

Code	Title	Credits
<b>Core Courses</b>		
ENGL 419	How to Read Anything	4
ENGL 502	Professional and Technical Writing	4
ENGL 595	Literary Topics (Digital Creative Writing)	4
<b>Development/Extension</b>		
ENGL 602	Advanced Professional and Technical Writing	4
ENGL 694	Special Topics in Creative Writing <sup>1</sup>	4
PTC 500	Business Communication	4
<b>Specialization/Practice</b>		
UMST 500	Internship <sup>2</sup>	4
Select three courses of the following disciplines:		12
Any 500, 600, or 700 level writing, communications, or journalism electives <sup>3,4</sup>		
<b>Total Credits</b>		<b>40</b>

<sup>1</sup> Can be duplicated for credit, provided the topics are different

<sup>2</sup> Capstone course. Students must have earned 90 credits before completing the internship for capstone credit. If students wish to do an internship before senior class standing, they must consult with the program coordinator to designate an upper-level course as a capstone course.

<sup>3</sup> ENGL 791 English Grammar is recommended

<sup>4</sup> These courses may be selected from the Communication Arts program and/or other programs, with program coordinator approval

For more information, contact [Susanne Paterson](mailto:susanne.paterson@unh.edu) ([susanne.paterson@unh.edu](mailto:susanne.paterson@unh.edu)), Associate Professor and Program Coordinator or the [UNH Manchester Office of Admissions](mailto:unhm.admissions@unh.edu) ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)) at (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
Discovery Course		4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
	Quantitative Reasoning	4
ENGL 419	How to Read Anything	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
	Foreign Language	4
PTC 500	Business Communication	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
	Foreign Language	4
ENGL 502	Professional and Technical Writing	4
ENGL 595	Literary Topics (Digital Creative Writing)	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
	Any 500, 600, or 700-level writing, communications, or journalism electives	4
ENGL 694	Special Topics in Creative Writing	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
ENGL 602	Advanced Professional and Technical Writing	4
	Any 500, 600, or 700-level writing, communications, or journalism electives	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
UMST 500	Internship	4
Discovery Course		4
Elective		4

Elective	4
<b>Credits</b>	<b>16</b>
<b>Spring</b>	
Any 500, 600, or 700-level writing, communications, or journalism electives	4
Elective	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>129</b>

## Student Learning Outcomes

### English Studies Program Learning Outcomes

1. Produce clear, contextually appropriate, and well-supported writing
2. Read and analyze texts—literary and non-literary—from diverse time periods, genres, and authorial perspectives
3. Engage with writing as a rhetorical, collaborative, and recursive process from invention to product
4. Practice writing and speaking for a variety of academic and professional exigencies, audiences, and platforms (including professional and vocational contexts in the form of internships and/or capstone projects)
5. Recognize language as culturally, historically, and socially constructed
6. Develop information and technology literacy skills

## English Minor (Manchester)

<https://manchester.unh.edu/program/minor/english>

## Description

With a minor in English, you can complement your major with five classes from our areas of study. We think you'll find that even subjects that seem far apart have an uncanny way of intersecting.

In our literature courses, you might read and research a play about thermodynamics, even as our writing classes give you an opportunity to study the many genres of creative and occupational writing. English study expands your portfolio of transferable skills while keeping your imaginative faculties in high gear.

Employers from across the professional spectrum are looking for employees with skill-sets that include those of an English minor—for instance, the ability to think critically, parse challenging texts, and express new ideas persuasively and creatively. You'll be amazed at what an English minor can do for you both personally and professionally.

## Requirements

For the English minor at UNH Manchester, students must complete 20 credits with a minimum 2.0 grade-point average in these courses overall and with no individual grade lower than a C-. Students may include in the English minor courses from the Writing Focus, which includes courses in creative writing and journalism.



ENGL 419 How to Read Anything is **recommended** as one of the five courses.

Code	Title	Credits
<b>Required Courses</b>		
Select two English courses at the 500 level (or ENGL 419 and one 500 level course)		8
Select three English courses at the 600 or 700 level		12
<b>Total Credits</b>		<b>20</b>

For more information, contact [Susanne Paterson](mailto:Susanne.Paterson@unh.edu) (Susanne.Paterson@unh.edu), Associate Professor, Program Coordinator, and minor supervisor.

## Professional Writing Minor

<https://manchester.unh.edu/program/minor/professional-writing>

### Description

The interdisciplinary minor in professional writing introduces you to the many genres of professional writing, providing opportunities to practice your skills in an internship setting.

Courses span the areas of English, Communication Arts, and Computing, and include classes such as Media Writing, Screenwriting, Professional and Technical Writing, Social Media for Organizations and Business, Introduction to Computer Applications, Mobile Computing, as well as others.

### Requirements

Students must complete 22-24 credits for the minor. Courses must be completed with a minimum grade of C- unless otherwise specified, and a 2.0 overall GPA in courses used for the minor is required. A maximum of two transfer courses (3 or 4 credits each) may be applied to the minor. No more than 8 credits used by the student to satisfy major requirements may be used in the minor.

**Students should select courses from the following subject areas:**

Code	Title	Credits
<b>English Courses</b>		
Select three of the following: <sup>1</sup>		12
ENGL 501	Introduction to Creative Nonfiction	
ENGL 502	Professional and Technical Writing	
ENGL 534	21st Century Journalism: How the News Works	
ENGL 621	Newswriting	
ENGL 631	Digital Reporting	
<b>Communication Arts Courses</b>		
Select at least one of the following:		4
CA 500	Media Writing	
CA 512	Screenwriting	
CA 514	Fundamentals of Video Production	
CA 542	Social Media for Organizations and Business	
<b>Computing Courses</b>		
Select one of the following: <sup>1</sup>		4
COMP 415	Mobile Computing First and For Most	
<b>Internship</b>		
Select one of the following:		2-4
UMST 500	Internship	
Another discipline-based internship approved by the minor supervisor		
<b>Total Credits</b>		<b>22-24</b>

<sup>1</sup> Other courses may be considered to fulfill the requirement with minor supervisor permission.

For more information, contact [Susanne Paterson](mailto:Susanne.Paterson@unh.edu) (Susanne.Paterson@unh.edu), Associate Professor, Program Coordinator, and minor supervisor.

## English Teaching Shaping skilled English educators through creativity and real-world experience

Inspire others to share your love of reading and writing with our English Teaching program. Considered one of the region's best, our program gives you the tools, guidance and real-world experience for a rewarding career in English education.

Our faculty are not only master teachers, but thoughtful advisors and mentors to those who see themselves as educators. They offer a diverse spectrum of expertise—from Shakespeare to African literature, from 21st century journalism to deep knowledge of standards-based literacy education.

The Accelerated Master's program in Durham allows you to work on requirements for your Master of Arts in Teaching degree while still in the bachelor's program. You'll spend the fifth year interning at an area school, preparing you to become state-certified to teach English Language Arts.

Combine your passion for reading and writing with theories of learning and teaching literacy—leading you to a career helping students develop the skills they need for a lifetime of learning.

<https://manchester.unh.edu/academics/degree-programs/english-teaching>

### Programs

- [English Teaching Major \(B.A.\) Manchester](#) (p. 444)
- [TESOL Minor \(Manchester\)](#) (p. 446)

### Faculty

English Teaching Faculty

## English Teaching Major (B.A.) Manchester

<https://manchester.unh.edu/program/ba/english-teaching-major>

### Description

## Shaping skilled English educators through creativity and real-world experience

Inspire others to share your love of reading and writing with our English Teaching program. Considered one of the region's best, our program gives

you the tools, guidance and real-world experience for a rewarding career in English education.

Our faculty are not only master teachers, but thoughtful advisors and mentors to those who see themselves as educators. They offer a diverse spectrum of expertise—from Shakespeare to African literature, from 21st century journalism to deep knowledge of standards-based literacy education.

The Accelerated Master's program in Durham allows you to work on requirements for your Master of Arts in Teaching degree while still in the bachelor's program. You'll spend the fifth year interning at an area school, preparing you to become state-certified to teach English Language Arts.

Combine your passion for reading and writing with theories of learning and teaching literacy—leading you to a career helping students develop the skills they need for a lifetime of learning.

## Requirements

All English Teaching majors must complete 10 courses (40 credits). Six of 10 courses must be at the 600-level or above. The English Teaching major prepares prospective teachers of middle- and high-school English (grades 5-12). This degree does not provide state certification. Students who wish to be certified must apply for admission to graduate study within the Education Department. Certification requires an additional year of course work and internship at the graduate level. The graduate coursework and internship can typically be completed in the 12 months following completion of the B.A. in English Teaching.

- All prospective English Teaching majors should enroll in EDUC 500 Exploring Teaching as early as possible.
- ENGL 419 How to Read Anything must be completed with a minimum grade of C. All other major courses must be completed with a minimum grade of C-.
- English Teaching majors must have a 2.5 GPA in the following program requirements:

## Program Requirements

Code	Title	Credits
ENGL 419	How to Read Anything	4
ENGL 514W	British Literature III: Revolts, Renewals, Migrations <sup>1</sup>	4
ENGL #516	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved <sup>1</sup>	4
Select an additional 500/600/700-level English course		4
Select two literature courses 600/700 level		8
ENGL 657	Shakespeare	4
ENGL 710	Teaching Writing	4
ENGL 791	English Grammar	4
ENGL 792	Teaching Literature and Literacy	4
Total Credits		40

## Diversity Requirement

Students must take one course that focuses on diversity in race, ethnicity, religion, gender or class, and theories concerning them. This course counts toward the ten courses described above. Consult with your advisor about courses that will fulfill this requirement.

## Capstone Requirement

Students must take one capstone course during their senior year from any approved ENGL 700-level course in the major. Students must have

earned 90 credits before taking the course. Consult with the program coordinator about courses that will fulfill this requirement.

<sup>1</sup> Cannot be repeated under different course title

Combine the English Teaching major with UNH's renowned MAT and in five years students could be eligible for state certification in English and Language Arts teaching. Upon acceptance into the five-year master's degree program, students can apply 12 undergraduate credits to the advanced degree.

For more information, contact [Susanne Paterson](mailto:susanne.paterson@unh.edu) ([susanne.paterson@unh.edu](mailto:susanne.paterson@unh.edu)), Associate Professor and Program Coordinator or the [UNH Manchester Office of Admissions](mailto:unhm.admissions@unh.edu) ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)) at (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
Elective		4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
	Quantitative Reasoning	4
ENGL 419	How to Read Anything	4
	Discovery Course	4
	Elective	4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
	Foreign Language	4
ENGL #516	American Literature II Money, Migration, and Modernity: Huck Finn to Beloved	4
	500/600/700-level English course	4
	Discovery Course	4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
	Foreign Language	4
ENGL #514	British Literature III: Revolts, Renewals, Migrations	4
	Elective	4
	Discovery Course	4
<b>Credits</b>		<b>16</b>

Third Year

Fall

ENGL 710	Teaching Writing	4
ENGL 657	Shakespeare	4
Discovery Course		4
Elective		4

**Credits** 16

Spring

600/700-level Literature course		4
Discovery Course		4
Elective		4
Elective		4

**Credits** 16

Fourth Year

Fall

ENGL 791	English Grammar	4
600/700-level Literature course		4
Discovery Course		4
Elective		4

**Credits** 16

Spring

ENGL 792	Teaching Literature and Literacy	4
Elective		4
Elective		4
Elective		4

**Credits** 16

**Total Credits** 129

## Student Learning Outcomes

Students will have the opportunity to compare philosophies of English teaching and learning, and to develop their own approaches to writing and literacy instruction in unit plans and lesson plans. In class, we will discuss theoretical and pedagogical ideas centered on student writing, engage in reading and writing exercises, produce and practice instructional activities and assessments, evaluate approaches to teaching writing, and review state-level standards and tests. Overall, the aim of the course is recognition of literacy skills (including reading, writing, listening, speaking, and viewing) and consideration of how they can be used for learning goals including comprehension, analysis, description, and evaluation. Students will:

- Design activities, lessons, and units to meet established standards and objectives in writing and language use.
- Adapt materials for a variety of students' needs, including exceptional learners.
- Identify teaching resources among mentors, professional literature, conferences, organizations (e.g., National Council of Teachers of English [NCTE]), technology, and websites.
- Reflect and write on the theoretical bases for instructional decisions, evaluating professional literature and using appropriate academic conventions.
- Deliver engaging, on-point writing and language instruction appropriate to audience and content; practice a variety of presentation and discussion strategies.

## TESOL Minor (Manchester)

<https://manchester.unh.edu/program/minor/tesol>

### Description

The Teaching English to Speakers of Other Languages (TESOL) Minor is set of courses designed to prepare interested students in teaching and/or working with multilingual learners. The minor is primarily for students pursuing careers in teaching but is also appropriate for students interested in a range of professions that require regular interaction with a multilingual population (e.g., social work, work force development, public health, and management). It is also benefits students who want to later pursue K-12 ESOL certification or a graduate degree in education or linguistics at UNH or another institution. As the cultural and linguistic diversity in K-12 schools continues to increase, the TESOL Minor is an excellent addition to any student interested in public school teaching.

Furthermore, the TESOL Minor appeals to students who are interested in teaching English to bi-/ multilingual learners in non-K-12 settings, either in the US or abroad. In the U.S. this includes teaching at the post-secondary level, e.g. community colleges, academic enrichment centers at Institutions of Higher Education (IHEs) and at adult learning centers. For students interested in teaching abroad, the TESOL Minor provides a competitive edge over other BS/BA candidates, including prestigious opportunities such as the Fulbright English Teaching Assistant Program.

The Minor is also attractive to students who are interested in using the credential to pursue overseas opportunities (e.g., Peace Corps, World Teach), and, in addition, opens up new international job-seeking possibilities.

### Requirements

For the Teaching English to Speakers of Other Languages (TESOL) Minor at UNH Manchester, students must complete 20 credits with a minimum 2.0 grade-point average in these courses overall and with no individual grade lower than a C-. No more than 8 transfer credits will be accepted.

Code	Title	Credits
<b>Required courses</b>		
EDUC 712	Teaching Multilingual Learners <sup>1</sup>	4
ENGL 716	Curriculum, Materials and Assessment in English as a Second Language	4
ENGL 791	English Grammar	4
<b>Select two of the following <sup>2</sup></b>		<b>8</b>
EDUC 500	Exploring Teaching (with an ESOL placement)	
EDUC 797	Special Topics in Education (related to TESOL) <sup>3</sup>	
ENGL 719	Sociolinguistics Survey	
<b>Total Credits</b>		<b>20</b>

- <sup>1</sup> Since 1998, EDUC 712 Teaching Multilingual Learners has been recognized by the Durham English Department as the equivalent of ENGL 715 Teaching English as a Second Language: Theory and Methods
- <sup>2</sup> Students may petition to have a TESOL related course from another major (e.g., English, Communication Arts) serve as an elective.
- <sup>3</sup> Special topics in the past have included: "Language and Culture in Schools & Schooling"; "The Immigrant Experience in Film and Literature"; and "Sociolinguistics and Socioliteracies". Students may petition to have a TESOL related course from another major

(e.g., English, Communication Arts) fulfill the EDUC special topics requirement.

For more information, contact [Judy Sharkey \(judy.sharkey@unh.edu\)](mailto:judy.sharkey@unh.edu), Professor of Education or [Susanne Paterson \(susanne.paterson@unh.edu\)](mailto:susanne.paterson@unh.edu), Associate Professor and Program Coordinator.

## General Studies

The Associate in Arts in General Studies offers students academic flexibility in a program that combines the foundations of a liberal arts education and elective courses that satisfy personal interests.

<https://manchester.unh.edu/program/aa/general-studies>

### Programs

- [General Studies \(A.A.\)](#) (p. 447)

### Faculty

<https://manchester.unh.edu/directory/all>

## General Studies (A.A.)

<https://manchester.unh.edu/program/aa/general-studies>

### Description

The associate of arts in general studies offers students academic flexibility in a program that combines the foundations of a liberal arts education and elective courses that satisfy personal interests. The A.A. in general studies is the first two years of a baccalaureate program, and all 400-level courses transfer to and fulfill the University's Discovery requirements. Students who earn an A.A. in general studies have a foundation for continued study in any major while they develop problem-solving skills, cognitive skills, and learning techniques that are vital to a lifetime of learning. Many students begin their college study in the A.A. general studies program. Depending on personal interests and academic goals, students may choose to apply to a baccalaureate degree program prior to completion of the A.A. degree.

### Requirements

To graduate with an associate of arts degree in general studies, students must complete 64 credits, earn a minimum cumulative GPA of 2.0, and fulfill two types of requirements: University Discovery Program and degree requirements. The program includes nine courses from the Discovery Program curriculum. Working with their advisors, students enhance their program of study with elective courses where they can explore their interests and possible baccalaureate degree majors. The last 16 hours of credit must be UNH courses completed following admission and matriculation, unless permission is granted to transfer part of this work from another institution.

## Course Requirements

Code	Title	Credits
<b>Discovery Foundations</b>		
Two writing-intensive courses, one of which must be:		8
ENGL 401	First-Year Writing	
One course in quantitative reasoning (must be completed within the first 32 credits)		4
One Inquiry or Inquiry attribute course (must be completed within the first 25 credits)		4
<b>Discovery Categories</b>		
Two courses from two of the following categories (one must be a lab course):		8
Biological Science		
Physical Science		
Environment, Technology, and Society		
One course in Historical Perspectives		4
One course in World Cultures or Fine and Performing Arts		4
One course in Social Science		4
One course in Humanities		4
Completion of the Interdisciplinary Core Requirement (may also fill the Humanities category requirement)		4
HUMA 411 or HUMA 412	Humanities I Humanities II	
Elective courses		20
<b>Total Credits</b>		<b>64</b>

For more information, contact the [UNH Manchester Office of Admissions \(unh.admissions@unh.edu\)](mailto:unh.admissions@unh.edu) at (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
Elective		4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
Quantitative Reasoning Course		4
HUMA 411 or HUMA 412	Humanities I or Humanities II	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
Discovery Course		4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>

**Spring**

Discovery Course	4
Elective	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>65</b>

## Student Learning Outcomes

Students who earn an A.A. in general studies have a foundation for continued study in any major while they develop problem-solving skills, cognitive skills, and learning techniques that are vital to a lifetime of learning.

## Homeland Security

### Preparing innovative, dynamic problem-solvers for a safer tomorrow

Today's threat environment is complex and dynamic and includes threats from small- to large-scale attacks of violence or terrorism, to cybersecurity to climate change, pandemics, and catastrophic natural disasters such as hurricanes, wildfires, tornadoes and earthquakes. Fully available to students on both campuses (Durham and Manchester), the Homeland Security (HLS) program will give students the tools to help organizations and the nation be safe and resilient.

<https://manchester.unh.edu/academics/degree-programs/homeland-security>

## Programs

- [Homeland Security Major \(B.S.\)](#) (p. 448)
- [Corporate Security Minor](#) (p. 449)
- [Cybersecurity Policy Minor](#) (p. 450)
- [Emergency Management Minor](#) (p. 450)
- [Global Studies Minor](#) (p. 451)
- [History Minor \(Manchester\)](#) (p. 451)
- [Homeland Security Minor](#) (p. 452)
- [National Security Intelligence Minor](#) (p. 452)
- [Political Science Minor](#) (p. 453)
- [Terrorism Studies Minor](#) (p. 453)

## Faculty

[Homeland Security Faculty](#)

## Homeland Security Major (B.S.)

<https://manchester.unh.edu/program/bs/homeland-security-major>

## Description

Fully available on both Durham and Manchester campuses, the UNH Homeland Security program is built upon the expertise and advice of

subject matter experts from around the Nation. Its proven curriculum includes practical experiences, service and experiential learning opportunities, and consulting opportunities that together empower students to manage programs and to lead people. HLS provides students with an impressive array of tools including how to do strategic planning, how to build emergency management and continuity plans, how to perform an organization-wide security and risk assessments, and how to design and evaluate exercises. The 4-year curriculum is flexible and incorporates the ability for students to take 40 credits of "breadth" as either two minors, a double major, or a dual degree. Students transferring with an associate's degree automatically satisfy the breadth requirement. Ultimately, the Homeland Security program empowers students to be successful on the job market or in graduate school.

Homeland security is a broad-field, applied liberal arts degree teaching students critical thinking, writing and analysis skills. As a result, HLS creates several graduate school opportunities and opens students to dozens of career paths in both the public sector (i.e., local, state or federal government), and the private sector or the military. Students will find diverse and rewarding career opportunities in cyber security/information assurance, intelligence analysis, civil or Foreign Service, diplomatic security, law enforcement at the local, state or federal levels, emergency and disaster management, immigration, border and transportation security, policy making, corporate security, risk management, critical infrastructure protection, human security and more.

## Requirements

Students must complete 128 credits to graduate. All courses within the major, fully available on both Durham and Manchester campuses, must be completed with a grade of C- or above and an overall GPA of 2.0 or above in major courses.

Code	Title	Credits
<b>Core Major Requirements</b>		
HLS 410	Introduction to Homeland Security	4
HLS 415	Fundamentals of Corporate Security	4
HLS 455	Introduction to Cybersecurity	4
HLS 480	Professional Skills in Homeland Security	4
HLS 505	Political Violence and Terrorism	4
HLS 510	Fundamentals of Emergency Management	4
HLS 515	Critical Infrastructure Security and Resilience	4
HLS 520	Homeland Security Law and Policy	4
HLS 580	Environmental and Human Security	4
JUST 501	Research Methods	4
or PSYC 502	Research Methods in Psychology	
or PS 595	Research for Political and Policy Action	
HLS 650	Intelligence Systems and Structures in Homeland Security	4
HLS 760	Strategic Planning and Decision Making	4
HLS 770	Internship in Homeland Security	4
or HLS 799	Senior Thesis in Homeland Security	
HLS 790	Capstone in Homeland Security	4
<b>Total Credits</b>		<b>56</b>

### Breadth Requirement

In addition to the core HLS courses, students must complete 40 additional credits from either Durham or Manchester campuses, or both, in one of five ways:

1. two minors;
2. a minor and a "coherent block"/self-designed concentration (i.e., ROTC credits, or credits earned from another major). The coherent block needs to be approved by the HLS coordinator;



3. a second major or a UNH dual degree;
4. an associate's degree transferred in to UNH;
5. some other combination of coursework with consent of the HLS program coordinator.

For additional information, contact [James Ramsay](mailto:james.ramsay@unh.edu) ([james.ramsay@unh.edu](mailto:james.ramsay@unh.edu)), HLS Program Coordinator, or the [UNH Manchester Office of Admissions](mailto:unhmanchester.admissions@unh.edu) ([unhmanchester.admissions@unh.edu](mailto:unhmanchester.admissions@unh.edu)) at (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. Undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
ENGL 401	First-Year Writing	4
HLS 410	Introduction to Homeland Security	4
Discovery Course		4
Breadth Area Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
PSYC 402	Statistics in Psychology	4
HLS 415	Fundamentals of Corporate Security	4
HLS 455	Introduction to Cybersecurity	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
PSYC 502 or PS 595	Research Methods in Psychology or Research for Political and Policy Action	4
HLS 480	Professional Skills in Homeland Security	4
HLS 505	Political Violence and Terrorism	4
Breadth Area Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
HLS 510	Fundamentals of Emergency Management	4
HLS 515	Critical Infrastructure Security and Resilience	4
Breadth Area Course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
HLS 520	Homeland Security Law and Policy	4
HLS 650	Intelligence Systems and Structures in Homeland Security	4
Discovery Course		4

Breadth Area Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
HLS 580	Environmental and Human Security	4
HLS 770	Internship in Homeland Security	4
Discovery Course		4
Breadth Area Course		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
HLS 760	Strategic Planning and Decision Making	4
Breadth Area Course		4
Discovery Course		4
Breadth Area Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
HLS 790	Capstone in Homeland Security	4
Breadth Area Course		4
Breadth Area Course		4
Breadth Area Course		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>128</b>

## Student Learning Outcomes

- Conduct research and work collaboratively to deliver professional, written papers, presentations, and briefs.
- Demonstrate knowledge of contemporary or emergent threats, challenges or issues including natural manmade and technological hazards.
- Apply knowledge and tools gained throughout the HLS program to complete a capstone project.
- Complete an internship in HLS (or a senior thesis in HLS).
- Recognize the concepts of ethics and professionalism in the homeland security enterprise.

## Corporate Security Minor

<https://manchester.unh.edu/program/minor/corporate-security>

## Description

Security threats are all around us. Modern society has demonstrated that all organizations face risks from natural disasters, to disgruntled employees, to foreign terrorists groups such as the Islamic State or Al Qaeda, to domestic terrorists/criminals, to active shooters, cyber-attacks, bioterror threats such as EBOLA, SARS, and anthrax. Further, weather-related events such as Hurricanes Katrina and Sandy, or massive snow storms causing extended shut downs of businesses, tornadoes, earthquakes and potential flood and rain events are always possible and can be devastating to the financial solvency of any organization. Consequently, threats like these have changed how employers evaluate and manage risk.

The relatively rapid rise of the Corporate Security Officer (CSO) in the private sector indicates the deep commitment many organizations

now have to enterprise risk management of security threats across all industrial sectors. Corporate security professionals (not “security guards”) plan for future potential events, develop and implement risk management, preparedness and resilience strategies that avoid, transfer or reduce the risk to the organization posed by these threats. The need for corporate security expertise has likely never been greater.

## Requirements

The corporate security minor requires students to complete five courses (20 credits). All five courses applied to the corporate security minor must be completed with a minimum grade of C- and an overall GPA of 2.0. Students must take at least three 500-level or above courses to complete the minor, noting no more than two courses (8 credits) may also be used in the HLS major.

Code	Title	Credits
<b>Required courses</b>		<b>16</b>
HLS 415	Fundamentals of Corporate Security	
HLS 515	Critical Infrastructure Security and Resilience	
HLS 630	Sports and Large Event Security Management	
ADMN 400	Introduction to Business	
or BUS 400	Introduction to Business	
<b>Select one of the following:</b>		<b>4</b>
ADMN 575	Behavior in Organizations	
or BUS 620	Organizational Behavior	
HLS 540	Prevention and Detection of Fraud	
HLS 640	Forensic Accounting	
<b>Total Credits</b>		<b>20</b>

For more information about the Homeland Security minor on either campus, contact [Anthony Schilling \(anthony.schilling@unh.edu\)](mailto:anthony.schilling@unh.edu), minor supervisor.

## Cybersecurity Policy Minor

<https://manchester.unh.edu/program/minor/cybersecurity-policy>

### Description

The Minor in Cybersecurity Policy introduces students to the basics of cybersecurity, as well as to societal and business mandates for incorporating cybersecurity into an organization's policies and governance structures. We study techniques for communicating about cybersecurity, and we explore solutions for sustaining cybersecurity within a variety of organizations.

This minor is available to both UNH Durham and Manchester students.

### Requirements

**This minor is only available to undergraduate students enrolled in the accelerated admissions option for the Master of Science in Cybersecurity Policy and Risk Management (CPRM) program.** Students must be accepted into CPRM before registering for any of the courses in Category B below. Only seniors are permitted to take courses in Category B.

Five courses (20 credits) are required for the minor. All courses must be completed with a minimum grade of C- and an overall GPA of 2.0.

Code	Title	Credits
<b>Category A <sup>1</sup></b>		
HLS 455	Introduction to Cybersecurity	4
HLS 515	Critical Infrastructure Security and Resilience	4
<b>Category B <sup>2</sup></b>		
Select any three of the following:		12
CPRM 710	Foundations of Cybersecurity Policy	
CPRM 720	Policy Development and Communications	
CPRM 730	Security Measures I	
CPRM 740	Cybersecurity Standards, Regulations, and Laws	
CPRM #750	Security Measures II	
CPRM 790	Organizations, Change Management, and Leadership	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> May be taken at any time

<sup>2</sup> May be taken only after acceptance into the accelerated option for the M.S. in CPRM program

For more information about, contact [Dr. Maeve Dion \(maeve.dion@unh.edu\)](mailto:maeve.dion@unh.edu), coordinator and minor supervisor.

## Emergency Management Minor

<https://manchester.unh.edu/program/minor/emergency-management>

### Description

The objective of the academic minor in Emergency Management (EM) is to allow students to achieve one half of the HLS breadth requirement in a closely related discipline to Homeland Security. The Federal Emergency Management Agency (FEMA) defines Emergency Management (EM) as “the managerial function charged with creating the framework within which communities reduce vulnerability to hazards and cope with disasters.”

Students completing this minor will have a composite view of emergency management, and its integral role in Homeland Security and resilience, as well as how to design emergency management plans, continuity of operations plans and how to design and evaluate exercises in both the public and private sectors. As such, the minor in EM formalizes an academic credential in an area vital to Homeland Security and of interest to several other disciplines and professions such as business, law enforcement, the government, the military, etc.

### Requirements

The Minor in Emergency Management will require five courses (20 credits). Two courses are also required by the Homeland Security major (Department of Security Studies) which provides the foundation for the minor and two from the Geography Department. One additional course from a list of electives is required to complete the minor. Students may take an unlisted course as an elective but only with prior approval by the minor coordinator.

Code	Title	Credits
<b>Required courses</b>		<b>16</b>
HLS 510	Fundamentals of Emergency Management	
HLS 515	Critical Infrastructure Security and Resilience	
GEOG 560	Natural Hazards and Human Disasters	
GEOG 591	Making Maps: GIS Fundamentals	
<b>Select one of the following:</b>		<b>4</b>
HLS 630	Sports and Large Event Security Management	
HLS 665	Bioterrorism, Biosecurity, and Biodefense	

DATA 557	Introduction to Data Science and Analytics
BUS 620	Organizational Behavior
ADMN 575	Behavior in Organizations
Other elective only as approved by the coordinator	
<b>Total Credits</b>	<b>20</b>

For more information about the Emergency Management minor on either campus, contact James Ramsay, minor supervisor, at [James.Ramsay@unh.edu](mailto:James.Ramsay@unh.edu) ([james.ramsay@unh.edu](mailto:james.ramsay@unh.edu)).

## Global Studies Minor

<https://manchester.unh.edu/program/minor/global-studies>

### Description

Globalization is a complex web of interwoven processes that affect virtually all facets of our daily lives, from pop culture to economics, politics to climate and everything in between. Many of the pressing problems of the 21st Century – climate change, environmental sustainability, terrorism, pandemics, etc. – transcend national boundaries and will need to be solved as a global community. The Global Studies minor explores the challenges and opportunities that arise from living in an increasingly inter-connected world and also cultivates cross-cultural awareness by encouraging students to view issues from different cultural perspectives.

The Global Studies minor has four thematic pillars: culture & society, governance & conflict, economics & interdependence, and environment & health.

**Governance & Conflict:** explores the challenges of global governance in an increasingly inter-connected world of societies with different political and economic systems; analyzes the causes and effects of conflict and examines techniques for conflict resolution

**Culture & Society:** explores the values, norms, art and literature of different cultures around the world and throughout history, and their inter-relatedness

**Environment & Health:** explores human security issues, such as food security, health and disease, environmental sustainability and climate change

**Economics & Interdependence:** explores the politics, policies and practices of international trade and finance, and the development and effects of economic interdependence

### Requirements

All five courses applied to the Global Studies minor must be completed with a minimum grade of C- and an overall GPA of 2.0. The five courses must span at least two different thematic pillars. Students must take at least three 500-level or above courses to complete the minor. Students wishing to use transfer credits from other universities should meet with the minor supervisor, to determine eligibility toward the minor.

Code	Title	Credits
Select five approved courses in at least two of the four pillars:		
<b>I. Governance &amp; Conflict</b>		
POLT 403	United States in World Affairs	
HLS 505	Political Violence and Terrorism	
HLS 555	Comparative Homeland Security Systems	

HLS 580	Environmental and Human Security
HLS 656	Comparative Homeland Security Systems Lab
PS 509	Political and Social Change in Developing Countries
PS 511	Women and War
PS 520	Globalization: Politics, Economics and Culture
POLT 560	World Politics
POLT 559	Comparative Politics of the Middle East
HIST 600	Explorations (European Crisis 1900-1945)
HIST 600	Explorations (Justice, Violence and Society)
GCHS 710	Conflict & Human Security
GCHS 720	Global Governance
HUMA 730	Special Studies (Justice, Violence and Society)
<b>II. Culture &amp; Society</b>	
ANTH 411	Global Perspectives on the Human Condition: An Introduction to Anthropology
ARTH 480	Introduction to Art History
ENGL #514	British Literature III: Revolts, Renewals, Migrations
ENGL 581	Reading the Postcolonial Experience
ENGL 681	Contemporary African Literature
ENGL 693	Special Topics in Literature
HIST 421	World History to the 16th Century
HIST 422	World History in the Modern Era
HIST 425	Foreign Cultures
HIST 435	Origins of European Society
HIST #656	Twentieth Century Europe
HUMA 411	Humanities I
HUMA 412	Humanities II
<b>III. Environment &amp; Health</b>	
BIOL 520	Our Changing Planet
BSCI 421	Diseases of the 21st Century
BSCI 620	Global Science Exploration
ESCI 401	Dynamic Earth
GEOG 401	World Regions: Europe and the Americas
GEOG 402	World Regions: Asia and Africa
HLS 580	Environmental and Human Security
PS 510	Politics of Food
PHIL 450	Environmental Ethics
GCHS 730	International Development & Human Security
GCHS 740	Environmental Security, Climate Change and Conflict
<b>IV. Economics &amp; Interdependence</b>	
POLT 403	United States in World Affairs
BUS 665	International Marketing Strategy Management
ECN 411	Introduction to Macroeconomic Principles
PS 509	Political and Social Change in Developing Countries
PS 510	Politics of Food
POLT 560	World Politics
<b>Total Credits</b>	<b>20</b>

For more information, contact [Melinda Negron-Gonzales](mailto:Melinda.Negron@unh.edu) ([Melinda.Negron@unh.edu](mailto:Melinda.Negron@unh.edu)), minor supervisor.

## History Minor (Manchester)

<https://manchester.unh.edu/program/minor/history>

### Description

An excellent complement to any degree, a History minor helps you build a foundational understanding of the political, social, economic and cultural forces that influence human life.

## Requirements

To earn a minor in history, students must complete 20 credits with no individual grade lower than C- and a 2.0 grade-point average in minor courses. Up to 8 transfer credits may be used toward the history minor.

Code	Title	Credits
Any five history (HIST) courses <sup>1</sup>		20

<sup>1</sup> Two must be 500 level or above

For more information, contact [Sonic Woytonik](mailto:sonic.woytonik@unh.edu) ([sonic.woytonik@unh.edu](mailto:sonic.woytonik@unh.edu)), minor supervisor.

## Homeland Security Minor

<https://manchester.unh.edu/program/minor/homeland-security>

### Description

Today's threat environment is complex and dynamic and includes threats from small- to large-scale attacks of violence or terrorism, to cybersecurity to catastrophic natural disasters such as hurricanes, wildfires, tornadoes and earthquakes. Fully available to students on both campuses (Durham and Manchester), the Homeland Security (HLS) minor will give students an excellent glimpse at what it takes to keep the nation safe and resilient.

The minor in Homeland Security (HLS) is designed to provide a professional experience to students *not* majoring in Homeland Security, but who are interested in aspects of the homeland security profession. Students will see how Homeland Security issues, challenges, and tools are related to their specific major and how Homeland Security can be used to embellish their careers.

### Requirements

The minor in homeland security requires five courses (20 credits). Students must earn grades of at least C- in each course and an overall GPA of 2.0 in minor courses. Transfer students may transfer up to two courses, subject to the approval of the HLS program coordinator. Courses taken on a pass/fail basis may not be used for the minor. Homeland Security majors cannot use the HLS minor as a breadth area.

Code	Title	Credits
<b>Required courses</b>		
HLS 410	Introduction to Homeland Security	4
HLS 455	Introduction to Cybersecurity	4
or HLS 415	Fundamentals of Corporate Security	
<b>Select three of the following:</b>		<b>12</b>
HLS 505	Political Violence and Terrorism	
HLS 510	Fundamentals of Emergency Management	
HLS 515	Critical Infrastructure Security and Resilience	
HLS 520	Homeland Security Law and Policy	
HLS 555	Comparative Homeland Security Systems	
HLS 580	Environmental and Human Security	
HLS 650	Intelligence Systems and Structures in Homeland Security	
HLS 760	Strategic Planning and Decision Making	
<b>Total Credits</b>		<b>20</b>

For more information about the Homeland Security minor on either campus, contact James Ramsay, HLS program coordinator and minor supervisor, at [James.Ramsay@unh.edu](mailto:James.Ramsay@unh.edu) ([james.ramsay@unh.edu](mailto:james.ramsay@unh.edu)).

## National Security Intelligence Minor

<https://manchester.unh.edu/program/minor/national-security-intelligence>

### Description

The objective of this academic minor is to allow students to study intelligence issues and challenges related to US national security.

National Security Intelligence may be defined as a secret nation state activity to understand, influence, or defend against adversarial entities. Students may take courses in multiple disciplines across UNH while pursuing the national security intelligence minor. Students completing this minor will have a composite view of national security intelligence and related topics that may support career path in the government, private sector, and not for profit realms.

### Requirements

The Minor in National Security Intelligence requires five courses (20 credits). Student completing the minor must take three courses originating in the Department of Security Studies which provide the foundation for the minor. Students will build upon this foundation with two additional intermediate course electives from the Department of Security Studies or other departments across UNH.

Code	Title	Credits
<b>Required courses</b>		
HLS 550	History and Structure of the U.S. Intelligence Community	4
HLS 650	Intelligence Systems and Structures in Homeland Security	4
<b>Select one of the following required courses:</b>		<b>4</b>
HLS 651	Issues in Intelligence Collection	
HLS 652	Intelligence Analysis and Production	
HLS 653	Counterintelligence	
HLS 654	Covert Action	
<b>Select two of the following electives:</b>		<b>8</b>
HLS 505	Political Violence and Terrorism	
HLS 651	Issues in Intelligence Collection	
HLS 652	Intelligence Analysis and Production	
HLS 653	Counterintelligence	
HLS 654	Covert Action	
HLS 655	Open Source Intelligence	
HIST 537	Espionage and History	
HIST 620	Foreign Relations of the United States	
NSIA 710	National Security Policy and the Intelligence Community	
NSIA 720	Intelligence Analysis	
POLT 403	United States in World Affairs	
POLT 548	Drug Wars	
POLT 550	Comparative Government and Society	
POLT 562	Strategy and National Security Policy	
SOC #656	Terrorism	
CMN 456	Propaganda and Persuasion	
<b>Total Credits</b>		<b>20</b>

For more information about the National Security Intelligence minor on either campus, contact [Andrew Macpherson](mailto:andrew.macpherson@unh.edu) ([andrew.macpherson@unh.edu](mailto:andrew.macpherson@unh.edu)), minor supervisor.

## Political Science Minor (Manchester)

<https://manchester.unh.edu/program/minor/political-science>

### Description

Students interested in pursuing a career in government, business, communications, or the law can add a breadth of perspective through the political science minor.

### Requirements

The political science minor consists of five courses (20 credits total) that may span the sub-disciplines of American politics, international relations, comparative politics, political philosophy, and political sociology.

The minimum grade requirement is C- per course. Any grade lower than a C- will not count toward the minor.

Students wishing to use transfer credits from abroad or other universities should meet with the political science minor supervisor, [Melinda Negron-Gonzales](mailto:melinda.negron@unh.edu) ([melinda.negron@unh.edu](mailto:melinda.negron@unh.edu)), to determine eligibility toward the minor.

Code	Title	Credits
<b>Requirements</b>		
Any POLT, PS, or GCHS course <sup>1</sup>		20

<sup>1</sup> No more than two courses may be taken at the 400 level.

For more information, contact [Melinda Negron-Gonzales](mailto:melinda.negron@unh.edu), ([melinda.negron@unh.edu](mailto:melinda.negron@unh.edu)) minor supervisor.

## Terrorism Studies Minor

<https://manchester.unh.edu/program/minor/terrorism-studies>

### Description

Terrorism is often a top priority of US national and homeland security agencies such as the Department of Defense, Intelligence Community, FBI, CIA, Department of Homeland Security, and State Department. The terrorism studies minor explores the causes, dynamics, and prevention of violent extremism at home and abroad. Courses explore different types of violent extremism and the range of counterterrorism strategies used in the US and other countries. Courses offer both a multidisciplinary and interdisciplinary perspective. This means that some courses will explore phenomena primarily through one disciplinary lens whereas others will weave together different disciplinary perspectives.

### Requirements

The terrorism studies minor requires students to complete five courses (20 credits). All five courses applied to the terrorism studies minor must be completed with a minimum grade of C- and an overall GPA of 2.0. Students must take at least three 500-level or above courses to complete the minor. Transfer students may transfer up to two courses, subject to the approval of the Homeland Security program coordinator. Courses

taken on a pass/fail basis may not be used for the minor. No more than eight credits to satisfy major requirements may be used in the minor.

Code	Title	Credits
<b>Required courses</b>		
HLS 505	Political Violence and Terrorism	4
HLS 555	Comparative Homeland Security Systems	4
HLS 650	Intelligence Systems and Structures in Homeland Security	4
<b>Select two of the following:</b>		<b>8</b>
GCHS 710	Conflict & Human Security	
GCHS 730	International Development & Human Security	
HLS 665	Bioterrorism, Biosecurity, and Biodefense	
HIST 600	Explorations <sup>1</sup>	
HUMA 730	Special Studies (Justice, Violence and Society)	
POLT 403	United States in World Affairs	
POLT 502	State and Local Government	
POLT 507	Politics of Crime and Justice	
POLT 548	Drug Wars	
POLT #765	Security Intelligence Study	
PS 500	Wicked Problems: Puzzles in Public Policy	
PS 507	Justice, Law and Politics	
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Explorations course title must be: *War and Political Violence in the Modern West* or *Justice, Violence, and Society*

For more information about the Terrorism Studies minor on either campus, contact [James Ramsay](mailto:james.ramsay@unh.edu) ([james.ramsay@unh.edu](mailto:james.ramsay@unh.edu)), Homeland Security program coordinator and minor supervisor, or [Melinda Negron-Gonzales](mailto:melinda.negron@unh.edu) ([melinda.negron@unh.edu](mailto:melinda.negron@unh.edu)), Global Conflict & Human Security graduate program coordinator.

## Humanities

### Shaping insightful thinkers through liberal arts exploration

Channel your curiosity about the human condition with our highly interdisciplinary Humanities program. With self-designed concentrations and faculty mentorship, you'll develop the intellectual, analytical and communication skills that will set you apart in any industry.

As a humanities major, you'll sharpen your abilities in analysis and critical thinking through exploration of diverse works of art, music, literature, history, philosophy and the sciences. Let your interests fuel your studies with self-designed concentrations, from the social and ethical implications of genetic engineering to the examination of a historical period through literature, arts and more.

With the personalization to tailor your degree to the future you want, the skills and knowledge you'll gain will help you reach your career goals.

<https://manchester.unh.edu/academics/degree-programs/humanities>

### Programs

- [Humanities Major \(B.A.\) Manchester](#) (p. 454)
- [Humanities Minor \(Manchester\)](#) (p. 455)

### Faculty

[Humanities Faculty](#)



# Humanities Major (B.A.) Manchester

<https://manchester.unh.edu/program/ba/humanities-major>

## Description

The UNH Manchester humanities program is an interdisciplinary study of the human condition, past and present. The program is based on careful examination of substantial works from a variety of disciplines and is intended to develop intellectual skills, specialized knowledge, and breadth of understanding. It provides students with a broad foundation of knowledge and skills in the liberal arts combined with a coordinated, self-designed program of studies in an area of individual student interest.

The program attracts highly motivated students who wish to assume significant responsibility for the content and direction of their studies. Humanities students develop skills of analysis, critical assessment, and effective communication as they study diverse works of art, music, literature, history, philosophy, and the sciences. Individually designed programs may cover the full range of student interests: for example, the social and ethical implications of genetic engineering or the examination of an historical period through study of its literature, arts, history, philosophy, and sciences. Students complete their major with two capstone seminars. The first, HUMA 795 Study of Creativity, explores the nature of creativity through the lives and works of individuals such as Leonardo da Vinci, Kathe Kollwitz, Mozart, Freud, Einstein, and Georgia O'Keeffe. The second seminar, HUMA 796 Study of Contemporary Issues, explores current social and political issues with a focus on developments in public policy, science, and business, and their impact on social values.

Humanities majors find employment in a wide range of fields or pursue graduate study in subjects such as law or education. Skills and knowledge developed through the major are important in virtually all social and career responsibilities. A humanities major or minor can also complement work in other majors such as elementary or secondary education, business, communications, or computer information systems.

## Requirements

### Program of Study

For the humanities major at UNH Manchester, students must complete a minimum of 128 credits and satisfy the University's Discovery Program and foreign language requirements, and students must complete 40 credits with a minimum grade of C in each course in the major.

Code	Title	Credits
<b>Core Courses</b>		
HIST 500 or ENGL 419	Introduction to Historical Thinking How to Read Anything	4
HUMA 411	Humanities I	4
HUMA 412	Humanities II	4
Self-Designed Concentration <sup>1</sup>		20
<b>Discovery Program Capstone Courses</b>		
HUMA 795	Study of Creativity	4
HUMA 796	Study of Contemporary Issues	4
<b>Total Credits</b>		<b>40</b>

<sup>1</sup> This is an approved program of study designed by the student in consultation with a faculty advisor. In addition to courses available on the Manchester campus, students may, with prior approval, use courses from area colleges and the University's Durham campus. The

concentration is made up of two humanities courses (HUMA prefix) at the 600 or 700 level and three courses from any relevant discipline at any level.

For more information, contact [Susanne Paterson](mailto:susanne.paterson@unh.edu) ([susanne.paterson@unh.edu](mailto:susanne.paterson@unh.edu)), Associate Professor and program coordinator or the UNH Manchester Office of Admissions ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)) at (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

### Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
Elective		4
Elective		4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
	Quantative Reasoning	4
HUMA 411	Humanities I	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
	Foreign Language	4
HUMA 412	Humanities II	4
ENGL 419	How to Read Anything	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
	Foreign Language	4
	Major Concentration	4
Elective		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
	Major Concentration	4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>

**Spring**

Major Concentration	4
Discovery Course	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>

**Fourth Year****Fall**

Major Concentration	4
HUMA 795 Study of Creativity	4
Discovery Course	4
Elective	4
<b>Credits</b>	<b>16</b>

**Spring**

Major Concentration	4
HUMA 796 Study of Contemporary Issues	4
Discovery course	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>129</b>

**Student Learning Outcomes**

- Demonstrate the ability to find and evaluate primary and secondary source material necessary for humanistic research.
- Demonstrate the ability to propose, conduct, and present interdisciplinary humanistic research in a written, oral, or other forms. Identify and interpret creative and cultural forms from a given historical period.
- Compare and contrast the meanings of major texts and other significant cultural productions.

**Humanities Minor (Manchester)**

<https://manchester.unh.edu/program/minor/humanities>

**Description**

The humanities minor is an interdisciplinary program where students can combine humanities courses and courses from other disciplines that form a multidisciplinary theme or topic. The minor in humanities is an excellent way to add breadth of perspective to specialized study in particular disciplines. Many professions encourage students to develop skills and knowledge outside their area of professional interest. The humanities minor can meet this objective and make college education a more enlightening and rewarding experience. Students selecting a minor in humanities should, in consultation with a faculty advisor in humanities, identify a general theme or topic for the minor.

**Requirements**

To earn a minor in humanities, students must complete 20 credits with no individual grade lower than C in minor courses.

Code	Title	Credits
<b>Requirements</b>		
ENGL 419	How to Read Anything	4
Select at least two courses in the humanities (HUMA)		8
Select more courses in humanities (HUMA) or choose complementary courses from other disciplines, such as English, philosophy, communication arts, public service and nonprofit leadership, or business, which contribute to the student's multidisciplinary theme or topic <sup>1</sup>		8
<b>Total Credits</b>		<b>20</b>

<sup>1</sup> Select in consultation with a faculty advisor in humanities.

For more information, contact [Susanne Paterson](mailto:susanne.paterson@unh.edu) (susanne.paterson@unh.edu), minor supervisor.

**Neuropsychology****Explore the human brain to fuel research, innovation, and discovery**

Channel your curiosity about the human brain and behavior in our cutting-edge Neuropsychology program. Fusing core components of biology and psychology, this program prepares students for an impactful career in the growing field of neuroscience.

You'll explore the concepts behind normal human behavior, from learning and memory to sensation and perception. You'll also examine complex neurological conditions like dementia, addiction and mood and movement disorders.

Guided by faculty experts in our innovative research labs, you'll gain the empirical, analytic and communication skills that will make you stand out in your career — or in your application to graduate or medical school.

<https://manchester.unh.edu/academics/degree-programs/neuropsychology>

**Programs**

- [Neuropsychology Major \(B.S.\)](#) (p. 455)

**Faculty**

[Neuropsychology Faculty](#)

**Neuropsychology Major (B.S.)**

<https://manchester.unh.edu/program/bs/neuropsychology-major>

**Description**

Neuropsychology is the study of the human brain and its relation to behavior. The UNH Manchester program focuses on the biological basis of human functioning in both normal and pathological states (e.g., dementia, depression) and therefore, prepares students for careers working with individuals with various mental health and neurological conditions. This interdisciplinary program offers a concentration of core and advanced courses in psychology and biology while providing sufficient flexibility for students to customize their education in order to meet specific requirements for their chosen career path, including the health professions.

The neuropsychology program prepares students for a variety of careers within the field of neuroscience, including bachelor-level positions and graduate training in research and health professions. At the bachelor-level, students are prepared for positions in healthcare (e.g., clinical laboratory technologist, psychometrician) and biomedical research (research assistant). The program is also designed to provide the flexibility needed to prepare students for graduate training in the health professions, such as being a physician, physician assistant, psychologist, neuropsychologist, or occupational therapist. Students interested in medical school are able to complete premedical requirements within four years.

## Requirements

Students majoring in neuropsychology must complete a minimum of 128 credits and satisfy the University's Discovery Program, and complete 56 credits in the major with a minimum of C- in each course and a 2.0 overall grade-point average in all major requirements. Three courses in the major can be used to fulfill both a major requirement and a Discovery requirement, providing students with more flexibility to customize their education.

Transfer students who elect to major in neuropsychology must complete at least 32 credits in the program at UNH to qualify for the degree in neuropsychology. The department's academic advisors will determine the distribution of these credits. Transfer students should note that courses are allotted only the number of credits granted by the original institution (after adjustments for semester-hour equivalents). Thus, students transferring from an institution at which courses carry less than four credits each must make up for any credit deficit created by acceptance of transfer credits into the neuropsychology major.

Specific course selections should be discussed with the advisor. Exceptions to the requirements for the major require a petition to the department.

## Program Requirements

Code	Title	Credits
<b>Core Courses in Psychology and Biology</b>		
BIOL 413 & BIOL 414	Principles of Biology I and Principles of Biology II (both with lab)	8
CHEM 403	General Chemistry I (with lab)	4
GEN 604	Principles of Genetics	4
NPSY 600	Behavioral Neuroscience	4
PSYC 401	Introduction to Psychology <sup>1</sup>	4
PSYC 402	Statistics in Psychology	4
PSYC 502	Research Methods in Psychology	4
PSYC 705	Tests and Measurement	4
<b>Advanced Courses in Psychology and Biology</b>		
Select three of the following:		12
BSCI 680	Pharmacology <sup>2</sup>	
BSCI #735	Cell Biology	
PSYC 710	Visual Perception	
PSYC 713	Psychology of Consciousness	
PSYC 731	Brain and Behavior	
PSYC 733	Drugs and Behavior <sup>2</sup>	
PSYC 735	Neurobiology of Mood Disorders	
PSYC 736	Attention Disorders	
<b>Advanced Elective in Psychology</b>		
Select one of the following:		4
PSYC 712	Psychology of Language	
PSYC 758	Health Psychology	
PSYC 762	Counseling	
PSYC 791	Special Topics	

Capstone Requirement	
Select one of the following:	
NPSY 701	Neuropsychology Capstone Project
PSYC 793	Internship (at approved site)
PSYC 795	Independent Study (1-4 credits) <sup>3</sup>
<b>Total Credits</b>	
56	

- <sup>1</sup> If used to fulfill SS Discovery requirement, students must take PSYC 511 Sensation and Perception, PSYC 513 Cognitive Psychology, or PSYC 561 Abnormal Behavior.
- <sup>2</sup> Students may either take BSCI 680 Pharmacology or PSYC 733 Drugs and Behavior for major credit, but not both.
- <sup>3</sup> If a student chooses to complete PSYC 795 Independent Study for less than 4 credits, they will need to take additional credits that count toward the major.

For more information about the neuropsychology program, contact Alison Paglia ([alison.paglia@unh.edu](mailto:alison.paglia@unh.edu)), Ph.D., program coordinator, Daniel Seichepine ([Daniel.Seichepine@unh.edu](mailto:Daniel.Seichepine@unh.edu)), Ph.D., or the UNH Manchester Office of Admissions ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)) at (603) 641-4150.

## Degree Plan

**This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.**

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
PSYC 401	Introduction to Psychology	4
BIOL 413	Principles of Biology I	4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
PSYC 402	Statistics in Psychology	4
BIOL 414	Principles of Biology II	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
CHEM 403	General Chemistry I	4
NPSY 600	Behavioral Neuroscience	4
PSYC 502	Research Methods in Psychology	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
GEN 604	Principles of Genetics	4
PSYC 705	Tests and Measurement	4
Elective		4

Discovery Course	4
<b>Credits</b>	<b>16</b>
<b>Third Year</b>	
<b>Fall</b>	
Advanced Courses in Psychology and Biology	4
Discovery Course	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Spring</b>	
Advanced Courses in Psychology and Biology	4
Discovery Course	4
Elective Course	4
Elective Course	4
<b>Credits</b>	<b>16</b>
<b>Fourth Year</b>	
<b>Fall</b>	
Advanced Courses in Psychology and Biology	4
Advanced Elective in Psychology	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Spring</b>	
PSYC 793      Internship	4
or PSYC 795      or Independent Study	
or NPSY 701      or Neuropsychology Capstone Project	
Elective	4
Elective	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>129</b>

## Student Learning Outcomes

A student successfully completing this program will obtain the following competencies:

- Understand fundamental principles in both psychology and biology, such as the scientific method, statistical analysis and cellular biology.
- Understand the biological basis for normal human behavior (e.g. sensation, perception, learning and memory, etc.) and for common neurological disorders (e.g. dementia, addictions etc.).
- Demonstrate the ability to gather, analyze, evaluate, and integrate peer-reviewed scientific articles in neuroscience. Additionally, students will learn to write literature reviews in American Psychological Association format.
- Understand ethical issues in research and clinical applications of neuropsychology.
- Effectively communicate complex neurobiological topics both orally and in writing.

## Philosophy

### Programs

- [Philosophy Minor \(Manchester\)](#) (p. 457)

## Philosophy Minor (Manchester)

<https://manchester.unh.edu/program/minor/philosophy>

### Description

Philosophy is the study of the fundamental nature of truth, existence, beauty, morality, and justice. People study philosophy to understand the basic principles of science, art, and the human condition.

Though this sounds abstract, a background in philosophy is excellent training for any walk of life. Philosophy offers training for a variety of careers by providing a unique combination of life-long skills: analytic and interpretive skills, critical reasoning skills, the enhanced capacity to detect problems and to solve them, excellence in oral and written presentation and defense of one's ideas, skill at asking probing and central questions about the ideas of others (as well as about one's own ideas), and skill at effectively understanding, organizing, and evaluating complex systems of thought.

### Requirements

A philosophy minor consists of five (5) philosophy courses (for a total of 20 credits) with a grade of C- or above. At least one of the philosophy courses must be at the 500-level or higher.

Code	Title	Credits
PHIL course at 500-level or higher		4
Four elective PHIL courses		16
<b>Total Credits</b>		<b>20</b>

PHIL 495 Tutorial Reading and PHIL 795 Independent Study may be used towards the minor only with special approval.

For more information, contact [Phillip Deen \(phillip.deen@unh.edu\)](mailto:phillip.deen@unh.edu), minor supervisor.

## Psychology

### Explore the biopsychosocial factors that drive thoughts and behaviors

Explore the science of behavior and mental processes in our Psychology program, bringing classroom learning to life in our research labs and in the field. Guided by faculty who are experts in their disciplines, you'll develop a broad background in the field — including perceptual, biological, clinical/counseling, and developmental psychology.

Our program prepares you for careers aimed at improving lives ranging from research assistant to mental health worker, social welfare caseworker to teaching. You'll also foster skills that are attractive and useful in all industries, including critical and logical thinking, data analysis, research, scientific communication and more.

<https://manchester.unh.edu/academics/degree-programs/psychology>

Programs

- Psychology Major (B.A.) Manchester (p. 458)
- Psychology Minor (Manchester) (p. 460)

Faculty

Psychology Faculty

Psychology Major (B.A.) Manchester

<https://manchester.unh.edu/program/ba/psychology-major>

Description

Psychology is the scientific study of behavior and mental processes. The UNH Manchester psychology program provides students with a broad background in psychology, introducing them to both the experimental and clinical perspectives in the field.

The psychology program, through its independent study and internship programs, offers opportunities for participation in cooperating New Hampshire mental health, human services, and rehabilitation facilities. Students have worked in hospitals, halfway houses, mental health centers, and other agencies. The department also invites guest speakers to discuss important issues in the field and sponsors a Psychology/Neuropsychology Club.

Psychology graduates find employment as trained research assistants, mental health aides in a wide variety of human services agencies, social welfare caseworkers, teachers in special education programs, and professionals in government, business, and industry. It is normally expected that students who wish to do professional clinical work will need to pursue graduate training at the master's or doctoral level.

Requirements

Students majoring in psychology must complete a minimum of 128 credits, satisfy the University's Discovery Program and foreign language requirements, and complete 44 credits with a minimum of C- in each course and a 2.0 overall grade-point average in all major requirements.

Transfer students who elect to major in psychology must complete at least 24 credits in the program at UNH/UNH Manchester to qualify for the degree in psychology. Transfer students must earn a total of 44 approved credits for completion of the psychology major. The department's academic advisors will determine the distribution of these credits. Transfer students should note that courses are allotted only the number of credits granted by the original institution (after adjustments for semester-hour equivalents). Thus, students transferring from an institution at which courses carry less than four credits each must make up for any credit deficit created by acceptance of transfer credits into the psychology major. Only courses taken in a psychology department can be transferred into the psychology major. Of the four 700-level courses required for the major, at least three must be taken at UNH.

The courses listed below are offered on the UNH Manchester and/or Durham campuses; specific course selections should be discussed

with the advisor. Exceptions to the requirements for the major require a petition to the department.

Note: Course numbers with the # symbol (e.g. #400) have not been taught in the last 3 years.

Program Requirements

Code	Title	Credits
Core Courses		
PSYC 401	Introduction to Psychology	4
PSYC 402	Statistics in Psychology	4
PSYC 502	Research Methods in Psychology	4
Breadth (500-level) courses		
Select two of the following courses from Group I:		8
PSYC 511	Sensation and Perception	
PSYC 512	Psychology of Primates	
PSYC 513	Cognitive Psychology	
PSYC 521	Behavior Analysis	
PSYC 522	Behaviorism	
PSYC 531	Psychobiology	
Select two of the following courses from Group II:		8
PSYC 552	Social Psychology	
PSYC 553	Personality	
PSYC 561	Abnormal Behavior	
PSYC 571	Pioneers of Psychology	
PSYC 581	Child Development	
Depth (700-level) courses		
Select two of the following courses from Group I:		8
PSYC 705	Tests and Measurement <sup>1</sup>	
PSYC 710	Visual Perception	
PSYC 712	Psychology of Language	
PSYC 713	Psychology of Consciousness	
PSYC 716	Cognitive Neuroscience	
PSYC 720	Animal Cognition	
PSYC 722	Behaviorism, Culture, and Contemporary Society	
PSYC 731	Brain and Behavior	
PSYC 733	Drugs and Behavior	
PSYC 735	Neurobiology of Mood Disorders	
PSYC 736	Attention Disorders	
PSYC 737	Behavioral Medicine	
PSYC 741W	Special Topics	
Select two of the following courses from Group II:		8
PSYC 705	Tests and Measurement <sup>1</sup>	
PSYC 755	Psychology and Law	
PSYC 756	Psychology of Crime and Justice	
PSYC 757	Psychology of Happiness	
PSYC 758	Health Psychology	
PSYC 762	Counseling	
PSYC 780	Prenatal Development and Infancy	
PSYC 783	Cognitive Development	
PSYC 785	Social Development	
PSYC 791	Special Topics	
or PSYC 791W	Special Topics	
PSYC 793	Internship	
Capstone Requirement (taken in senior year)		
See below		
Total Credits		44

<sup>1</sup> May be substituted for a Group I or Group II course, but they may not both be used to fill the same group.

Discovery Capstone:

The Discovery Program capstone requirement, taken during the senior year, may be fulfilled by completing one of the following options:



1. PSYC 793 Internship: This will count towards fulfilling the capstone and a group II 700-level psychology course. By taking PSYC 793 Internship, the capstone will be considered fulfilled.
2. PSYC 795 Independent Study: Students can designate a 4 credit independent study as their capstone experience. Students should also register for PSYC 798 Capstone, a 0 credit course to reflect that the capstone experience is fulfilled.
3. One 700-level course designated as capstone. A capstone designated 700-level course will count towards fulfilling the capstone and a 700-level course. Students will register for PSYC 798 Capstone, a 0 credit course to reflect the capstone experience is fulfilled. **See guidelines below:**

- You may take any eligible 700-level Psychology course in your **senior year** (90+ completed credits) for Capstone credit.
- Ask your professor about the possibility of taking the course for Capstone credit. Remember that your professor is not obligated to designate a course for Capstone credit. Please be respectful in approaching your professor, and if the answer is no, please accept this decision.
- Meet and discuss with your professor what you will be doing to constitute your Capstone experience. In some cases, it will be an extra assignment; in others it will involve the expansion of existing class work. Your professor will use his/her professional discretion to determine what constitutes as your Capstone experience.
- If approved, you will register for PSYC 798 Capstone in addition to the 700-level course.

The psychology department does not accept other departments' statistic courses toward the psychology major. Students who have taken a statistics course other than PSYC 402 Statistics in Psychology must pass a competency exam in order to declare the major and/or register for PSYC 402 Statistics in Psychology.

Students who plan to transfer to Durham should consult with their advisor.

For more information about the psychology program, contact [Alison Paglia \(alison.paglia@unh.edu\)](mailto:alison.paglia@unh.edu), program coordinator, or the [UNH Manchester Office of Admissions \(unhmanchester.admissions@unh.edu\)](mailto:unhmanchester.admissions@unh.edu) at (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
PSYC 401	Introduction to Psychology	4
Discovery Course		4

Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
PSYC 402	Statistics in Psychology	4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
Foreign Language		4
PSYC 502	Research Methods in Psychology	4
Breadth (500-level) course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Foreign Language		4
Breadth (500-level) course		4
Breadth (500-level) course		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
Breadth (500-level) course		4
Depth (700-level) course		4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Depth (700-level) course		4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Fourth Year</b>		
<b>Fall</b>		
Depth (700-level) course		4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
Depth (700-level) course		4
Capstone course		4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Total Credits</b>		<b>129</b>

Student Learning Outcomes

- Demonstrate fundamental knowledge and comprehension of the major concepts, theoretical perspectives, historical trends, and empirical findings in psychology.
- Understand basic research methods in psychology including design, data analysis, and interpretation; and utilize this knowledge to conduct their own psychological research, with an appreciation of the ethical issues involved in human and non-human research.
- Engage in scientific reasoning and problem solving so that they can evaluate the quality and implications of scientific research.
- Write empirical research reports and literature reviews in American Psychological Association style and present findings from scientific research.

Psychology Minor (Manchester)

<https://manchester.unh.edu/program/minor/psychology>

Description

The Psychology minor brings a unique perspective on society and human behavior to your studies and adds a set of skills that makes you stand out to employers in a variety of industries.

Requirements

Code	Title	Credits
Course Requirements		
PSYC 401	Introduction to Psychology	4
Two PSYC courses at the 500-level or higher		8
Two additional PSYC courses		8
Total Credits		20

- No more than 4 credits of PSYC 795 Independent Study may be applied to the minor.
- A maximum of 9 approved psychology transfer credits can be applied to the UNH psychology minor.
- Transfer courses must be evaluated for their equivalency. Only courses taken in a psychology department can be applied towards the minor.
- Three credit transfer courses can be applied as only three credits. Students must make up the credit deficit created by acceptance of transfer courses, with one exception: one three-credit course accepted in transfer may be applied for a total of 19 credits.
- AP Psychology transferred into UNH is equivalent as PSYC 401 Introduction to Psychology.

For more information, contact [Alison Paglia](#), program coordinator and minor supervisor.

Public Service and Nonprofit Leadership

<https://manchester.unh.edu/academics/degree-programs/public-service-and-nonprofit-leadership>

Overview

Developing agents of change in the classroom and in the field

The bachelor of science degree in public service and nonprofit leadership provides an interdisciplinary, applied approach to the study of public and not-for-profit institutions and actors. Students explore the ways that leaders and citizens work in and around governments to address the complex problems confronted by N.H. and the U.S. today.

All students choose a path that enables them to complete an accelerated Masters in Public Policy or Masters in Public Administration, where they take their most advanced courses in the Major alongside graduate students in the UNH Carsey School of Public Policy. Those courses count as 12 credits toward their BS degree and as 9 credits toward a UNH-Carsey MPP or MPA, should a student choose to continue on to a Masters. Most students entering as first-year students will be able to complete a combined BS/MPA or BS/MPP within five years.

Programs

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Faculty

[Public Service and Nonprofit Leadership Faculty](#)

Public Service and Nonprofit Leadership Major (B.S.)

<https://manchester.unh.edu/program/bs/public-service-nonprofit-leadership-major>

Description

The bachelor of science degree in public service and nonprofit leadership provides an interdisciplinary, applied approach to the study of public and not-for-profit institutions and actors. Students explore the ways that leaders and citizens work in and around governments to address the complex problems confronted by New Hampshire and the United States today.

All students choose a path that enables them to complete an accelerated Masters in Public Policy or Masters in Public Administration, where they take their most advanced courses in the Major alongside graduate students in the UNH Carsey School of Public Policy. Those courses count as 12 credits toward their BS degree and as 9 credits toward a UNH-Carsey MPP or MPA, should a student choose to continue on to a Masters. Most students entering as first-year students will be able to complete a combined BS/MPA or BS/MPP within five years.

Public Service majors develop essential, transferable skills in critical thinking, practical problem solving, communication, teamwork, leadership, civic and community engagement, research, and data

analysis. Coursework emphasizes experiential learning, such as interning at the N.H. State House or with local lobbying firms, engaged research in the real world, and hands-on service learning at a range of not-for-profit organizations in health, human services, advocacy, and the arts. All students must undertake at least one semester-long internship and at least one independent research project to be presented at the UNH Undergraduate Research Conference.

Public service and nonprofit leadership graduates can pursue careers in state and local government, political campaigns, advocacy, non-profit organizations, journalism, education, and more, and are prepared to pursue graduate studies in law, public policy, public administration, community development, and public health.

## Requirements

Students must complete 128 credits to graduate, including 44 credits in the public service and nonprofit leadership major. Students must maintain an overall cumulative GPA of 2.0 and a cumulative GPA in the major of 2.0. No credit toward the major will be given for any course in which the student receives a grade of less than C-. Students also must fulfill the UNH Discovery Program requirements. Up to three courses may be used toward both the public service and nonprofit leadership major and UNH Discovery Program requirements. Transfer students must take at least 28 credits in the major at UNH Manchester.

Code	Title	Credits
<b>Required Courses</b>		
PS 402	Practical Politics	4
PS 500	Wicked Problems: Puzzles in Public Policy	4
PS 506	Civil Society and Public Policy	4
PS 515	New Hampshire Politics in Action	4
PS 595	Research for Political and Policy Action	4
PS 701	Senior Seminar/Internship in Public Service	4
or INCO 505I	Semester in the City: Boston and SITC @ UNH Internship	
<b>Select eight credits from the following courses:</b>		<b>8</b>
PS #407	Politics, Law and Contemporary Society	
or PS 507	Justice, Law and Politics	
PS 501	Social and Political-Economic Theory	
PS #502	Political Psychology	
PS 510	Politics of Food	
PS #513	Politics of Red Tape: Bureaucracy & Policy	
PS 520	Globalization: Politics, Economics and Culture	
PS #599	Peer Educator Development	
PS #651	Selected Topics: Public Service	
PS #695	Public Service Independent Study	
PS 731	Community Leadership - Capstone	
PS 750	Poverty & Inequality Past and Present	
ECN 411	Introduction to Macroeconomic Principles	
ECN 412	Introduction to Microeconomic Principles	
ECN 650	Economics for Managers	
HMP 401	United States Health Care Systems	
HMP 403	Introduction to Public Health	
INCO 505A & INCO 505B	Semester in the City Becoming a Problem Solver and Social Innovator's Toolbox	
UMST 599	Special Topics	
<b>Select one path from the following:</b>		<b>12</b>
<b>MPA Path</b>		
PA 700	Foundations and Theories of Public Administration	
PA 709	Organization and Management in Public and Nonprofit Sectors	
PA #718	Nonprofit Management	
<b>MPP Path</b>		
PPOL 706	Fundamentals of Policy Analysis	
PPOL 712	Strategies for Policy Impact	

PPOL 722

Media Strategy and Communication

Total Credits

44

For more information, contact program coordinator [Stephen Pimpare](mailto:stephen.pimpare@unh.edu) ([stephen.pimpare@unh.edu](mailto:stephen.pimpare@unh.edu)) or contact the Office of Admissions ([unhm.admissions@unh.edu](mailto:unhm.admissions@unh.edu)), (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
PS 402	Practical Politics	4
Discovery Course		4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
Quantitative Reasoning		4
PS 500	Wicked Problems: Puzzles in Public Policy	4
Discovery Course		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
PS 506	Civil Society and Public Policy	4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
PS 515	New Hampshire Politics in Action	4
Major elective		4
Elective		4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Third Year</b>		
<b>Fall</b>		
Major elective		4
Discovery Course		4
Elective		4
Elective		4
<b>Credits</b>		<b>16</b>
<b>Spring</b>		
PS 595	Research for Political and Policy Action	4
Discovery Course		4

Elective	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Fourth Year</b>	
<b>Fall</b>	
MPP or MPA course	4
MPP or MPA course	4
Discovery Course	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Spring</b>	
PS 701 Senior Seminar/Internship in Public Service	4
MPP or MPA course	4
Discovery Course	4
Elective	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>129</b>

- Synthesize complex data and information and present it in written or oral form concisely and coherently.
- Effectively present research findings to a public audience, in-person and online.
- Communicate, in writing and verbally, clearly and professionally.
- Work effectively in groups and teams.
- Assume leadership roles if and when appropriate.
- Apply theories of leadership and management to their actually existing workplaces.
- Demonstrate capacity for graduate-level work in Public Policy, Public Administration, and related disciplines in the social sciences and human services.

#### Values

- Embody and act upon knowledge of cultural differences and an appreciation for the diversity of human experience and perspectives.
- Articulate the value of open democracy and engaged citizenship in building healthy communities at the local, national and global levels.
- Describe their own professional mission and their ethic of service.

## Student Learning Outcomes

By the end of their degree program, Public Service & Nonprofit Leadership majors should be able to demonstrate the following knowledge, skills, and core values so that they are positioned to be leaders in public and nonprofit organizations and effective analysts of and advocates for effective public policies.

#### Knowledge

- Describe key theories of policymaking, and explain which of them they think is most useful to make sense of particular issues in particular historical periods.
- Describe the relations between the public, private, and not-for-profit sectors as they effect politics, power, and policy making and explain how those relationships have changed over time.
- Describe the legislative process in the US and their state, offering specific examples of why some Bills become law and others do not.
- Develop and articulate a Theory of Change that encapsulates their own understanding of how political change has happened in the US in the past and of the ways in which political and policy changes that they care about might be enacted in the present and future.

#### Skills

- Design and execute an original multi-methods research project, including being able to: craft a well-formulated, researchable research question; develop credible hypotheses; produce a literature review that lays out the context in which their research will take place; design an appropriate means by which their hypotheses might be tested; conduct such original research; analyze those results using quantitative and/or qualitative methods, as appropriate; evaluate the meaning of their findings; produce visual representations (charts, graphs, tables) of their findings.
- Produce a polished, professional-quality Policy Brief.
- Design and execute a legislative advocacy strategy
- Identify sources for relevant, reliable, ethically gathered data and research and retrieve such data, evaluating its validity and reliability.

## Community Leadership Minor

### Description

<https://manchester.unh.edu/program/minor/community-leadership>

The Community Leadership Minor provides students with opportunities to develop leadership principles, values, practices, and processes with a combination of academic and experiential learning. Coursework emphasizes hands-on student involvement and learning in a variety of settings to build professional and civic competencies.

Upon the completion of the Community Leadership Minor, students will be able to:

- Demonstrate the six Career and Leadership Competencies (critical thinking, communication, teamwork, self-awareness, professionalism, and leadership) necessary to be an effective leader and community member.
- Apply concepts of social justice topics, including social identities, privilege, and power into current and future leadership roles.
- Articulate and apply their leadership philosophy, skills, and attributes into current and future leadership roles.

### Requirements

The Community Leadership Minor consists of 20 credits from the courses below. The minimum grade requirement for each course is C-.

Code	Title	Credits
<b>Required Courses</b>		
PS 425	Exploring Leadership	2
PS 426	Social Justice & Leadership	2
PS 731	Community Leadership - Capstone	4
<b>Elective Courses <sup>1</sup></b>		<b>12</b>
PS 430	The Mindful Leader	
PS 501	Social and Political-Economic Theory	
or PHIL 436	Social and Political Philosophy	
PS #502	Political Psychology	
PS 506	Civil Society and Public Policy	

PS 507	Justice, Law and Politics
PS 515	New Hampshire Politics in Action
PS 595	Research for Political and Policy Action
PS 750	Poverty & Inequality Past and Present
PHIL 430	Ethics and Society
BUS 400	Introduction to Business
BUS 453	Leadership for Managers
BUS 620	Organizational Behavior
BUS 635	Entrepreneurial Application through Enactus
CA 508	Conflict in Relational Communication
CMN 457	Introduction to Language and Social Interaction
UMST 599	Special Topics (Peer Educator Development)
INCO 505A	Semester in the City Becoming a Problem Solver
INCO 505B	Social Innovator's Toolbox
INCO 505I	Semester in the City: Boston and SITC @ UNH Internship
<b>Total Credits</b>	
<b>20</b>	

<sup>1</sup> Must take a total of 12 credits. Courses from any discipline that have a significant service-learning component may also count as electives, at the discretion and with the permission of the Minor Advisor/Supervisor.

For more information, contact program coordinator and minor supervisor, Stephen Pimpare at [Stephen.Pimpare@unh.edu](mailto:Stephen.Pimpare@unh.edu) ([stephen.pimpare@unh.edu](mailto:stephen.pimpare@unh.edu))



## Continuing Education, Summer Session, and January Term

Continuing education provides public access to higher education for individuals not formally admitted to a UNH degree program. Taking courses as a non-degree student is an excellent way to prepare for matriculation into a degree program, help advance or change careers, or study a topic of interest.

### Non-Degree Student Status

#### Undergraduate

Undergraduate courses (numbered 200-799) are open to individuals with a high school diploma, GED, or home-schooled secondary education equivalency. Individuals may register for a maximum of 11 credits per semester.

#### Graduate

Graduate courses (numbered 800-999) are open to individuals with a baccalaureate degree from an accredited college or university. Individuals may register for a maximum of 8 credits per semester.

### Full-Time Special Student Status

#### Undergraduate

Non-degree students who wish to register for 12 or more credits in a single semester must receive formal permission from UNH Undergraduate Admissions. Special tuition and fee rules apply. Please contact UNH Undergraduate Admissions at 603-862-1360 for more information on how to apply.

#### Graduate

Non-degree students who wish to register for 9 or more credits in a single semester must receive permission from The Graduate School. Students approved for this special status must pay full-time graduate tuition and fees at the time of registration. Please contact The Graduate School at 603-862-3000 for more information on how to apply.

### NH Senior Citizen Tuition Waiver

New Hampshire residents who are age 65 or older and are not enrolled in a degree program are eligible to take a maximum of two credit-bearing courses (some exceptions apply) per fiscal year (Summer Session/Fall/January Term/Spring) tuition-free. Please visit <https://www.unh.edu/continuingeducation/undergraduate-coursework> for more information, under Registration.

### Pre-Admission Program

The Pre-Admission Program allows students an opportunity to strengthen their academic credentials in preparation for admission to a baccalaureate program by completing coursework that satisfies both general education and introductory-level major requirements. Students complete two semesters in the program, register for up to 12 credits per semester, and then transfer to a baccalaureate program upon successful completion of the outlined criteria. For more information please visit <https://admissions.unh.edu/apply/veterans-non-traditional-students#preadmission>.

### CATS Program

The CATS (Challenging Academically Talented Students) Program is open to highly motivated and academically strong high school juniors and

seniors who want to enrich their academic experience with a college-level course. Students may choose from freshman-level courses (400-500 numbered courses). For an application and more information, please visit <https://admissions.unh.edu/apply/cats-challenging-academically-talented-students-program>.

### Prerequisites

Individuals are responsible for meeting all course prerequisites before registering for classes. Prerequisite information is included in undergraduate and graduate course descriptions.

Graduate coursework is advanced study and presumes completion of adequate preparation at the undergraduate level in the same or allied field in which the student wishes to pursue graduate coursework.

### Academic Standards and Expectations

A cumulative grade-point average of 2.00 (C grade) is the minimum acceptable level for undergraduate work and 2.67 (B- grade) is the minimum acceptable level for graduate work at the University. The records of non-degree students are examined periodically and academically deficient students may be warned or excluded from registering. All non-degree students are expected to become familiar with and adhere to the current UNH Student Rights, Rules, and Responsibilities available online at <https://www.unh.edu/student/rights>.

### Professional Development and Training

Professional Development and Training, an affiliate office of the Graduate School, serves individuals, businesses, and organizations by offering a wide range of non-credit professional development opportunities throughout the year. Programs are designed to assist professionals in developing new or advanced knowledge and skills in a variety of fields. Training is offered in Durham, Manchester, and Portsmouth, N.H. For more information, visit <https://training.unh.edu/>.

### Summer Session

Summer Session provides a wide range of credit courses, institutes, and programs in a variety of term lengths from May to August. From youth-enrichment programs to advanced-level institutes, Summer Session provides educational opportunities for learners of all ages. On-campus housing is available for students enrolled in summer credit courses. Please note: summer credit courses are held to the same academic standards as regular term courses but are typically offered at an accelerated pace. For more information, please visit [www.unh.edu/summersession](http://www.unh.edu/summersession).

### January Term

January Term is a three-week learning opportunity held during winter break. Online, on-campus, and study-away credit courses are available in a variety of academic disciplines at both the undergraduate and graduate levels. Because of the intensive course of study, students may register for only one course during January Term. For more information, visit <https://unh.edu/januaryterm/>.

<https://www.unh.edu/continuingeducation/university-coursework>

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**Accounting (ACC)****Accounting (ACC)**

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ACC 501 - Survey of Accounting****Credits: 4**

Survey of basic accounting concepts, including exposure to financial statements, accounting processes, decision making, and budgeting. This course is designed for students pursuing a Business Administration minor or exploring basic accounting. Not for Paul College students.

**Equivalent(s):** ACFI 501, ADMN 502

**Grade Mode:** Letter Grading

**ACC 520 - Topics in Accounting****Credits:** 4

Special Topics in Accounting, vary by semester. Prereq: ACC 501 with a minimum grade of C-.

**Repeat Rule:** May be repeated for a maximum of 16 credits. May be repeated up to 3 times.

**Grade Mode:** Letter Grading

**ACC 620 - Topics in Accounting****Credits:** 4

Special Topics in Accounting, topics vary by semester.

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Letter Grading

**ACC 720 - Topics in Accounting****Credits:** 4

Special Topics in Accounting, vary by semester.

**Repeat Rule:** May be repeated for a maximum of 16 credits.

**Grade Mode:** Letter Grading

**ACC 721 - Intermediate Financial Accounting I****Credits:** 4

Examination of the nature and applicability of accounting theory and the conceptual framework of accounting. Development of the capacity to address and resolve issues and problems in financial reporting. Topics include valuation and reporting of current and operating assets, and revenue recognition. Students wishing to repeat ACFI 621 must request and obtain departmental approval. Prereq: ADMN 502.

**Equivalent(s):** ACFI 621

**Grade Mode:** Letter Grading

**ACC 722 - Intermediate Financial Accounting II****Credits:** 4

Selected topics within financial reporting such as accounting for leases, pensions, stock options, and deferred taxes. Focus on how and why these issues are accounted for in the manner prescribed by current GAAP. Prereq: ACFI 621 or ACFI 721.

**Equivalent(s):** ACFI 622

**Grade Mode:** Letter Grading

**ACC 723 - Advanced Managerial Accounting****Credits:** 4

Builds on the basic managerial accounting course by continuing the theme of accounting as a management tool. Emphasis is on cost accounting as a source of data for measuring and improving the economic condition of the enterprise. Newly evolving management themes are integrated into the traditional topics of planning and control, cost analysis, overhead allocation, transfer pricing, and decision modeling. Prereq: ADMN 503.

**Equivalent(s):** ACFI 723

**Grade Mode:** Letter Grading

**ACC 724 - Auditing****Credits:** 4

Philosophy and environment of auditing, with attention to an understanding of the major auditing concepts and objectives and its judgement process. Emphasis on the nature and economic purpose of audits, standards, professional ethics, auditors' legal liability, internal control, and audit evidence. Includes audit procedures, reports, and computer software. Prereq: ACFI 621 or ACC 721.

**Attributes:** Writing Intensive Course

**Equivalent(s):** ACFI 724

**Grade Mode:** Letter Grading

**ACC 725 - Independent Studies in Accounting****Credits:** 1-4

Student-designed individual research projects, approved by a faculty sponsor. Paper required. Course credits vary according to the nature of the project, to be determined by the faculty sponsor. Seniors in high standing; by permission.

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Letter Grading

**ACC 726 - Introduction to Federal Taxation****Credits:** 4

Federal income tax concepts and law applicable to individuals. Coverage includes taxable income and deductions, passive activities, alternative minimum tax, property transactions and compensation. Prereq: ADMN 502.

**Equivalent(s):** ACFI 726

**Grade Mode:** Letter Grading

**ACC 727 - Financial Statement Analysis****Credits:** 4

Methods and tools of analysis and interpretation of financial statement data. Use of financial information in a variety of decision making situations including a prediction of corporate earnings, debt ratings, and financial distress; lending decisions; risk analysis; and equity valuations. Senior standing only. Prereq: ACFI 621 or ACC 721.

**Equivalent(s):** ACFI 725

**Grade Mode:** Letter Grading

**ACC 747 - Business Law****Credits:** 4

Law of contracts, agency, sales, negotiable instruments, real and personal property, partnership and corporations, with application of the Uniform Commercial Code. Prereq: ECON 401, ECON 402, ADMN 510.

**Equivalent(s):** MGT 747

**Grade Mode:** Letter Grading

**ACC 795 - Internship in Accounting****Credits:** 1-4

Accounting fieldwork in a business or other type of organization. Supervision provided by the organization, and consultation provided by the faculty sponsor. Written report required. Course credits vary according to the nature of the fieldwork, to be determined by the faculty sponsor. Seniors in high standing; by permission.

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Credit/Fail Grading

**ACC 799 - Honors Thesis in Accounting****Credits:** 4-8

Supervised research leading to the completion of an honors thesis or project in accounting; required for graduation from the honors program in administration for students in the accounting option. Permission of director of undergraduate programs and Accounting and Finance department chair.

**Grade Mode:** Letter Grading

## Administration (ADMN)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ADMN 400 - Introduction to Business****Credits:** 0 or 4

This course will introduce students to business organizations, the business disciplines and critical issues in contemporary business. The priority will be in having students develop strong intellectual foundations in business, knowledge of core disciplines of business, and an awareness of businesses' role in the economy and in the larger society. The course will include once a week lectures and also small group discussion sessions. The lectures will be organized by the lead PAUL faculty person and include visits and discussions with executives from New Hampshire companies. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ADMN 403 - Computing Essentials for Business****Credits:** 0 or 1

Self-paced course covering the fundamental skills and proficiency of general business software applications. Topics will include word processing and spreadsheet applications. Cr/F.

**Grade Mode:** Credit/Fail Grading**ADMN 410 - Management Information Systems****Credits:** 0 or 4

This course provides an introduction to computer literacy, basic computer hardware and software concepts, business applications of information technology and computer ethics. Hands-on exercises include spreadsheets, databases and web pages. Students registering for ADMN 410 are expected to be able to bring a laptop computer to each class session running the Windows version of Microsoft Office Professional (including Microsoft Access). Pre- or Coreq: ADMN 403.

**Grade Mode:** Letter Grading**ADMN 444 - Business for People, Planet, and Profits****Credits:** 4

Many experts and practitioners have realized that the traditional approaches of government and the non-profit sector will not - alone - be enough to solve the myriad of social and environmental challenges facing the world. Rather than seeing big business as "part of the problem" many are considering how the immense power of the private sector can contribute to addressing social and environmental issues. This course will allow students to explore the growing phenomenon of "socially and environmentally conscious capitalism," a more considered type of capitalism with the potential to be a platform for social and environmental change.

**Attributes:** Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**ADMN 502 - Financial Accounting****Credits:** 0 or 4

Fundamentals of financial accounting concepts and procedures for analyzing economic events and the preparation and use of financial statements.

**Equivalent(s):** ACC 501, ACFI 501**Grade Mode:** Letter Grading**ADMN 503 - Managerial Accounting****Credits:** 0 or 4

The use of information by managers to (1) determine the cost and profitability of the organization's products or services; (2) plan, control, and evaluate routine operations; and (3) make special non-routine decisions. The demand for managerial accounting information is derived from an integrated treatment of organizational objectives, an orientation to customers, and a focus on activities as the unit of analysis for measurement of cost, quality, and time. Prereq: ADMN 502.

**Grade Mode:** Letter Grading**ADMN 510 - Business Statistics****Credits:** 4

Introductory coverage of statistical methods for managerial decision-making: probability, descriptive and inferential statistics, and regression. Quantitative techniques common to many introductory statistics courses are covered, but the emphasis is on understanding concepts such as uncertainty, inferences from sample data, and model formulation, and on utilizing these techniques as aids in decision-making. Prereq: ADMN 403, MATH 420 or MATH 422 or MATH 424A or MATH 424B or MATH 425.

**Attributes:** Quantitative Reasoning(Disc)**Equivalent(s):** ADMN 420

**Mutual Exclusion:** No credit for students who have taken ADM 430, BIOL 528, BUS 430, EREC 525, HHS 540, MATH 439, MATH 539, MATH 644, PSYC 402, PSYC 402H, SOC 402, SOC #402H, SOC 502, SOC 502H.

**Grade Mode:** Letter Grading**ADMN 520 - Topics in Business****Credits:** 1-4

Special topics, vary by semester.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Credit/Fail Grading**ADMN 570 - Introduction to Financial Management****Credits:** 4

The investments, financing, and dividend decisions of the firm in a global setting. Topics include capital budgeting, designing and issuing securities, manager performance evaluation, resolution of agency problems, and working capital management. Open to PAUL majors only. Prereq: ECON 401. Pre- or Coreq: ADMN 420, ADMN 502; ECON 402.

**Equivalent(s):** ADMN 601**Grade Mode:** Letter Grading**ADMN 575 - Behavior in Organizations****Credits:** 4

Behavioral science concepts applied to work settings. Focus on understanding and analyzing individual beliefs, values, goals, perceptions, motivation, commitment, and decision making; group structures and processes (interpersonal skills, communication, conflict resolution, leadership, and team work); organizational control systems (rewards, task design, performance appraisal); outcomes (satisfaction and development of the person as well as the organization); and organizational change. Prereq: ADMN 400, ADMN 502.

**Attributes:** Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** BUS 620

**Mutual Exclusion:** No credit for students who have taken MGT 535, MGT 580.

**Grade Mode:** Letter Grading



**ADMN 580 - Quantitative Decision Making****Credits:** 4

Introduction to the use of quantitative tools in the decision-making process of an organization. Planning and operational problems in the manufacturing and services sectors are emphasized. Topics include forecasting, capacity planning, optimization, project scheduling, simulation and risk analysis, quality, inventory management, and waiting lines. Prereq: ADMN 510 or ADMN 420.

**Grade Mode:** Letter Grading**ADMN 585 - Marketing****Credits:** 4

Covers marketing as the process of planning and developing goods and services to satisfy the needs of target customers: consumers, other businesses, institutions. Focus on how marketing contributes to the firm's goals through product planning, pricing, promotion, and distribution policies, through both digital and traditional channels. Open to PAUL majors only. Prereq: ADMN 400; ECON 401.

**Mutual Exclusion:** No credit for students who have taken HMGT #600, MKTG 530, MKTG 550.

**Grade Mode:** Letter Grading**ADMN 620 - Topics in Business****Credits:** 4

Special topics, vary by semester.

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Letter Grading**ADMN #685 - Study Abroad****Credits:** 0-16

Open to students studying abroad in the discipline as approved by the department chair and Undergraduate Programs Office. Special fee. Cr/F.

**Co-requisite:** INCO 588**Attributes:** World Cultures(Discovery)**Grade Mode:** Credit/Fail Grading**ADMN 700 - PAUL Assessment of Core Knowledge****Credits:** 0

One of the learning objectives in the Business Administration Program is that all students will graduate with an understanding of these core knowledge assembled from the various disciplines that contribute courses to the program. We assess this learning as part of our Assurance of Learning Program. The zero credit course provides an administrative mechanism for accomplishing this goal. Permission required. Cr/F.

**Co-requisite:** ADMN 775**Grade Mode:** Credit/Fail Grading**ADMN 720W - Topics in Business****Credits:** 4

Special topics, vary by semester.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Letter Grading**ADMN 775 - Strategic Management: Decision Making****Credits:** 4

Capstone course: Problem-solving, decision-making, and strategic thinking relative to managerial, economic, ethical, legal, political, social, and technological aspects of an organization's environment. Integrates the functional discipline skills within the role of the general manager as leader and chief strategist, organizational builder and doer. Case discussion and analysis, industry and competitive analysis, environmental scanning, industry simulation, strategic audit, stakeholder analysis, values, ethics and social issues management within the public policy process are important course components. Prereq: ADMN 570, ADMN 575, ADMN 580, and ADMN 585.

**Co-requisite:** ADMN 700**Equivalent(s):** ADMN 703**Grade Mode:** Letter Grading**ADMN 799 - Honors Thesis/Project****Credits:** 4-8

Supervised research leading to the completion of an honors thesis or project; required for graduation from the honors program in administration. Prereq: permission of director of undergraduate programs and department chair. Writing intensive.

**Attributes:** Honors course; Writing Intensive Course**Grade Mode:** Letter Grading

## Aerospace Studies (AERO)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**AERO 301 - Leadership Laboratory****Credits:** 0

Taken by all AFROTC cadets throughout enrollment in AFROTC. Command and staff leadership experiences in cadet corps. Air Force customs and courtesies, drill and ceremonies, career opportunities, and life and work of the junior officer. Student leadership potential developed in a practical, supervised laboratory. Cr/F.

**Repeat Rule:** May be repeated up to unlimited times.

**Grade Mode:** Credit/Fail Grading**AERO 302 - AFROTC Physical Training****Credits:** 0

Taken by all AFROTC cadets throughout enrollment in AFROTC. Prepares cadets to pass the Air Force Fitness Assessment by introducing a year-round physical conditioning program that emphasizes total fitness that includes proper aerobic conditioning, strength and flexibility training, and healthy eating. Command and staff leadership experiences, Air Force customs and courtesies, and the reinforcement of unit cohesion, military good order and discipline, and esprit de corps.

**Co-requisite:** AERO 301**Grade Mode:** Credit/Fail Grading**AERO 415 - Heritage and Values of the United States Air Force I****Credits:** 2

Heritage and Values of the United States Air Force I, is a survey course designed to introduce students to the United States Air Force and provides an overview of the basic characteristics, missions, and organization of the Air Force.

**Grade Mode:** Letter Grading

**AERO 416 - Heritage and Values of the United States Air Force II**  
**Credits:** 2

Heritage and Values of the United States Air Force II, is a survey course designed to introduce students to the United States Air Force and provides an overview of the basic characteristics, missions, and organization of the Air Force. This is a continuation of AERO 415.

**Grade Mode:** Letter Grading

**AERO 541 - Team and Leadership Fundamentals I**

**Credits:** 2

Team and Leadership Fundamentals I, focuses on laying the foundation for teams and leadership. The topics include skills that will allow cadets to improve their leadership on a personal level and within a team. The courses will prepare cadets for their field training experience where they will be able to put the concepts learned into practice. The purpose is to instill a leadership mindset and to motivate sophomore students to transition from AFROTC cadet to AFROTC officer cadet.

**Grade Mode:** Letter Grading

**AERO 542 - Team and Leadership Fundamentals II**

**Credits:** 2

Team and Leadership Fundamentals II, focuses on laying the foundation for teams and leadership. The topics include skills that will allow cadets to improve their leadership on a personal level and within a team. The course will prepare cadets for their field training experience where they will be able to put the concepts learned into practice. The purpose is to instill a leadership mindset and to experience where they will be able to put the concepts learned into practice. The purpose is to instill a leadership mindset and to motivate sophomore students to transition from AFROTC cadet to AFROTC officer candidate. This is a continuation of AERO 541.

**Grade Mode:** Letter Grading

**AERO 671 - Leading People and Effective Communication I**

**Credits:** 4

Leading People and Effective Communication I, teaches cadets advanced skills and knowledge in management and leadership. Special emphasis is placed on enhancing leadership skills and communication. Cadets have an opportunity to try out these leadership and management techniques in a supervised environment as juniors and seniors.

**Grade Mode:** Letter Grading

**AERO 672 - Leading People and Effective Communication II**

**Credits:** 4

Leading People and Effective Communication II, teaches cadets advanced skills and knowledge in management and leadership. Special emphasis is placed on enhancing leadership skills and communication. Cadets have an opportunity to try out these leadership and management techniques in a supervised environment as juniors and seniors. This is a continuation of AERO 671.

**Grade Mode:** Letter Grading

**AERO 681 - National Security Affairs/Preparation for Active Duty I**

**Credits:** 4

National Security Affairs/Preparation for Active Duty I, is designed for college seniors and gives them the foundation to understand their role as military officers in American society. It is an overview of the complex social and political issues facing the military profession and requires a measure of sophistication commensurate with the senior college level. The final semester provides information that will prepare the cadets for Active Duty.

**Grade Mode:** Letter Grading

**AERO 682 - National Security Affairs/Preparation for Active Duty II**  
**Credits:** 4

National Security Affairs/Preparation for Active Duty II, is designed for college seniors and gives them the foundation to understand their role as military officers in American society. It is an overview of the complex social and political issues facing the military profession and requires a measure of sophistication commensurate with the senior college level. The final semester provides information that will prepare the cadets for Active Duty. This is a continuation of AERO 681.

**Grade Mode:** Letter Grading

**AERO 796 - AFROTC Internship**

**Credits:** 1-4

This internship is an Air and Space Studies program which prepares students for careers as Air Force Officers by providing experiential learning in an AFROTC detachment. History or Political Science majors are preferred. The internship is supervised by an Air Force Officer. By permission only. Prereq: AERO 415 and AERO 416, AERO 541 and AERO 542, and AERO 671 and AERO 672.

**Repeat Rule:** May be repeated for a maximum of 4 credits.

**Grade Mode:** Letter Grading

## Africana and American Studies (AFAM)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

No courses are currently active in the course inventory for this subject prefix.

## Agricultural Mechanization (AM)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

No courses are currently active in the course inventory for this subject prefix.

## American Sign Language (ASL)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ASL 435 - American Sign Language I**

**Credits:** 0 or 4

Introduction to American Sign Language with emphasis on visual receptive and expressive use of language, as well as providing opportunities for other forms of visual communication such as facial expression, mime, and gesture. Participants develop their skills through videotapes, classroom participation, and readings that cover issues important to the Deaf community. A weekly, one-hour language laboratory is required as part of this course. Limited to 15 students. Special fee. No credit if credit has been received for COMM 401 (previously COMM 533).

**Equivalent(s):** COMM 401, COMM 533

**Grade Mode:** Letter Grading

**ASL 436 - American Sign Language II****Credits:** 0 or 4

Introduction to American Sign Language with emphasis on visual receptive and expressive use of language, as well as providing opportunities for other forms of visual communication such as facial expression, mime, and gesture. Participants develop their skills through videotapes, classroom participation, and readings that cover issues important to the Deaf community. A weekly, one-hour language laboratory is required as part of this course. Limited to 15 students. Special Fee. No credit if credit has been received for COMM 401 (previously COMM 533).

**Prerequisite(s):** ASL 435 with a minimum grade of D-.**Equivalent(s):** COMM 733**Grade Mode:** Letter Grading**ASL 531 - American Sign Language III****Credits:** 0 or 4

Continuation of ASL 436. Expands on groundwork and grammatical principles established in ASL I and II. Introduces the sociolinguistics aspects of ASL as it functions within the deaf cultural context. Limited to 15 students. Lab.

**Prerequisite(s):** ASL 436 with a minimum grade of D-.**Grade Mode:** Letter Grading**ASL 532 - American Sign Language IV****Credits:** 0 or 4

Continuation of ASL 531. Expands on the groundwork and grammatical principles established in ASL I, II, and III. Introduces the sociolinguistic aspects of ASL as it functions within the deaf cultural context. Areas of investigation include use of formal versus informal sign register; sign variation by region, age, and gender; social factors that give rise to code switching; and political and cultural evolution of the U.S. deaf community. Taught in the target language using the direct experience method. Limited to 15 students. Lab.

**Prerequisite(s):** ASL 531 with a minimum grade of D-.**Grade Mode:** Letter Grading**ASL 621 - Advanced American Sign Language Discourse I****Credits:** 0 or 4

Focuses on the use of ASL discourse in formal as well as informal settings. Students explore the genres of public speaking, artistic expression, formal discussion, interview, and narrative. Development of ASL vocabulary in specialized areas not covered in previous courses. Lab.

**Prerequisite(s):** ASL 532 with a minimum grade of D-.**Grade Mode:** Letter Grading**ASL 622 - Advanced American Sign Language Discourse II****Credits:** 0 or 4

In this advanced course, students give two PowerPoint presentations on their research on two selected cutting-edge/current Deaf Studies topics, and are assessed on itemized public speaking skills, grammatical features (linguistics) studies that are a culmination of previous ASL courses, and pragmatic language functions. These presentations are to use high/academic register, appropriate for a large academic audience, demonstrating sensitive awareness of visual acuity and its impact on signing production. Lab.

**Prerequisite(s):** ASL 621 with a minimum grade of D-.**Grade Mode:** Letter Grading

## American Studies (AMST)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**AMST 444C - Picturing America: The Arts & Social Change****Credits:** 4

How has the camera shaped the way we see ourselves, and the world around us? How are photographers and writers—sometimes self-consciously and sometimes unwittingly affected by the definitions of what it means to be an American? What does something American look like? In this class, we'll try to answer that question in all its complexity by looking at both photographic and written documents, from the late nineteenth century, when photography was a relatively new technology, to the present. How can we "read" a photograph? What kinds of ethical and aesthetic concerns are involved in recording "reality?" What is the relationship between art and social concerns? How do photographs tell stories, and with what consequences?.

**Attributes:** FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**AMST 444D - Long-Ago Stories Behind Everyday Life****Credits:** 4

This interdisciplinary course focuses on the culture of the United States during a specific and short periods of time (1885-1915; 1915-1940; etc). Emphasis is as much on methods of interdisciplinary studies as on the material itself: we'll approach culture through primary sources from a variety of different disciplines: history, sociology, literature, art, architecture, music, film.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading

## Analytics (DATA)

**DATA 557 - Introduction to Data Science and Analytics****Credits:** 4

An introduction to data science and analytics. The landscape of analytics, including an overview of industries and sectors using analytics or expected to use analytics in the near future. Data generation, data management, data cleaning, and data preparation. Ethical use of data. Focus on visual and exploratory analysis. Project-based, with an emphasis on collaborative, experiential learning. Programming and statistical software will be used, but previous experience is not required.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**DATA 674 - Predictive and Prescriptive Analytics I****Credits:** 4

A first course in predictive and prescriptive analytics. Supervised learning models including linear models and CART models. Model assessment and scoring methods, including cross-validation. Regularization and model tuning. Unsupervised learning models including k-means clustering. Project-based, with an emphasis on collaborative, experiential learning. Statistical software will be used and programming required. Prereq: MATH 425, COMP 570, DATA 557.

**Grade Mode:** Letter Grading**DATA 675 - Predictive and Prescriptive Analytics II****Credits:** 4

A second course in predictive and prescriptive analytics. Time series analysis and model ensembles. Bootstrapping, simulation, optimization. Monte Carlo methods. Project-based, with an emphasis on collaborative experiential learning. Statistical software will be used and programming required. Prereq: DATA 674.

**Grade Mode:** Letter Grading

**DATA 690 - Internship Experience****Credits:** 4

A field-based learning experience via placement in a business, non-profit, or government organization using analytics. Under the guidance of a faculty advisor and workplace supervisor, students gain practical experience solving problems and improving operational processes using analytics. May be repeated but no more than 4 credits may fill major requirements. Prereq: UMST 582.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**DATA 750 - Neural Networks****Credits:** 4

Artificial neural networks power the recent advances in computer vision, speech recognition, and machine translation. This is a first course on neural networks with a focus on applications in computer vision and natural language processing. Topics will include generic feedforward neural networks, convolutional neural networks for computer vision tasks, and recurrent neural networks with application to natural language processing, with other topics to be selected based on the interests of the instructor and the class. Prereq: Senior status.

**Equivalent(s):** COMP 750**Grade Mode:** Letter Grading**DATA #757 - Mining Massive Datasets****Credits:** 4

A first course in large-scale analytics and data science. Characteristics of big data and the emerging software stack for working with massive datasets, including Hadoop and MapReduce. Algorithms for extracting information from massive datasets. A first course in linear algebra is not a prerequisite, but is recommended. Prereq: MATH 425, DATA 557, or instructor permission.

**Grade Mode:** Letter Grading**DATA #790 - Capstone Project****Credits:** 4

Under direction of a faculty mentor, students work in teams to find solutions to complex real-world problems using analytics. Projects may come from internal or external sources. Students define the problem, obtain the necessary data, develop suitable models and solutions, and present their results. Prereq: Senior status.

**Grade Mode:** Letter Grading

## Animal Sciences (ANSC)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ANSC 401 - Animals and Society****Credits:** 0 or 4

Through an interdisciplinary and historical lens, students delve into the interaction and interdependence of animals and people, the changes and patterns over time, and the resulting implications for the animal industry and the quality of life for animals, people, and the planet. Topics covered include agricultural production, organic farming, sustainability, global agriculture, Community Supported Agriculture (CSAs), research, nutrition, food safety, genetics, animal health, aquaculture, animal welfare, breeding, recreation, companionship, and the reproduction of domestic animals. What are the major changes in meat consumption by humans? What is the effect of these changes on the environment and large and small farm operations? What are the effects of biotechnological research performed on animals for human benefits? What is the difference between animal welfare and animal rights? Why should we care? In what ways does this affect us?

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Grade Mode:** Letter Grading**ANSC 402 - Horsemanship Lab****Credits:** 1

For beginning, intermediate, and advanced riders. Lab (lesson) format with required co-requisite (hybrid or on-line). Correct position and technique for dressage and combined training with application of appropriate theory. Allow time before and after lab for horse care. For the safety of horse and rider, there is a rider weight limit of 200 pounds for all mounted activities in the UNH Equine Program, including ANSC 402.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ANSC 405 - Theory of Horsemanship****Credits:** 2

Principles and theory of horsemanship, dressage and jumping, including biomechanics of the horse and rider, rider position and aids, cross-country jumping and conditioning, and the horse's instincts, senses, behavior and training as they relate to riding. Online only.

**Grade Mode:** Letter Grading**ANSC 406 - Careers in Animal Science****Credits:** 1

Students explore a variety of career opportunities within the fields of biotechnology, agriculture, animal science and veterinary medicine. Through class presentations and guest speakers students will learn about steps they could take to enhance their prospects for career success, including the internships, career related employment, research, and study abroad opportunities. Students will also prepare a draft and final resume, articulate a career plan, and write reviews about each of the guest speakers and panelists.

**Grade Mode:** Letter Grading**ANSC 411 - Freshman Seminar in Equine Science****Credits:** 1

Seminar format class. This introductory level class provides students with an overview of the equine industry, its economic impact and pressures and the job opportunities available. Class also includes investigation of the requirements and options within the UNH Equine Program and exploration of the opportunities and resources available for students. Cr/F.

**Grade Mode:** Credit/Fail Grading

**ANSC 419 - Horse Power****Credits:** 4

Students explore the enduring bond between the horse and man and the effect of that bond on civilization by considering: How has the horse and man's use of the horse shaped civilization and contributed to societal change? How has the progress of civilization and societal change affected the horse and its role in society? What does our use of the horse say about us as individuals and as a society? Cannot receive credit if credit received for ANSC 444B.

**Attributes:** Humanities(Disc)**Equivalent(s):** ANSC 444B**Grade Mode:** Letter Grading**ANSC 421 - Introduction to Animal Science****Credits:** 4

This course provides an overview of the scope and diversity of animal agriculture at the global, national and local levels. It also provides an introduction to the animal sciences through which students 1) learn basic animal science terminology 2) acquire an appreciation of the objectives of various animal enterprises and 3) gain understanding of contemporary trends, challenges and opportunities within animal agriculture. Special fee.

**Grade Mode:** Letter Grading**ANSC 422 - Introduction to Horsemanship Theory****Credits:** 3

For beginning and intermediate riders enrolled in ANSC 402. Hybrid format, includes face-to-face and on-line content, with required lab co-requisite (ANSC 402). Correct theory of basic horsemanship skills, including safe handling practices, introduction to equipment and horse sports, overview of equine senses and behavior, and correct rider position and technique for dressage and jumping. See ANSC 402 (co-requisite) for details on required lab activities. Permission required.

**Co-requisite:** ANSC 402**Grade Mode:** Letter Grading**ANSC 426 - Equine Conformation and Lameness****Credits:** 4

The study of conformation as it relates to soundness and performance. Students learn to recognize the components of good conformation as they relate to the athletic functions of the horse. Field trips highlight varying disciplines and how conformational changes make horses appropriate for differing activities. Students will also use the University herd to practice assessing conformation and its evaluation for performance types. Students will also learn how conformational faults impact long term soundness. Special fee.

**Equivalent(s):** AAS 426**Grade Mode:** Letter Grading**ANSC 437 - Equine Husbandry Techniques****Credits:** 0 or 4

Course familiarizes students with different aspects of equine management through a practical and hands-on approach. Topics include selection, fit and care of English tack, bits, grooming, clipping, wound care, safe bandaging techniques, equine behavior, farm layout, basic health care and monitoring, parasite control, and equine transportation. Students will have hands-on experience in the UNH stable. Responsibilities include feeding, cleaning, turnout, and basic care of the University herd. Special Fee.

**Equivalent(s):** AAS 437**Grade Mode:** Letter Grading**ANSC 500 - Equine Assisted Activities and Therapies****Credits:** 4

Comprehensive examination of Equine Assisted Activities and Therapies including types of therapeutic riding and its physical, cognitive, and emotional benefits for clients with a variety of disabilities. Topics include hippotherapy, therapeutic riding, equine-facilitated mental health, youth at risk, therapeutic vaulting, carriage driving, equipment needs/modifications, special considerations for selecting and training the therapy horse, and the role of the volunteer therapist and instructor. Students have the opportunity to work with horses and riders in the UNH Therapeutic Riding Program during labs, as well as view other programs on mandatory field trips. Special fee.

**Grade Mode:** Letter Grading**ANSC 504 - Equine Physiology****Credits:** 4

A fundamental equine science course including anatomy, sports medicine, nutrition and preventative care. Students present oral and written journal reviews on equine science topics pertinent to lecture. Prereq: BIOL 412. Special Fee.

**Equivalent(s):** ANSC 404**Grade Mode:** Letter Grading**ANSC 507 - Survey of Equine Training Techniques****Credits:** 3

Physiological development, control, and education; biting, lunging, driving, and equine gymnastics. Special fee. Lab.

**Grade Mode:** Letter Grading**ANSC 510 - Integration of Culture and Agriculture in Ireland: Past, Present, and Future****Credits:** 2 or 4

What was the worst natural disaster in 19th century Europe? What characterizes Ireland's agriculture in the 21st century? In this interdisciplinary course, students examine the cultural, historical, political, economical, and religious influences on Ireland's agriculture, fisheries, and forestry. The crowning experience of the course, a 10-day study abroad in late May, provides students with a window to the world as they experience the culture, agriculture, and topography of Ireland. Students will immerse themselves in local history and culture as they tour working agricultural farms, university research facilities, and cultural landmarks. Permission required. Not open to freshmen. Special fee. Writing intensive. 2 or 4 credits.

**Co-requisite:** INCO 589**Attributes:** World Cultures(Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**ANSC 511 - Anatomy and Physiology****Credits:** 0 or 4

Discussion/comparison of the principles of mammalian form and function. Includes molecular and cellular mechanisms of major processes (such as muscle contraction, neural transmission, and signal transduction) and systematic aspects of the nervous, endocrine, cardiovascular, respiratory, gastrointestinal, and renal systems. Prereq: BIOL 411 and BIOL 412. Special fee. Lab. Not open to Freshmen.

**Mutual Exclusion:** No credit for students who have taken BMS 507.**Grade Mode:** Letter Grading



**ANSC 512 - Anatomy and Physiology****Credits:** 0 or 4

Discussion/comparison of the principles of mammalian form and function. Includes molecular and cellular mechanisms of major processes (such as muscle contraction, neural transmission, and signal transduction) and systematic aspects of the nervous, endocrine, cardiovascular, respiratory, gastrointestinal, and renal systems. Prereq: BIOL 411 and 412 and ANSC 511. Special fee. Lab. Not open to freshmen.

**Equivalent(s):** ZOOL 508, ZOOL 518**Mutual Exclusion:** No credit for students who have taken BMS 508.**Grade Mode:** Letter Grading**ANSC 522 - Intermediate Horsemanship Theory****Credits:** 3

For intermediate and advanced riders, and beginners who have completed ANSC 422. Hybrid format, includes face-to-face and online lectures/content with required lab (ANSC 402) as co-requisite. Correct theory of more advanced horsemanship skills and concepts, including equine behavior and learning, horse and rider biomechanics, correct rider techniques for dressage and combined training, and systematic athletic development of the horse for dressage and jumping. Permission required.

**Co-requisite:** ANSC 402**Equivalent(s):** ANSC 405**Grade Mode:** Letter Grading**ANSC 536 - Preparation and Competition Techniques for the Modern Sport Horse****Credits:** 4

Course addresses the safe handling and appropriate grooming and clipping techniques for modern sport horses as they are prepared for competition. Additional topics include trailering, studding, post-workout care and other industry skills. Students will evaluate selection and movement of sport-horses while in-hand and demonstrate knowledge by showing horses in best practice for the type and style. Students will demonstrate horse-handling proficiency while showing their assigned horse in-hand at the annual Little Royal Livestock & Horse Show. Lecture and lab format, including industry guest speakers and demonstration. Prereq: ANSC 437, ANSC 422/ANSC 522/ANSC 402.L or instructor permission.

**Equivalent(s):** AAS 536**Grade Mode:** Letter Grading**ANSC 538 - Equine Handling/Longeing****Credits:** 1

This seven-week intensive course provides students with the opportunity to learn to longe a variety of University horses in an enclosed arena under private instruction. The emphasis is on safety and welfare of the horse and handler. Proper equipment and fit are addressed along with different training techniques used to improve the horse's quality of movement.

**Equivalent(s):** AAS 538**Grade Mode:** Letter Grading**ANSC 543 - Technical Writing in Animal Sciences****Credits:** 2

Emphasis on writing scientific articles and articles for the end user on subjects pertaining to the animal science industry. Students are expected to make several oral presentations. Resume preparation is also included. Prereq: ENGL 401 or equivalent; permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ANSC 743**Grade Mode:** Letter Grading**ANSC 546 - Animal Business Applications****Credits:** 4

Survey of the various elements of managing an animal and/or agricultural operation regardless of commodity. Topics include: financial statements, credit and interest, insurance considerations, labor management, marketing, promotions, advertising, and sales.

**Equivalent(s):** AAS 546**Grade Mode:** Letter Grading**ANSC 547 - Equine Stable Management****Credits:** 3

Students learn how to make equine management decisions based upon science and business principles. Topics covered include evaluating health parameters, hoof care, vaccination and parasite control, nutrition, accurate record keeping and housing. Students monitor horse health, vaccinate, pull shoes and do fecal exams using the University herd. Business topics include; the importance of contracts, efficient staffing, stable/arena design for function. Field trips highlight different sized equine enterprises. Prereq: ANSC 437. Special Fee.

**Equivalent(s):** AAS 547**Grade Mode:** Letter Grading**ANSC 548 - Agricultural Business Management****Credits:** 4

This course is designed to give students an opportunity to focus on the agricultural industry relative to specific, operational concepts such as small business start-up, creating a business plan, funding strategies, business development including SWOT analysis, market analysis, branding, product placement and pricing strategy, advertising and using social media, employee hiring and management, supply chain management and analyzing financial statements. An examination of sustainable and socially and environmentally responsible business practices will also be included. The course involves lecture and field study allowing students to examine similar agricultural operations in order to enhance practical understanding of topics covered.

**Equivalent(s):** AAS 548, ANSC 635**Grade Mode:** Letter Grading**ANSC 600 - Field Experience****Credits:** 1-4

A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. Permission of supervising faculty member required. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ANSC 602 - Animal Rights and Societal Issues****Credits:** 4

To explore all aspects of human-animal interaction and welfare, emphasizing social, ethical, biological, historical and economic aspects of animal care and use. (Juniors and seniors only.) Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ANSC 407**Grade Mode:** Letter Grading

**ANSC 603 - Introduction to Livestock Management****Credits:** 4

This course explores the economic, scientific, and practical aspects of livestock management in New England, related to swine, beef, cattle, sheep, goats, and rabbits. This will include breed selection, feeding, reproduction, health, and housing systems. Product harvesting and food safety regulations related to sales and marketing are explored. Students will also be required to manage and care for a flock of sheep at UNH as part of their weekly laboratory exercises. Prereq: ANSC 421, or instructor permission.

**Grade Mode:** Letter Grading**ANSC 605 - Poultry Production and Health Management****Credits:** 4

This course focuses on understanding how the management practices used in raising domestic poultry can promote the production of healthy birds. Discussion centers on chickens in both large and small commercial flocks. Topics covered include breed and stock selection, anatomy & physiology, hatcher and brooder management, commercially important diseases, biosecurity and preventative health care, applicable food safety practices, and welfare. Students will gain hands-on experience working with live poultry during this course. Prereq: ANSC 421, AAS 431, or permission.

**Grade Mode:** Letter Grading**ANSC 609 - Principles of Animal Nutrition****Credits:** 4

Applied animal nutrition and nutrient metabolism. Prereq: one year of chemistry; one semester of physiology.

**Grade Mode:** Letter Grading**ANSC 612 - Genetics of Animals****Credits:** 4

Application of the physical and chemical bases of heredity to the inheritance patterns and allele frequencies related to qualitative, quantitative, and sex-linked traits in animals. Overview of current genetic, genomic, and biotechnological applications to the health, behavior, and evolutionary relationships of domestic and wild animals. Prereq: BIOL 411 with a minimum grade of C-.

**Equivalent(s):** GEN 604**Grade Mode:** Letter Grading**ANSC 622 - Further Explorations in Horsemanship Theory****Credits:** 2

For intermediate and advanced riders who have already completed ANSC 522. Online format, with required lab (ANSC 402) as a co-requisite. Students will use online content and independent study projects for in-depth explorations of more advanced topics related to the theory of dressage, jumping, and horsemanship, with particular attention to the application of correct theory to the individual rider's current skills, goals, and lab activities. May be repeated, with a different focus in subsequent semesters. Prereq: ANSC 522 and Permission.

**Co-requisite:** ANSC 402**Repeat Rule:** May be repeated for a maximum of 10 credits.**Grade Mode:** Letter Grading**ANSC 625 - Animal Diseases****Credits:** 4

This course focuses on concepts of animal health and disease primarily as they relate to domestic agricultural species. Basic principles of diagnosis, transmission treatment, and prevention are introduced and applied to the presentation of specific disease conditions. The course is divided into sections that focus on the primary body system that is affected by the disease or disorder and a heavy emphasis is placed on learning the skills necessary to recognize and prevent disease. Prereq: AAS 439, ANSC 511, ANSC 512.

**Grade Mode:** Letter Grading**ANSC 627 - Animal Health Applications****Credits:** 4

This course will use a case-based approach to integrate foundational concepts of animal anatomy and physiology with animal health and disease. Independent research of specific animal diseases cases will inform discussion of body systems in a variety of domestic animal species, targeting primarily farm animals, horses, dogs and cats. Hands-on laboratory experiences will use live domestic animals on campus to apply principles of disease diagnostics, prevention and treatment learned in class. Prereq: ANSC 511 and ANSC 512. Special Fee.

**Grade Mode:** Letter Grading**ANSC 635 - Nonprofit Management for Agriculture Business****Credits:** 4

This course is designed to give students an opportunity to focus on the agriculture industry relative to specific operational topics for nonprofit businesses. Case studies will include therapeutic riding, agricultural nonprofits, animal welfare/rescue field, animal or agricultural educational programs and nonprofit foundations and the growing field of animal and plant therapy. Topics include; legal structure and organization, credentialing, developing a strategic plan, creating and managing a board of directors, staff and volunteer management, risk management and insurance, fundraising, marketing and public relations, using social media and public accountability. Special consideration will be given to understanding and utilizing financial statements to drive the business and fundraising efforts. The course will involve lecture and project management allowing student to examine similar agricultural business operations in order to enhance practical understanding of topics covered for a final project. Course is offered biennially, in the Fall semester of even-numbered years.

**Equivalent(s):** ANSC 548, CSL 402, CSL 508**Grade Mode:** Letter Grading**ANSC 640 - Principles of Riding Instruction****Credits:** 4

Introduction to the principles, theory and practice of Riding Instruction. Includes discussion of styles of learning and instruction as applied to a riding environment, student assessment, skill acquisition, lesson planning, horse selection and principles of group and private riding instruction. Students will use lab time to observe, assist and practice teaching in sections of ANSC 402, which will be matched according to their abilities and interests. Students will prepare for ARIA licensing examinations as part of class. Fall semester only. Lab. Prereq: ANSC 405 or ANSC 522.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**ANSC 641 - Principles of Dressage Instruction****Credits:** 2

Advanced principles and theory of dressage and advanced concepts in teaching and coaching dressage. Students will use lab time to observe, assist and practice teaching in dressage-only sections of ANSC 402. Students will prepare for ARIA licensing examinations as part of class. Spring semester only. Lab. Prereq: ANSC 640.

**Grade Mode:** Letter Grading**ANSC 642 - Principles of Jumping Instruction****Credits:** 2

Advanced principles and theory of jumping and advanced concepts in teaching and coaching over fences in the arena and cross-country. Students use lab time to observe, assist and practice teaching in intermediate I and II level sections of ANSC 402. Lab. Prereq: ANSC 640. Offered spring semester of every odd numbered year.

**Grade Mode:** Letter Grading**ANSC 643 - Principles of Therapeutic Riding Instruction****Credits:** 4

Principles and theory of teaching therapeutic riding, including special considerations of teaching in a therapeutic environment and methods of instruction for individuals with a variety of disabilities. Lab consists of observing, assisting and practice-teaching in UNH Therapeutic Riding Program as preparation for PATH International CTRI instructor certification. Spring semester only, biannually, odd numbered years. Prereq: ANSC 500 and ANSC 437 or ANSC 402 or equivalent.

**Grade Mode:** Letter Grading**ANSC 650 - Dairy Industry Travel Course****Credits:** 1

Extended field trip to a variety of dairy farms and dairy related businesses in the Northeast with students and faculty from other New England land grants. Includes discussion sessions, case study, problem solving, and journal report. Prereq: permission. Special fee.

**Repeat Rule:** May be repeated for a maximum of 2 credits.**Grade Mode:** Letter Grading**ANSC 665 - Principles of Horse Trials Management****Credits:** 2

Theory and hands-on involvement in the organizational process of managing an event competition. Topics will include budgeting, logistical needs, working with entries, sponsorship, awards, publicity, facilities management, course design and committee management. Students will actively participate in the management and preparation of the UNH Horse Trials, overseeing the committees working in the phases of the event and also performing other responsibilities. 1-credit, half semester course. (During the fall semester, the class will meet for the first half of the semester; during the spring semester, the class will meet for the second half of the semester)

**Equivalent(s):** ANSC 565**Grade Mode:** Letter Grading**ANSC 670 - Exotic Companion Species Health and Management****Credits:** 4

This course focuses on concepts of health and disease as they relate to companion zoological species (i.e. exotic pets and those species kept in small, living collections) management. Developing an understanding of species specific needs and utilizing this knowledge to promote physical and mental health in a captive environment will be core themes of the course. Prereq: BIOL 411 & BIOL 412, previous coursework in animal anatomy & physiology recommended.

**Grade Mode:** Letter Grading**ANSC 690 - Livestock and Wildlife in Namibia: Challenges, Opportunities and Geography****Credits:** 4

This course explores the economic, historic, geographic, scientific and cultural aspects of livestock and wildlife management in Namibia. Its people developed unique models of conservation, as alternatives to national parks and private land in managing wildlife and livestock. Students will gain insight into this unique country and its animals, through lecturers, research, writing and direct interaction with practitioners in the study abroad component. Special Fee.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**ANSC 695 - Supervised Teaching Experience****Credits:** 1-2

Participants are expected to perform such functions as leading discussion sections, directing and assisting in laboratories, and assisting students with their problems in courses that participants have completed successfully. Enrollment is limited to juniors and seniors who have a minimum 3.00 cumulative average. Prereq: permission of instructor and department chairperson. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Credit/Fail Grading**ANSC 698 - Cooperative for Real Education in Agricultural Management (CREAM)****Credits:** 4

CREAM (Cooperative for Real Education in Agricultural Management) is a 2-semester course in which students perform the work and make the financial management decisions associated with the CREAM dairy herd. Students assume complete responsibility for the management and care of the 25-cow herd for the entire academic year. CREAM provides students with a unique experiential learning model that will help them understand how to work together to manage and operate a small business, the decision-making skills required in production agriculture and the application of science to the management of a dairy herd. Two semesters of 4 cr. each are required. Prereq: AAS 425 or permission.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** AAS 275, ANSC 615**Grade Mode:** Letter Grading**ANSC 701 - Physiology of Reproduction****Credits:** 4

Comparative aspects of embryology, anatomy, endocrinology, and physiology of reproduction. Lab.

**Grade Mode:** Letter Grading**ANSC 708 - Ruminant Nutritional Physiology****Credits:** 3

Anatomy of the ruminant gastrointestinal tract, physiological factors related to rumen function, and microbial and whole-body metabolism of carbohydrates, protein, and lipids. Prereq: BMS 503 and BMS 504 or equivalent.

**Grade Mode:** Letter Grading**ANSC 710 - Dairy Nutrition****Credits:** 4

Feeding management of dairy cattle. Emphasis on feedstuffs, nutritional requirements, and diet formulation for efficient production and optimum health. Prereq: ANSC 609 or NUTR 750; permission.

**Grade Mode:** Letter Grading

**ANSC 715 - Physiology of Lactation****Credits:** 4

Examines the biological and biochemical influences of the lactation process. Emphasis on the physiological effects of environments, hormones, and nutrition on milk synthesis and secretion, mammary physiology, and maternal response. Prereq: ANSC 701, permission.

**Grade Mode:** Letter Grading**ANSC 724 - Reproductive Management and Artificial Insemination****Credits:** 4

Focus on goals and fundamentals of reproductive management of horses, dairy and livestock animals, and through actual experience, development of competency in performing modern breeding techniques for equine and bovine reproduction. Permission required. Special fee. Lab.

**Equivalent(s):** ANSC 652**Grade Mode:** Letter Grading**ANSC 725 - Equine Sports Medicine****Credits:** 4

Course focuses on equine anatomy and physiology in relation to athletic performance and injury. Students write an independent paper assessing the use of an equine heart rate monitor on either a UNH or private horse during the semester. (Juniors and seniors only.) Prereq: ANSC 504, 512, 620. Special fee.

**Grade Mode:** Letter Grading**ANSC 727 - Advanced Dairy Management I****Credits:** 4

Advanced management evaluation of milking procedures, reproduction, genetics, herd health, feeding, housing, and milking systems. Prereq: junior or senior standing; permission.

**Equivalent(s):** ANSC 615**Grade Mode:** Letter Grading**ANSC 728 - Advanced Dairy Management II****Credits:** 4

Advanced management evaluation of record keeping, financial and business management, personnel management, waste management, and marketing. Prereq: junior or senior standing; permission. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ANSC 744 - Advanced Concepts in Therapeutic Riding Instruction****Credits:** 4

This course combines weekly lectures and practice teaching in the UNH Therapeutic Riding Program. Advanced concepts will be explored for mounting and dismounting participants with a higher degree of disability as well as teaching techniques for riders with less mobility and / or significant behaviors. Upon completion of this course, students will be prepared to sit for the national Certified Therapeutic Riding Instructor (CTRI) exam at an additional cost paid to the Professional Association of Therapeutic Horsemanship International (PATH International). Course is not offered every year. Prereq: ANSC 643.

**Grade Mode:** Letter Grading**ANSC 750 - Collaborative Farm Design and Development****Credits:** 4

As a semester long group project, students will design an economically feasible, fully operational, diversified small farm. Students will need to consider site selection, infrastructure, equipment, labor, animal production and health, financing options, marketing and sales, etc. in their design. The final project will be presented in both an oral and a written format. Independent initiative and group collaboration are both integral to success in this project. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ANSC 750W, NUTR 750, NUTR 750W**Grade Mode:** Letter Grading**ANSC 795 - Investigations****Credits:** 1-4

Investigations in genetics, nutrition, management, diseases, histology, equestrian management/agribusiness, physiology, cell biology, microbiology, dairy management, or teaching experience. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** ANSC 795W**Grade Mode:** Letter Grading**ANSC 795W - Investigations****Credits:** 1-4

Investigations in genetics, nutrition, management, diseases, histology, equestrian management/agribusiness, physiology, cell biology, microbiology, dairy management, or teaching experience. Prereq: permission.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** ANSC 795**Grade Mode:** Letter Grading**ANSC 796 - Equine Senior Seminar****Credits:** 2

This course is geared to prepare graduating seniors for professional work experience, including skills related to job seeking, resume preparation and interviewing for work in the equine field. In addition, students will engage in dialogue regarding current and relevant controversial topics within the equine industry. Through guided group discussion, selected readings and guest speakers, student are exposed to subjects which equine professionals must confront and address within the equine industry. This course serves as a preparation for and pre-requisite to the Equine Capstone Experience, ANSC 797.

**Equivalent(s):** ANSC 697, ANSC 796W**Grade Mode:** Credit/Fail Grading**ANSC 797 - Equine Capstone Experience****Credits:** 4

This course allows students to review critical professional skills, concepts and theories necessary for success within the equine industry and then to demonstrate competence in these areas, to a panel of equine program faculty. Students also coordinate logistics and content of an outreach Equine Education Day. Successful completion allows students to showcase professional skills and abilities to the non-academic equestrian community. Prereq: ANSC 796.

**Grade Mode:** Letter Grading



**ANSC 799 - Honors Senior Thesis****Credits:** 1-4

Independent research culminating with a written honors thesis in A) Genetics; B) Nutrition; C) Management; D) Diseases; E) Histology; F) Light Horsemanship; G) Physiology; H) Cell Biology; I) Microbiology; J) Dairy Management. Prereq: permission. IA.

**Attributes:** Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Anthropology (ANTH)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ANTH 411 - Global Perspectives on the Human Condition: An Introduction to Anthropology****Credits:** 4

This course introduces students to the core concepts, methods, and research of contemporary cultural anthropology, as well as to the ways in which the discipline is relevant to their daily lives. Students will learn how anthropology approaches the study of culture, language and communication, family and kinship, gender and sexuality, race and ethnicity, economic relationships, political systems, religion, social change and globalization. Ethnographic material from both the U.S. and cross-culturally, as well as a series of hands-on, experiential and interactive activities, will demonstrate anthropological concepts and questions.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** ANTH 411H, ANTH 411W**Grade Mode:** Letter Grading**ANTH 411W - Global Perspectives on the Human Condition: An Introduction to Anthropology****Credits:** 4

This course introduces students to the core concepts, methods, and research of contemporary cultural anthropology, as well as to the ways in which the discipline is relevant to their daily lives. Students will learn how anthropology approaches the study of culture, language and communication, family and kinship, gender and sexuality, race and ethnicity, economic relationships, political systems, religion, social change and globalization. Ethnographic material from both the U.S. and cross-culturally, as well as a series of hands-on, experiential and interactive activities, will demonstrate anthropological concepts and questions.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Equivalent(s):** ANTH 411, ANTH 411H**Grade Mode:** Letter Grading**ANTH 412 - Broken Pots and Buried Cities: Introduction to World Archaeology****Credits:** 4

Traces the history of archaeology's most spectacular finds and how those moments of adventure and glory developed into a scientific discipline. Provides an introduction to the methods used by archaeologists to recover, analyze, and interpret data in their ongoing effort to understand humanity through the analysis of those small things left behind.

**Attributes:** Social Science (Discovery)**Grade Mode:** Letter Grading**ANTH 415 - The Human Story: Evolution, Fossils and DNA****Credits:** 4

This course uses an evolutionary approach to investigate human biological and bio-cultural variation in time and space. Through a study of the basics of population genetics, an evaluation of our closest living relatives, nonhuman primates, and an exploration of the biological and cultural pathways traversed by our ancestors to become modern Homo sapiens, students learn the depth and complexity of the human story. Laboratory exercises dealing with human genetics, hominin fossils, and evolution are integrated with lectures to give students hands-on learning experience. No credit earned if credit received for ANTH 413.

**Attributes:** Biological Science(Discovery)**Equivalent(s):** ANTH 413**Grade Mode:** Letter Grading**ANTH 440A - Honors/Medicine and Culture: Science, Technology and the Body****Credits:** 4

This course takes a comparative, cross-cultural approach to global medicine. Through critical readings, multimedia presentations, class discussions, and expository writing, we consider how techno-scientific developments, transnational flows, environmental transformations, and historical inequities shape how we know and experience our bodies. Key course topics include controversies surrounding new medical technologies, the intersections between Western and non-Western medical systems, and innovative responses to chronic global diseases.

**Attributes:** Environment,TechSociety(Disc); Honors course**Grade Mode:** Letter Grading**ANTH 440B - Honors/Saving Culture: Heritage Management****Credits:** 4

Culture and heritage are increasingly important topics for scholars, art connoisseurs, politicians, and the public alike. The Taj Mahal in India is the UNESCO world heritage site, but is yoga that many around the world engage in? Who decides what heritage is and what counts as culture? How do these decisions impact peoples' daily lives? The course introduces students to the concept of cultural heritage and how it "works" in complex, non-universal ways.

**Attributes:** Honors course; World Cultures(Discovery)**Grade Mode:** Letter Grading**ANTH 444 - The Lost Campus: The Archaeology of UNH****Credits:** 4

In this course, students are active participants in the systematic documentation and examination of the University of New Hampshire's cultural heritage resources. Students are introduced to the practice and process of archaeology through lectures, readings, assignments and hands-on archival research and archaeological fieldwork. Students learn the foundational methods of archaeology including survey, mapping, documentation, excavation, artifact identification, artifact interpretation, and presenting results to the public.

**Attributes:** Historical Perspectives(Disc); Inquiry (Discovery)**Grade Mode:** Letter Grading**ANTH #450 - Introduction to Race, Culture, and Power****Credits:** 4

Race, culture, and power intersect to create differing opportunities and access to social and economic privileges, resources, and power. This course explores how race and racism have functioned to produce movements. The course draws on research on Blackness, Whiteness, and ethnic minorities in the United States and in cross-cultural perspective.

**Equivalent(s):** INCO 450**Grade Mode:** Letter Grading



**ANTH 500 - Peoples and Cultures of the World****Credits:** 4

Explores cultures and peoples from specific geographic regions of the world. Broadly considers social, gendered, economic, and political changes in ecological and historical context, focusing on precolonial, colonial, and contemporary societies and globalization. Sections: A. North America, B. Latin America, C. Middle East and North Africa, D. Sub-Saharan Africa, E. Southeast Asia. May be repeated barring duplication of subject.

**Attributes:** World Cultures(Discovery)**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** ANTH 500W**Grade Mode:** Letter Grading**ANTH 501 - World Archaeological Cultures****Credits:** 4

Explores past peoples and societies from specific geographic regions of the worlds through archaeological material culture, such as tools, art, and architectural remains. Broadly considers social, gendered, economic, and political dynamics of ancient (premodern) societies in ecological and historical context and the role of material culture in the present. Sections: A) North America; B) Mesoamerica; C) South America; D) Near East; E) Europe; F) Asia. May be repeated barring duplication of subject.

**Attributes:** World Cultures(Discovery)**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**ANTH 510 - Animals, Identity, and Culture****Credits:** 4

This course explores the roles of identity and culture in shaping the relationships humans form with other animals. A range of relationships are investigated, including those that figure animals as beings sharing in personhood, as prey, as technologies, as workers, as food, and as family. Inspired by the explosion of new research in multiple disciplines, this course emphasizes cross-cultural and transhistorical variations, while also exploring some of the biosocial features humans share with other animals.

**Grade Mode:** Letter Grading**ANTH 511 - Core Concepts in Anthropology****Credits:** 4

This foundational course, required within the first year of declaring the major, provides students with a cross-field perspective on anthropology through a focus on writing in the discipline. Approaching humankind as cultural and biological beings with distinct as well as interconnected histories, the course exposes students to the varied research practices of cultural, biological, archaeological, and linguistic anthropologists. Students will build skills in reading and research and will practice writing within several disciplinary genres and conventions that reflect anthropology's public as well as scholarly sides. Featured topics provide entry points into key anthropological themes, including the holistic study of human thought, behavior, language, ideologies, and institutions; race, gender, and inequality; and adaptation and change within social and natural environments.

**Grade Mode:** Letter Grading**ANTH 513 - Ethnographic Methods****Credits:** 4

The course introduces students to social science research and differences between quantitative and qualitative research methods, and provides a hands-on experience to develop skills in interviewing, participant-observation, life-history, surveying, socio-linguistics, fieldnotes, and ethics of the research.

**Attributes:** Inquiry (Discovery)**Grade Mode:** Letter Grading**ANTH 514 - Method and Theory in Archaeology****Credits:** 0 or 4

Basic method and theory; techniques in recovering and interpreting data; laboratory exercises in ceramic and lithic analysis. Critical evaluation of archaeological literature.

**Attributes:** Inquiry (Discovery)**Grade Mode:** Letter Grading**ANTH 525 - Anthropology of the Body: Fat, Fitness and Form****Credits:** 4

This course surveys the way our human bodies are valued, transformed, experienced and made subject to control in different societies around the world. It explores cultural constructions of fatness and obesity, fitness and sports as sites of politics, economics and social change, and bodily modification and dis-integration in tattooing, injury, biomedical technology, disability, aging, and extreme environments of war and outerspace. Uses anthropological and feminist theories and introduces ethnographic methods.

**Attributes:** Social Science (Discovery)**Grade Mode:** Letter Grading**ANTH 550 - Introduction to Forensic Anthropology****Credits:** 4

This course provides an overview of forensic anthropology, a sub-field of biological anthropology that applies knowledge of skeletal anatomy to problems of medico-legal significance (i.e., identification of human skeletal remains and interpretation of the circumstances surrounding death). This course outlines concepts underlying the recovery and analysis of human remains, the determination of the biological profile (including age, sex, ancestry, and stature), and the interpretation of skeletal trauma and pathology.

**Grade Mode:** Letter Grading**ANTH 597 - Special Topics****Credits:** 4

Occasional and experimental offerings on an entry level. May be repeated for different topics.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**ANTH 610 - Medical Anthropology: Illness and Healing****Credits:** 4

Intermediate-level introduction to medical anthropology through sociocultural and bioarchaeological approaches to describing health-related ideas and practices in cross-cultural, historical and ecological contexts. Focuses on human illness and religious experiences of disease and the end of life. Considers how suffering, diagnosis, treatment, prevention, and care are shaped by: religion and ritual; symbolism and language; age, gender and sexuality; families, social movements, and governments; and the worldwide expansion of biomedical expertise and technologies.

**Equivalent(s):** ANTH 610W**Grade Mode:** Letter Grading

**ANTH 611 - History of Anthropological Theory****Credits:** 4

Provides a grounding in the history of social thought in cultural anthropology and sister disciplines from 19th century evolutionism to the present. Course reading is based on primary sources - original essays written by theorists central to the discipline. Assessment is partly based on students' ability to apply theoretical concepts to novel contexts, as well as the ability to evaluate and compare theories on the basis of logic and evidence.

**Grade Mode:** Letter Grading**ANTH 612 - Applied Anthropology****Credits:** 4

Introduces students to the ways anthropological questions, concepts, and methods are applied to real world problems. Students learn how anthropological knowledge and methods can be used in a wide range of disciplines and careers. The course includes experiential learning where students engage with professionals doing work within applied anthropology. Students gain perspective on the practical possibilities in their major and acquire skills to position themselves for future careers.

**Grade Mode:** Letter Grading**ANTH #616 - Religion, Culture, and Society****Credits:** 4

Major anthropological theories of religion; analysis of religious beliefs as symbolic systems and their interrelations with ritual and other social institutions. Detailed study of specific religions. Operates on a seminar format. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ANTH 620 - Ritual and Religion of Ancient Mesoamerica****Credits:** 4

This course examines the religious beliefs and ritual practices of ancient Mesoamerican cultures, such as the Olmec, Maya, and Aztecs. Students learn about the meaning of ritual practices (like human sacrifice and burial rites) and the myths that underlie this mysterious ritual behavior from an archaeological perspective. This class is writing intensive and involves primarily in-class discussion. Students are evaluated based on their participation, oral presentations, and a number of writing assignments.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ANTH 625 - Sexuality in Cross-Cultural Perspectives****Credits:** 4

This course examines the ideologies and practices associated with sexuality from a broad perspective that incorporates diverse case studies from the ethnographic record. Working from the argument that much of human sexual behavior is culturally constructed rather than biologically determined, the course invites students to expand their notion of the "normal" and to consider the human condition from a cross-cultural perspective. Topics discussed include cross-cultural varieties of transgendered experience, same-sex sexualities, and heteronormative identities.

**Grade Mode:** Letter Grading**ANTH 640 - Anthropology of Islam: Muslims' Everyday Lives in Contemporary Communities****Credits:** 4

This course introduces students to different ways of being Muslim in contemporary world, focusing on Muslim communities residing in Central Asia (post-Soviet independent countries, China, and Afghanistan); the United States and some parts of Europe; and the Middle East and North Africa (MENA).

**Grade Mode:** Letter Grading**ANTH #645 - Cultural Sustainability and the Role of Public Archaeology****Credits:** 4

In archaeology, the sustainability movement has encouraged increased outreach and education in an effort to make archaeology relevant to the public and to sustain past lifeways, especially cultural traditions threatened of being erased in our increasingly homogenized and globalized world. Students will be introduced to this field and experience for themselves how to translate academic archaeology to the masses through public programming, from designing museum exhibits to participating in "open archaeology" education for the public.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ANTH 650 - Anthropology of Migration and Movement****Credits:** 4

This course uses an anthropological framework to gain a more nuanced understanding of the complexities of global migration and human movement. It will examine the theoretical underpinnings of an anthropological perspective on migration and movement, and will explore a variety of ethnographic case studies to explore the significant political, economic, environmental, legal, and social issues that influence global migration.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ANTH 655 - Bioarchaeology of the Human Past****Credits:** 4

Bioarchaeology is the study of human remains from ancient and historical sites. Past populations can be examined by utilizing principles of skeletal and dental biology, as well as archaeological context and ethnohistory, to address anthropological questions. This course will encompass a global survey of bioarchaeological sites and research, with a focus on women and children in the past. Students will explore ethical issues, controversies, excavation methods, and inclusion of indigenous communities.

**Grade Mode:** Letter Grading**ANTH 660 - Human Osteology****Credits:** 4

This course will cover the study of the human skeleton (osteology) and the ethical handling and treatment of human remains. The lecture format will be followed for the first 2/3 of the course while students will participate in hands-on skeletal analysis for the last third of the class. Students will learn about the major bones of the body, common pathologies, trauma analysis and interpretation, and age, sex, stature, and ancestry estimation.

**Grade Mode:** Letter Grading

**ANTH 674 - Archaeological Survey and Mapping in Belize****Credits:** 4

Involves hands-on training in field reconnaissance, survey and mapping of archaeological sites, and the use of ARCGIS mapping software.

This field course takes place in Belize (Central America) and will be of interest to students studying anthropology, geography and geospatial technologies, among others. Special fee.

**Co-requisite:** INCO 589**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ANTH 675 - Archaeological Field School in Belize****Credits:** 4

The Archaeological Field School in Belize is a hands-on course aimed at training students in all aspects of archaeological field and laboratory work. Students gain experience in field excavations and laboratory processing and analyses of recovered artifacts. The course consists of lectures 2-3 nights/week on a variety of topics related to Archaic and ancient Maya civilization, as well as lecture and class discussion on a range of topics concerning archaeological field and laboratory techniques.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ANTH 680 - Africana Religions: Mobility, Power, and Material Culture****Credits:** 4

Explores Africana indigenous and earth-based and ancestral practices, Islam, and Christianity to show how religion has powerfully shaped communities and always been on the move within and beyond the African continent, including in the Americas and Asia. Uses theories of media and material culture to survey religious environments, ritual, oral, visual, and expressive arts. Students tour virtual and local exhibits and interact with curators, heritage specialists, community members, and museum collections to curate an exhibit.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ANTH 685 - Gender, Sexuality and HIV/AIDS in Sub-Saharan Africa****Credits:** 4

HIV/AIDS has been defined as one of the exceptional global pandemics of the Millennium. This course traces the rise and global spread of HIV and AIDS and the introduction of antiretroviral therapies and preventions in sub-Saharan African and its Diasporas with a focus on sex and gender. Includes findings on heterosexual and LGBTIQ individuals, couples, and communities and perspectives on: kinship, marriage, love, transactional sex, reproduction, contraception, gender-based violence, and activist movements. Uses ethnographies and health sciences databases.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ANTH 695 - Globalization and Global Population Health****Credits:** 4

This course traces how political economies drive global movements of people, diseases, and health interventions. It takes a multidisciplinary approach through medical anthropology and humanities, public health, and sustainability, looking at: histories of health intervention and biomedical technologies; under-development; shifting public-private sector governance; humanitarianism, cultural knowledge, expertise, and translation; and health-related social justice approaches and liberation theologies. Topics may include: epidemics, non-communicable diseases, metabolic disorders, substance abuse, violence, injury, and aging.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ANTH 697 - Special Topics****Credits:** 4

Occasional or experimental offerings. May be repeated for different topics. Prereq: ANTH 411 or permission. Operates on a seminar format.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** ANTH 697W**Grade Mode:** Letter Grading**ANTH 699 - Senior Thesis****Credits:** 4 or 8

Independent work in the library or field; recommended for, but not confined to, majors intending to pursue graduate studies. Contact staff to obtain approval and arrange supervision prior to senior year. 4 or 8 credit 2 semesters; an IA grade (continuous course) given at end of first semester. Writing intensive.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ANTH 699H**Grade Mode:** Letter Grading**ANTH 699H - Honors Senior Thesis****Credits:** 4 or 8

Independent work in the library or field; recommended for, but not confined to, majors intending to pursue graduate studies; required for honors candidates. Contact staff to obtain approval and arrange supervision prior to senior year. 4 or 8 credit 2 semesters, 8 credits required for honors; an IA grade (continuous course) given at end of first semester. Writing intensive.

**Attributes:** Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ANTH 699**Grade Mode:** Letter Grading**ANTH 700 - Internship****Credits:** 1-4

Provides student with supervised practical experience in anthropology in one of the following areas: A) professional or community support work within an academic or applied anthropology setting; B) teaching; C) museum work; D) archaeological laboratory or fieldwork; E) research on a faculty research project; F) editorial work on a journal or faculty book project. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ANTH 750 - Islam and Gender: Gendered Lives of Muslims****Credits:** 4

This seminar focuses on the lives of Muslims. While critically questioning some existing ideas about and representations of Muslims, it introduces students to practical and historical aspects of gender politics in different Muslim communities.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ANTH 785 - The Anthropology of Dreams and Dreaming****Credits:** 4

This course emphasizes the "dream theories" of indigenous societies and how beliefs and practices associated with dreaming are integrated into cultural, ontological, political, economic, and religious systems. Western theories are also examined from within a comparative perspective—from basic Freudian models to contemporary scientific debates about the neurological origin and significance of dreaming. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**ANTH 795 - Reading and Research****Credits:** 1-8

A) Cultural/Social Anthropology; B) Anthropological Linguistics; C) Archaeology; D) Physical Anthropology. Prereq: 12 credits of anthropology; permission.

**Grade Mode:** Letter Grading**ANTH 796 - Reading and Research****Credits:** 1-8

A) Cultural/Social Anthropology; B) Anthropological Linguistics; C) Archaeology; D) Physical Anthropology. Prereq: 12 credits of anthropology; permission.

**Grade Mode:** Letter Grading**ANTH 797 - Advanced Topics****Credits:** 4

Advanced or specialized courses presenting material not normally covered in regular course offerings. May be repeated, but not in duplicate areas. Course descriptions on file in the department office during registration. A) Social Organization; B) Economic Anthropology; C) Anthropology of Religion; D) Political Anthropology; E) Social Impact Analysis; F) Cultural Ecology; G) Prehistoric Archaeology; H) Historic Archaeology; I) Cultural Resources Conservation; J) Lithic Analysis; K) Ceramic Analysis; L) Faunal Analysis; M) Human Evolution; N) Human Variations; O) Anthropological Theory. Prereq: ANTH 411 or ANTH 412 (as appropriate)/ or permission. Operates on a seminar format, open only to juniors and seniors.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading

## Applied Animal Science (AAS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**AAS 421 - Large Animal Behavior and Handling Techniques****Credits:** 2

Introduction to domestic large animal behavior and handling techniques. Cattle, horses, swine, and sheep are used in this course. Students perform routine health-related procedures and gain valuable hands-on skills and safe animal handling techniques which can be applied to the fields of veterinary medicine, animal research, commercial agriculture, and animal control. 1 lec/1 lab.

**Equivalent(s):** AAS 221, ANSC 408, ANSC 508**Grade Mode:** Letter Grading**AAS 423 - Dairy Selection****Credits:** 2

Selection techniques used in cattle for purchase, breeding, and genetic improvement through the use of visual evaluation, pedigrees, production, and progeny information. 1 lec/1 lab. Special Fee.

**Equivalent(s):** AAS 223**Grade Mode:** Letter Grading**AAS 425 - Introduction to Dairy Herd Management****Credits:** 4

The course explores economic, scientific and practical aspects of dairy herd management. The topics covered include history, cattle selection, nutrition, housing, milking, and disease prevention strategies. There are a number of field trips and weekly labs emphasizing management and hands-on experience.

**Equivalent(s):** AAS 244, ANSC 409, ANSC 410**Grade Mode:** Letter Grading**AAS 428 - Anatomy and Physiology of Domestic Animals****Credits:** 4

An overview course describing the anatomy (structure) and physiology (function) of domestic animals, focusing on canine, feline, equine, and bovine species. Anatomic and physiologic topics are intertwined as the course progresses through each body system. Relevant species differences are stressed. Focus is on applied concepts appropriate for animal-related careers. Special Fee.

**Equivalent(s):** AAS 228**Grade Mode:** Letter Grading**AAS 428B - Anatomy and Physiology of Domestic Animals Lab for VTEC majors****Credits:** 1

Reinforces material presented in AAS 428 lecture and introduces students to the animal body by hands-on study of anatomy. Anatomical relationships and concepts that are important for the medical care of animals are presented. The feline species will be the primary anatomical model used. Comparative anatomy of bovine, equine, and avian species will also be covered. Course is required of Veterinary Technology majors and is designed to be taken along with AAS 428 lecture.

**Co-requisite:** AAS 428**Grade Mode:** Letter Grading**AAS 432 - Introduction to Forage and Grassland Management****Credits:** 3

Introduction to grasslands of the world and their management. Special emphasis on the identification, production, and utilization of New England forage crops for feeding domestic farm animals. The course includes the selection of local plant species and varieties, including their management and recommended harvesting practices. The course also includes a basic introduction to soils, as well as nutrient and fertility management.

**Equivalent(s):** AAS 232**Grade Mode:** Letter Grading**AAS 434 - Equipment and Facilities Management****Credits:** 3

Operation of agricultural equipment and maintenance of agricultural facilities as found in New England. Development of the essential skills and technical information needed to manage and supervise agricultural facilities and equipment. 2 lec/1 lab.

**Equivalent(s):** AAS 234**Grade Mode:** Letter Grading



**AAS 439 - Fundamentals of Animal Health****Credits:** 2

Covers the principles of maintaining animal health by preventing and managing disease via husbandry, immunization, diagnostic testing and treatment. Focus is on domestic species; primarily dogs, cats, horses and cows. Topics include external and internal parasitology, microbiology, immunology including vaccination, and disease treatment. Course is designed to be taken along with the appropriate lab section: AAS 439A for Applied Animal Science majors or AAS 439B for VTEC majors, respectively. No credit earned if credit was received for VTEC 439.

**Equivalent(s):** AAS 239, VTEC 439**Grade Mode:** Letter Grading**AAS 591 - Studies****Credits:** 1-3

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Areas may include dairy, light horses, livestock, poultry, meats, forages, management, small animals, or general animal science. Permission required.

**Repeat Rule:** May be repeated for a maximum of 6 credits.**Equivalent(s):** AAS 291**Grade Mode:** Letter Grading**AAS 597 - Applied Animal Science Work Experience****Credits:** 0

Employment (12 weeks, generally in the summer following the first year) in an approved animal-related position. Cr/F.

**Equivalent(s):** AAS 297**Grade Mode:** Credit/Fail Grading

## Applied Business Management (ABM)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

No courses are currently active in the course inventory for this subject prefix.

## Arabic (ARBC)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ARBC 401 - Elementary Arabic I****Credits:** 4

This course introduces students to the language of Arabic and the culture of the Middle East. It teaches writing and pronunciation of Arabic letters and words, as well as a number of common phrases, such as greetings and cordial interactions. Both modern standard Arabic and colloquial Egyptian are taught. It also introduces students to basic aspects of Arabic culture and history. Special fee.

**Equivalent(s):** LLC 401**Grade Mode:** Letter Grading**ARBC 402 - Elementary Arabic II****Credits:** 4

This course builds on skills of learning Arabic acquired in ARBC 401. It continues with the teaching of these skills, which are listening, reading, writing, and speaking. It expands the students' acquisition of grammar, and widens their familiarity with the Middle East culture. It teaches both modern Standard Arabic and colloquial Egyptian. Prereq: ARBC 401 or permission from the instructor. Special fee.

**Attributes:** Foreign Language Requirement**Equivalent(s):** LLC 402**Grade Mode:** Letter Grading**ARBC 425 - Introduction to Arabic Culture****Credits:** 4

Conducted in English. This course offers an introduction to Arabic culture and explores its historical, linguistic, social, religious, cultural, and artistic foundations. Students can expect to develop cultural awareness and communicative skills useful when interacting with people from the Arab world, in addition to critical analytical thinking skills through discussion of various Arabic cultural topics.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**ARBC 503 - Intermediate Arabic****Credits:** 4

This intermediate level course builds on the skills of reading comprehension and the writing and speaking of Modern Standard Arabic that were acquired in first-year Arabic. It takes students to the next level of familiarity with, and the practice of, Arabic. It also puts a heavier weight on using the Egyptian dialect of Arabic in conversation. Prereq: ARBC 402 or permission from the instructor. Special fee.

**Attributes:** World Cultures(Discovery); Foreign Language Requirement**Grade Mode:** Letter Grading**ARBC 504 - Intermediate Arabic****Credits:** 4

This intermediate level course builds on the skills of reading and reading comprehension and the writing and speaking of Modern Standard Arabic that were acquired in Arabic 503. Students begin to read Arabic newspapers, websites, and other simple reading materials. An emphasis on using the Egyptian dialect of Arabic in conversation continues. Prereq: ARBC 503 or permission of the instructor. Special fee.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**ARBC 595 - Arabic Practicum****Credits:** 2

Practical use of Arabic language and culture through special projects outside the classroom. Prereq: Permission. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Credit/Fail Grading**ARBC 631 - Advanced Arabic I****Credits:** 4

This advanced intermediate level course builds on the skills of reading and reading comprehension, and the writing and speaking, of Modern Standard Arabic that were acquired in ARBC 504. Students continue to read Arabic newspapers, websites and other materials, and bring their findings to share in class discussions. An even greater emphasis than in lower levels of Arabic, are placed on acquiring and practicing the Egyptian dialect of Arabic in class conversations. Prereq: ARBC 504 or permission from the instructor.

**Grade Mode:** Letter Grading



**ARBC 632 - Advanced Arabic II****Credits:** 4

This advanced intermediate level course builds on the skills of reading and reading comprehension, and the writing and speaking, of Modern Standard Arabic. Students continue to read Arabic newspapers, websites and other materials, and bring their findings to share in class discussions. An even greater emphasis than in lower levels of Arabic, are placed on acquiring and practicing the Egyptian dialect of Arabic in class conversations. Prereq: ARBC 631 or permission from the instructor.

**Grade Mode:** Letter Grading**ARBC 700 - Arabic Media****Credits:** 4

This is a content-based language course, which means that this course will help students to improve their Arabic by introducing them to the world of Arabic media. You will be introduced to Media Arabic, which includes the language of print, broadcast, and internet formats. We will be focusing on political, economic and security issues in their cultural contexts as presented in Arabic media. Prereq: ARBC 504 or permission of the instructor.

**Grade Mode:** Letter Grading**ARBC 795 - Independent Study in Arabic****Credits:** 1-4

Guided individual study. Topics selected by instructor and student in conference. Barring duplication of content, may be repeated for credit. Prereq: permission of instructor.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading

## Art History (ARTH)

**ARTH 400 - Topics in Art History****Credits:** 4

Art History will be presented thematically. At least three distinct chronological periods will be treated; students will develop research skills and give oral presentations. Topics will vary: "Art Writers: Their Sources and Their Effects;" "Rome from Romulus to the Fascists;" "Cults of the Original and Cultures of the Copy." Repeatable up to a maximum of 12 credits with different topics. May count towards Architectural Studies Minor if papers take the appropriate emphasis.

**Attributes:** FinePerformingArts(Discovery); Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 12 credits.**Equivalent(s):** ARTS 400**Grade Mode:** Letter Grading**ARTH 440A - From Digging to Digital: Preserving and Displaying the Past****Credits:** 4

This course introduces the methods for the digital preservation of artifacts and the ethics of cultural conservation. Students will work with objects from the UNH museum to assess digital tools available to conservators, art historians, and archaeologists. We will explore photogrammetry, 3D modeling, virtual reality, web publishing software, and digital applications to study objects and preserve our cultural heritage. Discussion sections will address the social role of museums and international affairs.

**Attributes:** Environment,TechSociety(Disc)**Equivalent(s):** ARTS 440A**Grade Mode:** Letter Grading**ARTH 444 - Mona Lisa to Much Ado About Nothing: An Introduction to Renaissance Culture****Credits:** 4

What did Michelangelo and Shakespeare have in common? This course will read primary sources about the period called the Renaissance, which looked back to Greek and Roman paganism but which also launched Europe toward modernity due to its new emphasis on individual ambition and civic pride.

**Attributes:** FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** ARTS 444**Grade Mode:** Letter Grading**ARTH 444B - Art and Money****Credits:** 4

This course explores the relationship between art and money from a variety of perspectives. Topics will range from the art market boom in seventeenth-century Holland, to money as subject matter in twentieth-century art. How do we determine the value of art? How do markets influence taste? How do we define authenticity? What is at stake in the opposition between art and money, and can they be reconciled?.

**Attributes:** FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** ARTS 444B**Grade Mode:** Letter Grading**ARTH 444C - Seeing Gender: Feminist Art and Visual Culture****Credits:** 4

What is the role of visual culture in our understanding of sex, gender and sexuality? What role do the history of art, art and film criticism, and philosophical aesthetics play in the creation, interpretation, and appreciation of feminist art? Through close analysis of key artworks, primary sources, and theoretical and literary texts, as well as discussion and writing, this course will explore topics including gender norms, the gaze, patriarchal/stake violence, transgender theory, and global feminism.

**Attributes:** FinePerformingArts(Discovery); Inquiry (Discovery)**Equivalent(s):** ARTS 444C**Grade Mode:** Letter Grading**ARTH 474 - Introduction to Architectural History****Credits:** 4

Survey of representative buildings from the entire history of architecture with analysis of structure, form, and symbolic content, concentrating on major works such as pyramids, the Roman Pantheon, the Gothic cathedral, the Renaissance palace, the Baroque church, and the modern skyscraper. In addition to the overarching narrative of architectural history, further topics include materials and building technologies, design theories, aesthetic principles, and the role of the architect in society.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** ARTS 574**Grade Mode:** Letter Grading**ARTH 480 - Introduction to Art History****Credits:** 4

Analysis of the central forms and meanings of art history through intensive study of selected artists and monuments. Includes works of architecture, sculpture, painting, and the graphic arts. Topics will vary but might include the Parthenon, Chartres Cathedral, Michelangelo's Sistine Chapel ceiling. Rembrandt's self-portraits, Monet's landscapes, Picasso's Guernica, Frank Lloyd Wright's Falling water, Georgia O'Keeffe's abstractions, ukiyo-e prints, and Benin sculpture.

**Attributes:** FinePerformingArts(Discovery)**Equivalent(s):** ARTS 480**Grade Mode:** Letter Grading

**ARTH 501 - Introduction to Mediterranean Archaeology****Credits:** 4

Survey of representative archaeological sites, architecture, and objects produced by the cultures surrounding the Ancient Mediterranean.

The course will focus on the structure, form, and symbolic content, or sanctuaries, cities, tombs, housing, as well as material culture such as pottery and sculpture. In addition to the overarching narrative of the history of classical archaeology, further topics include cross-cultural influences, materials and building technologies, archaeological theory and practice, and aesthetic principles.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** CLAS 501**Grade Mode:** Letter Grading**ARTH 583 - Baroque Art: Realism, Caricature, Shock****Credits:** 4

The last period of Italian world prominence in the visual arts, the Baroque witnessed a shift of artistic power toward Spain, France, and the Netherlands. The private collecting of pictures, controversies over the legitimacy of religious images, the exploration of etching, pastels, and monotypes, and the serious pursuit of less august subject matter for the visual arts all served to separate Baroque art from its esteemed predecessor, the Renaissance. Bernini, Borromini, Caravaggio, Velazquez, Rembrandt, Rubens, and Poussin are among the artists to be studied.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTH 683**Grade Mode:** Letter Grading**ARTH 587 - Art in an Age of Revolutions, c. 1715-1900****Credits:** 4

This course surveys visual art made in Europe and North America in a period of profound change: from the dawn of Enlightenment, through the American and French Revolutions and their reverberations throughout Europe, to the eve of WWI. Topics will include the role of portraiture in revolutionary politics from Copley's Paul Revere to David's Marat; crises in modern history painting from Benjamin West to Goya; and the radical realisms of Courbet and the Pre-Raphaelites.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 687**Grade Mode:** Letter Grading**ARTH 592 - Photography's Brave New Worlds****Credits:** 4

Today, we are bombarded by photographs on the Internet, Facebook, Twitter, and Instagram. Indeed, digital photographs seem to have created a "brave new world." However, throughout its history, photography's artistic innovations, technological developments, and creative new uses have transformed the ways in which we navigate the world. This course focuses on photography's game-changing impact on art, science, social reform, popular culture, globalization, and war propaganda from 1839 to the present.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** ARTS 592**Grade Mode:** Letter Grading**ARTH 600 - Internship in Art History****Credits:** 1-4

Elective only. Cannot be used to fulfill art history requirements. May be repeated up to 8 credits. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ARTS 600**Grade Mode:** Letter Grading**ARTH 654 - 17th and 18th Century American Architecture****Credits:** 4

Chief architectural styles and significant buildings from the European colonization to the birth of the American republic. A study of religious, public, and domestic architecture and of the settlement patterns of the Spanish, French, Dutch, and English colonies, culminating in the revolutionary classicism of the new republic. Typical works include the California mission church, the New Orleans raised cottage, the Dutch farm house of the Hudson Valley, the plantations of Virginia, and the Boston State House. Field trips. Prereq: one 400 level or 500 level art history course.

**Equivalent(s):** ARTS 654**Grade Mode:** Letter Grading**ARTH 655 - Nineteenth-Century Architecture: The Architecture of Empire****Credits:** 4

Architectural concepts and significant buildings in Europe and America from the Revolutions of the late eighteenth century to the First World War; this course covers religious, civic, commercial, and domestic theories of architecture as well as town planning and urban design during the rise of the modern nation-state and market capitalism. Connections between social and architectural history will be emphasized. Prereq: one 400- or 500-level art history course or permission of the instructor.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 655**Grade Mode:** Letter Grading**ARTH 656 - Twentieth-Century Architecture: Modern and Contemporary****Credits:** 4

From the turn of the century to recent commissions of living architects, this course provides a global view of twentieth-century architecture, covering the major movements along with more radical engagements with architecture. Important formal, technological, and theoretical debates surrounding Modernism will lead to consideration of Post-Modernity and contemporary values of architectural design. Connections between social and architectural history will be emphasized. Prereq: one 400- or 500-level art history course or permission of the instructor.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 656**Grade Mode:** Letter Grading**ARTH 674 - Greek Art and Architecture****Credits:** 4

Ancient Greece has long been a source of emulation and inspiration. From the legendary Bronze Age palaces of Mycenae and Knossos, through the classical ideas of the city state and its ultimate diffusion through Alexander the Great, this course explores ancient Greek culture through the lens of its art and architecture. We will consider the monuments and surviving artifacts that have influenced art and architecture through the ages and continue to shape the modern world.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 674**Grade Mode:** Letter Grading

**ARTH 675 - Roman Art and Architecture****Credits:** 4

Starting as a handful of huts overlooking the Tiber River, Rome would grow into a vast empire spanning the Mediterranean. In the process the Roman world would absorb, adapt, and encompass a variety of ancient cultures to create vibrant works of art and architecture. This course will survey the artistic and architectural achievements of ancient Rome. Our aim is to understand the development of Roman material culture and consider its legacy in the modern world.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 675**Grade Mode:** Letter Grading**ARTH 677 - Early Medieval Art****Credits:** 4

Development of Christian art from 300 to 1000 A.D. Study of the formulation of a new visual language via the intersection of Mediterranean and northern European traditions. Major focus on early Christian catacombs, Byzantine mosaics, insular manuscripts, and Carolingian imperial art. Prereq: one 400- or 500-level art history course.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 677**Grade Mode:** Letter Grading**ARTH 678 - Romanesque and Gothic Art****Credits:** 4

From the fall of the Roman Empire to the fourteenth century, through plague and destruction, glory and honor, heaven and hell, this course tackles the culmination of medieval artistic development, focusing especially on major architectural monuments and their sculptural programs. Treating also the art of tombs, relics, manuscripts, and devotional painting. Connections between social, religious, and art history are emphasized. Prereq: 400- or 500-level art history.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 678**Grade Mode:** Letter Grading**ARTH 679 - Northern Renaissance Art I****Credits:** 4

Painting, sculpture, graphic arts, and manuscript illumination in France, Germany, and the Netherlands in the 14th and 15th centuries. Emphasis on the development of the traditions of Northern naturalism and the emergence in 15th-century Flanders of a distinct Renaissance consciousness, which runs parallel to contemporary trends in Italy. Major figures include the Limbourg brothers, Claus Sluter, Jan van Eyck, and Hugo van der Goes. Prereq: one 400- or 500-level art history course.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 679**Grade Mode:** Letter Grading**ARTH 680 - Iconoclasm and Collecting: The Art of Early Modern Northern Europe****Credits:** 4

The sixteenth century in northern Europe was a time of tumult, religiously, politically, and economically. We will study a formative early phase in the challenge to create an art during ideologically-fraught times (including amusing art), from Bosch's weird monsters to Bruegel's vast landscapes. Prints and drawings greatly expanded the market for art, its capabilities to explore new imagery, and its geographical reach. Lucas van Leyden, key predecessor of Rembrandt, Durer, an unusually well-traveled artist and ambitious to create an art theory for Germans, Holbein, one of whose portraits caused an international debacle, and Bruegel, who turns his back on traditional ambitions, were all valued for their works on paper as well as their paintings.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 680**Grade Mode:** Letter Grading**ARTH 681 - Early Renaissance Art****Credits:** 4

How did Europe recover from the Black Death in 1348? How was it possible for Florence to become the center of western creativity both before and after that catastrophe? How did Renaissance art develop elsewhere during the fourteenth and fifteenth centuries? Was was "primitive" about Botticelli? Prereq: one 400- or 500-level art history course; or instructor permission.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 681**Grade Mode:** Letter Grading**ARTH 682 - The High Renaissance****Credits:** 4

Examines the trajectory from Leonardo to the deaths of Michelangelo and Titian: painting, sculpture, architecture, and works on paper. Prereq: one 400- or 500-level art history course or instructor permission.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 682**Grade Mode:** Letter Grading**ARTH 684 - Baroque Art in Northern Europe****Credits:** 4

Dutch and Flemish painting in the 17th century. Examination of such major figures as Rubens, Rembrandt, Van Dyck, and Vermeer. Attention is also given to the development of the genres and to the many little masters who practiced them. Prereq: one 400- or 500-level art history course; or instructor permission.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 684**Grade Mode:** Letter Grading

**ARTH 685 - Graphic Art of the Renaissance and Baroque Periods****Credits:** 4

The availability of paper and the invention of the printing press made it possible for drawings and prints to become fundamental elements in the western artistic tradition. Prints have been called major instigators of the production of secular art and of overtly experimental art. They were the first art made with an elite but relatively broad class of collectors in mind, and—in different examples—the first art that could be owned even by the poor. Examination of anonymous works, works by artists famous only as printmakers, and the printed work by or after Mantegna, Durer, Lucas van Leyden, Raphael, Michelangelo, Bruegel, and Rembrandt, as well as drawings of the period. Prereq: one 400- or 500-level art history course; or instructor permission.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 685**Grade Mode:** Letter Grading**ARTH 686 - Sex and Sensuality in 18th-Century Art****Credits:** 4

European art of the "long" eighteenth century (1680-1815) experienced radical shifts in aesthetic, social, and political orientation: from the splendors of absolutism to the austere neoclassicism of revolutionary art. This course explores painting and sculpture (and works in other media) in relation to the development of a public sphere, the emergence of individualism, the invention of personal domestic comfort, the introduction of women to artistic power, the scientific revolution, and the birth of global consumer culture. Prereq: one 400-500 level art history course; or instructor permission.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 686**Grade Mode:** Letter Grading**ARTH 688 - Histories of Late 19th & 20th Century European Modernism****Credits:** 4

An examination of European and American art from Symbolism to Surrealism, from the 1890s to World War II. The course focuses on a series of topics related to the political, social, scientific, and artistic upheavals of the era. Among the topics to be considered are Gauguin and "Primitivism"; Picasso, Cubism, and film; the Bauhaus and Utopian Architecture; Modernist Philosophy; Surrealism and Freud; and the fate of art under Hitler and Stalin. Prereq: one 400- or 500-level art history course; or instructor permission.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 688**Grade Mode:** Letter Grading**ARTH 689 - Contemporary Art and Theory: 1945-2000****Credits:** 4

This course examines developments in the fine arts and art theory from 1945 to the present. Special emphasis will be on the issues of the construction of post-war national/culture identities, the relationship between aesthetics and politics, and globalization, in relation to various artistic movements, including Action and color Field Painting, Pop Art, Minimalism and Conceptual Art, Earthworks and Sited Sculpture, Feminist Art, and Digital Art. Prereq: one 400- or 500-level art history course; or instructor permission.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 689**Grade Mode:** Letter Grading**ARTH 693 - American Art****Credits:** 4

A chronological survey of American painting and sculpture from the European colonization to the New York Armory Show of 1913, with emphasis on portraiture, narrative, still-life, and landscape painting. Examination of stylistic and thematic developments from the Puritan and Georgian New England portrait, the heroic narrative of the Revolutionary era, the romantic landscape to the realism of the post-Civil War era and the birth of modernism. Typical works include Copley's Portrait of Paul Revere, Cole's Course of Empire, Homer's Fog Warning, Cassatt's At the Opera, and Eakin's Max Schmitt in a Single Scull. Prereq: one 400- or 500-level art history course; or instructor permission.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 693**Grade Mode:** Letter Grading**ARTH 694 - Vision and Modernity: From Panorama to Early Film****Credits:** 4

The course examines the emergence of modern visual culture between the end of the 18th century and the beginning of the 20th century. It tracks the development of new technologies and conditions of viewing—from the panorama to photography to early cinema—and situates those developments in relation to larger social, intellectual, and cultural shifts in our conceptions of subjectivity, collectivity, and the mechanics of optical perception. The visual material at the center of our discussions will include nineteenth- and twentieth-century photographs, as well as paintings, prints, film, and other forms of visual entertainment and ephemera. Prereq: one 400- or 500-level art history course; or instructor permission.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 694**Grade Mode:** Letter Grading**ARTH 695 - Topics in Art History****Credits:** 4

Topics and prerequisites to be announced before registration. May be repeatable twice with different topics. Prereq: one 400- or 500-level art history course; or instructor permission.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ARTS 695**Grade Mode:** Letter Grading**ARTH 697 - Topics in Asian Art****Credits:** 4

A thematic study of the major artistic achievements in India, China, and/or Japan from pre-history to the twentieth century. Works of art in various media, including painting, sculpture, ceramics, calligraphy, prints, architecture, and gardens, will be examined in relation to philosophical concepts and to their cultural/historical contexts. May be repeated twice with different topics. Prereq: one 400- or 500-level art history course ; or instructor permission.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ARTS 697**Grade Mode:** Letter Grading

**ARTH 699 - Museum Studies****Credits:** 4

Introduction to the history and practice of American museums, including their purposes, organization, interpretation, policies and practices. Use of the UNH Museum of Art with occasional visits to other museums and art conservators. This course may not be used by studio art/art ed or B.F.A majors to fulfill the art history requirements. Prereq: two courses in art history or instructor permission.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 699**Grade Mode:** Letter Grading**ARTH 700H - Honors Seminar in Art History****Credits:** 4 or 8

The thesis course involves substantial research in an original problem in art history. A 1-2 page written proposal needs to be endorsed by a faculty member and the Department Honors Committee. The thesis proposal identifies the specific goals, methodology, anticipated outcome, and general timeline and must be submitted the semester prior to the start of the project. Upon completion, the student and faculty mentor will present the thesis project to the Honors-in-Major Committee.

**Attributes:** Honors course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ARTS 700H**Grade Mode:** Letter Grading**ARTH 795 - Understanding Art History: An In-Depth Overview****Credits:** 4

Art history is by its nature interdisciplinary, and so this course, while it is intended as the capstone for art history majors, also welcomes voices (and eyes) from other disciplines. We will look at a variety of case studies addressing works of art and architecture, and students will research their own topics, in an effort to understand better the strengths and weaknesses of art historical thought, both past and present. Prereq: at least one 600-level or above art history course or equivalent experience.

**Attributes:** Writing Intensive Course**Equivalent(s):** ARTS 795**Grade Mode:** Letter Grading**ARTH 796 - Independent Study: Art History****Credits:** 1-4

Open to highly qualified juniors or seniors who have completed the advanced level courses. May be repeated for a maximum of 8 credits. Written proposal required and permission from supervising faculty member.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ARTS 796**Grade Mode:** Letter Grading**ARTH 799 - Seminar in Art History****Credits:** 4

Topics and prerequisites to be announced before registration. May be repeated with permission of instructor.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ARTS 799**Grade Mode:** Letter Grading

## Arts/History & Studio (ARTS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ARTS 455 - Architectural Design Studio****Credits:** 4

An entry level architectural design studio. Course assignments feature hand drafting, hand rendering, model building, and project presentations while developing skills in verbal, written, and graphic communication. Drafting, hand-rendering, and model making materials and tools are required for this course. Knowledge of CAD or 3-D computer modeling is not required.

**Grade Mode:** Letter Grading**ARTS 501 - Introductory Ceramics****Credits:** 4

Theory and practice of basic ceramics; includes all methods of basic construction, decoration, glazing, and kiln firing. Emphasis on each individual's perceptual development. Special fee. Lab.

**Grade Mode:** Letter Grading**ARTS 510 - Principles of Design****Credits:** 4

An introduction to the principles of design. Students will explore the foundational elements and processes of design principles found in the development of the fine and commercial arts. Lectures will explore the history of design concepts and movements, while studio/lab sessions will enable students to develop their own projects and animation designs. Students will develop basic proficiencies in design software programs.

**Attributes:** FinePerformingArts(Discovery)**Equivalent(s):** ARTS 401**Grade Mode:** Letter Grading**ARTS 525 - Introductory Woodworking****Credits:** 4

This course introduces students to the process of designing and building furniture with wood as the primary material. Students think creatively to brainstorm and develop their own, individual designs and use a variety of hand tools, power tools, and machines to build their objects. This course is a prerequisite to upper level woodworking and furniture design workshop courses, which subsequently investigate more sophisticated furniture concepts and woodworking techniques. Special fee. Studio.

**Attributes:** FinePerformingArts(Discovery)**Grade Mode:** Letter Grading**ARTS 532 - Introductory Drawing****Credits:** 4

This course is an introduction to the basic principles of studio drawing. Students work towards mastering the technical skills to produce drawings from observation, a working knowledge of the historical time line in drawing, and insight into the complexities of the creative process. A variety of materials are explored, pencil, charcoal, ink and collage. Art historical and contemporary drawing practices are shown in lectures and books to amplify the concepts introduced in the daily studio work. Special Fee.

**Attributes:** FinePerformingArts(Discovery)**Equivalent(s):** ARTS 532H**Grade Mode:** Letter Grading



**ARTS 532H - Honors/Introductory Drawing****Credits:** 4

This course is an introduction to the basic principles of studio drawing. Students work towards mastering the technical skills to produce drawings from observation, a working knowledge of the historical time line in drawing, and insight into the complexities of the creative process. A variety of materials are explored, pencil, charcoal, ink and collage. Art historical and contemporary drawing practices are shown in lectures and books to amplify the concepts introduced in the daily studio work. Special fee.

**Attributes:** FinePerformingArts(Discovery); Honors course**Equivalent(s):** ARTS 532**Grade Mode:** Letter Grading**ARTS 536 - Introduction Printmaking: Intaglio****Credits:** 4

Study of intaglio printmaking techniques, including etching, dry point, and engraving. Prereq: ARTS 532 or permission. Special fee. Lab.

**Grade Mode:** Letter Grading**ARTS 546 - Painting Design I: Perceptual Painting and Color Theory****Credits:** 4

Color is the central formal issue in painting. This course explores in some detail all basic aspects of color, introducing color terms and examining the meaning of color contrast. Students become familiar with the color wheel and perform color-mixing assignments. Ideas about color are related to paintings done in class based on a variety of subjects. Students receive training on the essential vocabulary of color (as well as materials, techniques, etc.). Lectures on great colorist, critiques and outside assignments are also featured as part of the studio routine of this course. Prereq: ARTS 532 Introductory Drawing. Special fee.

**Grade Mode:** Letter Grading**ARTS 551 - Introduction to Darkroom Photography****Credits:** 4

This studio course introduces the fundamentals of photographic practice. Students learn technical aspects of exposure, developing and printing in the darkroom as they explore and respond to the visual qualities of the medium. The format includes class demonstrations, lab work, field assignments and critiques. Manual 35mm film camera will be provided. Special fee.

**Grade Mode:** Letter Grading**ARTS 552 - Introductory Digital Photography****Credits:** 4

Introduction to the basic principles and applications of digital photography. The philosophical and technical relationship between camera and computer is an integral part of today's digital literacy needs. Techniques learned correspond to traditional darkroom processes and include creative shooting, editing and image manipulation. The students uses new skills and techniques towards developing a unique artistic vision. Digital camera required (point and shoot or DSLR). Special Fee.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**ARTS 567 - Introductory Sculpture****Credits:** 4

Introduces the beginning student to the theory and practice of designing three-dimensional compositions using a series of progressive assignments. The student develops a practical understanding of sculptural elements, including line, form, space, mass, and plane. Multiple materials are explored including clay, plaster, wire and wood. This course is a prerequisite to upper level sculpture workshop courses, which subsequently focus on in-depth investigations of a particular sculptural material. Special fee.

**Grade Mode:** Letter Grading**ARTS 596 - Special Topics in Studio Art****Credits:** 4

Introductory level topics to be announced before registration. Topics can be either a lecture or studio course. May be repeated with different topics.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**ARTS 598 - An Artist's Life****Credits:** 4

This course looks at the visual arts from the standpoint of artists. Biographies of artists and their environments are emphasized. Studio methods, professional activities, and ideas of historical and contemporary artists are also studied. The semester includes readings, discussions, and field trips. The course encourages students to develop ideas about the relationship of the visual arts to other disciplines in fine arts, literature and the sciences.

**Attributes:** Inquiry (Discovery)**Grade Mode:** Letter Grading**ARTS 600 - Internship in Studio Art****Credits:** 1-4

Internship can be taken for university elective credits or can be applied to a major concentration requirement with approval. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ARTS 601 - Ceramics Workshop****Credits:** 4

Application of new ceramic materials and techniques, with emphasis on ideas and their expression through form and content. Experimentation encouraged. Specific focus to be announced each semester. Prereq: ARTS 501. Special fee. Lab.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Equivalent(s):** ARTS 502**Grade Mode:** Letter Grading**ARTS 610 - Principles of Typography****Credits:** 4

Introduction to the principles of typography. Students will explore the foundational elements and processes of typographic principles used in graphic design and publishing. Lectures will explore the history of typographic concepts and movements, while studio/lab sessions will enable students to develop their own projects and typographic designs. Students will develop basic proficiencies in design software programs.

**Grade Mode:** Letter Grading

**ARTS 611 - Animation and Motion Design****Credits:** 4

This course is an introduction to animation and motion design, and will cover the history and aesthetics of animation and motion design, ways to think in time and space, techniques and methods for planning motion sequences, how to create and use storyboards and scripts, how to use live action video footage in your designs, and the use of motion-specific industry-standard software tools (AfterEffects, Flash, Premier and others).

**Grade Mode:** Letter Grading**ARTS 612 - Interaction & Game Design****Credits:** 4

This course is an exploration of the principles of interaction design as they relate to physical and digital space, with a focus on designing user-centered artifacts, games, and experiences. Theoretical concepts like ethnography, user-testing, and the use of mapping in design will be explored. We will also examine the landscape of technology as it relates to interaction, and the use of appropriate tools and software to create prototypes and functioning digital designs.

**Grade Mode:** Letter Grading**ARTS 613 - Design and Place****Credits:** 4

This course is an exploration of designing objects and experiences for spaces and places, both physical and digital. This branch of design is known as experiential and/or environmental graphic design. Lectures will focus on wayfinding, sense making, accessibility and universal design, and others. Studio work will engage students in creating projects like signage systems, exhibition design, packaging and design for retail spaces, and 3-dimensional digital spaces.

**Grade Mode:** Letter Grading**ARTS 614 - Design and People****Credits:** 4

An exploration of designing with and for people and communities. How do designers create work for specific audiences, and how do they collaborate with people to make useful designs? Lectures will explore communication theory, user observation and ethnography, participatory design, modes of persuasion, system design, sustainability, how to design for niche audiences, and others. Studio work will focus on connecting students to specific audiences to create design projects that solve problems or address social issues.

**Grade Mode:** Letter Grading**ARTS 625 - Wood/Furniture Design Workshop****Credits:** 4

In this studio course students learn how to design and build furniture and non-functional objects using a variety of techniques, hand tools, and machines. Emphasis is on challenging and exploring creativity to examine preconceived ideas about what furniture forms should look like while developing a solid understanding of various techniques. Prereq: ARTS 525 Introductory Woodworking. Special fee.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Grade Mode:** Letter Grading**ARTS 632 - Intermediate Drawing****Credits:** 4

Intermediate Drawing reinforces and builds upon skills developed in Introductory Drawing. Strong emphasis is given to resolving spatial relationships and composition (examination of 2D and 3D space). Line as abstraction, gesture, tonal development, perspective, and drawing from the human figure are important topics of this course. Materials such as graphite, charcoal, ink, and mixed media are covered, as well as the use of different papers. Outside assignments and class critiques play an expanded role. Prereq: ARTS 532 Introductory Drawing. Special fee.

**Grade Mode:** Letter Grading**ARTS 633 - Life Drawing****Credits:** 4

A continuation of the more formal aesthetic issues introduced in introductory and intermediate drawing with an emphasis on drawing the human figure from life. Prereq: ARTS 532 Introductory Drawing. Lab. Special fee.

**Grade Mode:** Letter Grading**ARTS 636 - Printmaking Workshop****Credits:** 4

Emphasis on development of the individual's imagery in lithography and/or intaglio, including an introduction to multicolor printmaking. Prereq: ARTS 536 and/or ARTS 537.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Grade Mode:** Letter Grading**ARTS 646 - Painting Design II: Perceptual Painting and the Individual Artist's Vision****Credits:** 4

Students paint in class and begin to consider the character of their own work as artists. Themes related to color development are explored further. Teachers of this course help students understand the stylistic attributes of great artists/mentors. Lectures, demonstrations, outside assignments, and class critiques continue to augment the daily regime of class painting. Other painting media besides oil paint (acrylic, water media) may be featured in the class. Prereq: ARTS 546 Painting and Color Theory. Special fee.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ARTS 651 - Photography Workshop****Credits:** 4

Individualized projects involving creative methods, including color, manipulative, and documentary techniques. Students provide their own cameras. Prereq: ARTS 551 Photography: Darkroom AND ARTS 552 Digital Photography. Lab. Special fee.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Grade Mode:** Letter Grading**ARTS 667 - Sculpture Workshop****Credits:** 4

Design and production of sculpture focusing on various materials and techniques and how they relate to composition and content. Emphasis on understanding visual language while developing an individual style. Prereq: ARTS 567. Special fee. Lab.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading

**ARTS 696 - Special Topics in Studio Art****Credits:** 4

Topics and prerequisites to be announced before registration. May be repeated with different topics.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**ARTS 700H - Honors Seminar****Credits:** 4 or 8

The studio art honors thesis course involves a significant independent body of work. A 1-2 page written proposal that identifies the specific goals, methodology, anticipated outcome, and general timeline needs to be endorsed by a faculty member and the Department Honors Committee and must be submitted the semester prior to the start of the project.

Upon completion, the thesis project and a written artist statement will be presented to the Honors-in-Major Committee. Senior BFA majors can designate ARTS 798 Thesis Seminar as honors in place for ARTS 700H.

**Attributes:** Honors course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ARTS 732 - Advanced Drawing****Credits:** 4

Treatment of more complex compositional problems; application of a broader range of solutions to pictorial problems to reinforce and expand individual concepts of image and technique. Prereq: ARTS 632 Intermediate Drawing and ARTS 633 Life Drawing. Lab. Special fee.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**ARTS 746 - Painting Design III: Perceptual Painting and Narrative Themes****Credits:** 4

Daily class routine remains grounded in practical aspects of color development, technique, and formal mastery. Outside assignments begin to stress narrative motives in a variety of assignments that present the student with opportunities to explore ideas. A higher level of ambition is encouraged in the student/artist. Prereq: ARTS 646 Painting and the Artist's Vision (8 credits). Special fee.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**ARTS 791 - Art Education (Elementary)****Credits:** 4

Children's creative growth as revealed through their visual expression. Development of elementary art education programs with emphasis on objectives, methods, materials and techniques to foster creativity. Suggested prereq: EDUC 500.

**Grade Mode:** Letter Grading**ARTS 792 - Art Education (Secondary)****Credits:** 4

The creative process in the visual arts in relation to the development and skills of middle and high school students in the public schools; mechanics of beginning and maintaining a secondary art program; exploring resources for art education programs on the secondary level. Suggested prereq: EDUC 500.

**Grade Mode:** Letter Grading**ARTS 796 - Independent Study: Studio Art****Credits:** 1-8

Open to highly qualified juniors or seniors who have completed the advanced level courses. May be repeated for a maximum of 12 credits with no more than 8 credits in a single medium. Same term multi-enrollment in different media only. A) Photography, B) Sculpture, C) Drawing, D) Painting, E) Printmaking, F) Watermedia, G) Design, H) Architectural Design, J) Ceramics, K) Wood Design. Special fee in some mediums. Written proposal and permission required.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**ARTS 798 - Seminar/Senior Thesis****Credits:** 4-8

Readings and discussions oriented toward the intellectual premises of art. Culminates in mounting an exhibition of the student's work. Required of all students in the B.F.A program. Other advanced students may elect with instructor's permission. A year-long course; an IA grade (continuous course) will be given at the end of the first semester. Lab. B.F.A. majors must take 8 credits total. Special fee for Photography students.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Athletic Training (AT)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**AT 506 - Concepts of Athletic Training****Credits:** 4

Introduces techniques for prevention, recognition, treatment, and rehabilitation of common athletic injuries. Course is a prerequisite for beginning clinical experience in athletic training rooms for the athletic training professional. Prereq: BMS 507.

**Co-requisite:** AT 507**Equivalent(s):** KIN 506**Grade Mode:** Letter Grading**AT 507 - Concepts of Athletic Training Lab****Credits:** 1

Theory and techniques of protective taping and wrapping to prevent common athletic injuries. Techniques of transfer and transportation of injured athletes. Identification of anatomical landmarks. Observation and practice in the University athletic training rooms. Special fee.

**Co-requisite:** AT 506**Equivalent(s):** KIN 507**Grade Mode:** Letter Grading**AT 658 - Evaluation and Care of Athletic Training Injury I****Credits:** 4

Factors involved in the care and recognition of athletic injuries. Mechanisms, etiology, and pathology. Clinical signs and symptoms. Techniques for performing appropriate test and assessment procedures. First aid procedures. Emphasizes fractures, soft tissue injury, and the lower extremities. Prereq: AT 506; BMS 507 and BMS 508.

**Co-requisite:** AT 658L**Attributes:** Writing Intensive Course**Equivalent(s):** KIN 658**Grade Mode:** Letter Grading

**AT 658L - Evaluation and Care of Athletic Training I Lab****Credits:** 1

Techniques and practice for performing test and assessment procedures for athletic injuries. Prereq: AT 507.

**Co-requisite:** AT 658**Equivalent(s):** KIN 658L**Grade Mode:** Letter Grading**AT 659 - Evaluation and Care of Athletic Training II****Credits:** 4

Factors involved in the care and recognition of athletic injuries. Mechanisms, etiology, and pathology. Clinical signs and symptoms. Techniques for performing appropriate test and assessment procedures. First aid procedures. Emphasizes upper extremities, head, and trunk. Prereq: AT 506; BMS 507 and BMS 508.

**Co-requisite:** AT 659L**Attributes:** Writing Intensive Course**Equivalent(s):** KIN 659**Grade Mode:** Letter Grading**AT 659L - Evaluation and Care of Athletic Training II Lab****Credits:** 1

Techniques and practice for performing test and assessment procedures for athletic injuries. Prereq: AT 507.

**Co-requisite:** AT 659**Equivalent(s):** KIN 659L**Grade Mode:** Letter Grading**AT 660 - Therapeutic Exercise in Athletic Training****Credits:** 4

Rationale, use, and application of exercise in athletic injury rehabilitation. Basic components of designing and implementing rehab programs. Assessment of physical/injury status.

**Co-requisite:** AT 661**Equivalent(s):** KIN 660**Grade Mode:** Letter Grading**AT 661 - Therapeutic Exercise in Athletic Training Lab****Credits:** 1

Students learn and practice psychomotor techniques associated with rehabilitative and conditioning exercise.

**Co-requisite:** AT 660**Equivalent(s):** KIN 660**Grade Mode:** Letter Grading**AT 662 - Therapeutic Modalities in Athletic Training****Credits:** 4

Rationale, use, and application of therapeutic modalities in athletic injury rehabilitation. Principles of electrophysics and biophysics. Physiological effects on body tissues, indications and contraindications, and clinical applications. Prereq: AT 506; AT 507.

**Co-requisite:** AT 663**Equivalent(s):** KIN 662**Grade Mode:** Letter Grading**AT 663 - Therapeutic Modalities in Athletic Training Lab****Credits:** 1

Students use and practice with the devices, machines, and techniques associated with the treatment and rehabilitation of athletic injuries.

**Co-requisite:** AT 662**Equivalent(s):** KIN 663**Grade Mode:** Letter Grading**AT 665 - Laboratory Practicum in Athletic Training****Credits:** 2

Clinical experience in athletic training under the supervision of UNH approved clinical instructor. Special fees (sections A-E). 2 credits (per section - 5 sections total). AT 665A Prereq: AT 506 and AT 507. AT 665B Prereq: AT 658, and AT 662. AT 665C Prereq: AT 659 and AT 660. AT 665D Co- or Prereq: AT 710. AT 665E Prereq: AT 665D.

**Repeat Rule:** May be repeated for a maximum of 10 credits.**Equivalent(s):** KIN 665**Grade Mode:** Letter Grading**AT 667 - Pharmacology for Athletic Training****Credits:** 2

Introduces the use of drugs as they pertain to the health care of athletes and their effect on athletic competition. Topics to be covered will include basic drug action, commonly prescribed medications, dealing with the diabetic and asthmatic athlete and performance enhancing substances. Prereq: junior or senior Standing.

**Equivalent(s):** KIN 667**Grade Mode:** Letter Grading**AT 670 - General Medical Conditions in Athletics****Credits:** 4

Athletes often sustain non-orthopedic pathologic conditions. An athletic trainer must be able to recognize, assess, and determine appropriate action or referral in an athlete suffering general or systemic illness or disease. Covers conditions affecting the major systems of the body. Prereq: EXSC 620.

**Equivalent(s):** KIN 670**Grade Mode:** Letter Grading**AT 693 - Teaching Assistantship****Credits:** 2

Students serve as teaching assistants in assigned class activities. Assignments to be made by the class instructor may include teaching assistants' and administrative duties. May take two different sections. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Credit/Fail Grading**AT 696 - Independent Study****Credits:** 2-4

An advanced, individual scholarly project under the direct supervision of a faculty member. Prereq: junior or senior.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

**AT #696W - Independent Study****Credits:** 2-4

An advanced, writing-intensive, individual scholarly project under the direct supervision of a faculty member. Student and Faculty Adviser will prepare a written proposal that outlines: the questions to be pursued, the methods of investigation, the student's qualifications to conduct the research, the nature of the finished written product (e.g. case study, position paper, extended lab report). This proposal must be approved by the major faculty and the department chair prior to the student's registration for AT 696 WI. All AT 696 WI projects must include: Some forms of informal, ungraded writing such as a journal, reading summaries, draft chapters, or invention activities. Regular writing interaction between student and faculty adviser (i.e. at least weekly or biweekly), to include written feedback from the adviser. A finished product that is polished via revision. Faculty sponsors and students should consult the resources and guidelines of the UNH Writing Program. Prereq: junior or senior; departmental approval.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**AT 699H - Honors Project****Credits:** 4

Project first involves tutorial sessions to introduce the student to the experimental design, after which a research question is developed. After an appropriate literature review, the student collects and analyzes data, forms conclusions, and prepares a written report on the findings.

**Attributes:** Honors course**Grade Mode:** Letter Grading**AT 710 - Organization and Administration of Athletic Training Programs****Credits:** 4

Principles of organization and administration of athletic training programs; management of personnel; legal aspects; relation of athletic trainer to athletic programs and sports medicine team.

**Attributes:** Writing Intensive Course**Equivalent(s):** KIN 710**Grade Mode:** Letter Grading**AT 715 - Seminar in Athletic Training****Credits:** 4

Career issues and special topics in athletic training. Students are required to submit and present a term project on assigned topic. Prereq: AT 665C.

**Equivalent(s):** KIN 715**Grade Mode:** Letter Grading**AT 718 - Career Preparation in Athletic Training****Credits:** 4

The last Athletic Training required course, and designated "Capstone Experience", this course is designed to provide the students with means to integrate and augment concepts, skills, and knowledge gained in all previous major course requirements. Students write an evidenced-based practice paper understanding and appreciating the role of evidence-based medicine in athletic training. Comprehensive practical exam. Prereq: AT 665, sections A-D. Athletic Training majors only.

**Equivalent(s):** KIN 718**Grade Mode:** Letter Grading

## Biochemistry, Molecular & Cellular Biology (BMCB)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**BMCB 401 - Professional Perspectives in Biochemistry, Molecular and Cellular Biology****Credits:** 1

Introduction to the fields of biochemistry, molecular and cellular biology. Explores professional opportunities for BMCB majors. Guest speakers from on- and off-campus present seminars and lead discussions on contemporary issues in subject area. Development of strategies for achieving professional goals. Cr/F.

**Grade Mode:** Credit/Fail Grading**BMCB #405 - Biotechnology Research Internship****Credits:** 2

A 4-week (minimum) experiential learning internship in which students conduct independent laboratory-based research in an area of shared interest with a faculty mentor in the College of Life Sciences and Agriculture. Students gain first-hand experience conducting original research, incorporating direct observation, reflection, evaluation, and discussion. Permission required. Open to high school students only.

**Grade Mode:** Credit/Fail Grading**BMCB 501 - Biological Chemistry****Credits:** 4

Survey of the molecular basis of life with a focus on the mechanisms of biochemical reactions in metabolic pathways, beginning with an overview of functional groups and organic reactions relevant for living organisms. Bioenergetics of carbohydrate, lipid, and nitrogen metabolic pathways. Prereq: CHEM 403 and CHEM 404, or CHEM 411.

**Mutual Exclusion:** No credit for students who have taken BMCB 658, BMCB 751, BMCB 752.

**Grade Mode:** Letter Grading**BMCB 605 - Principles of Cell Biology****Credits:** 4

Cell and developmental biology of multicellular eukaryotic organisms. Structure and function of major cellular compartments; mechanisms of cellular communication and dynamics; embryonic development. Special topics: subcellular organization and function; membrane biogenesis; signal transduction; mitogenesis; apoptosis; autophagy; tumor suppressors and cell cycle regulation; cytokinesis; cytoskeletal dynamics; cellular shape and motility; stem cell biology; organogenesis; morphogenesis and patterning. Prereq: BIOL 411 and BIOL 412; CHEM 403 and CHEM 404.

**Equivalent(s):** BIOL 605, BSCI #735**Grade Mode:** Letter Grading**BMCB 658 - General Biochemistry****Credits:** 3

Comprehensive, introductory course emphasizing the cellular metabolism and the structure and function of proteins, nucleic acids, carbohydrates, and lipids. Prereq: BIOL 411; CHEM 545 and CHEM 546, or CHEM 547 and CHEM 548, or CHEM 651 and CHEM 652.

**Co-requisite:** BMCB 659**Equivalent(s):** BMCB 658A**Mutual Exclusion:** No credit for students who have taken BMCB 501.**Grade Mode:** Letter Grading



**BMCB 658A - General Biochemistry****Credits:** 3

Comprehensive, introductory course emphasizing the cellular metabolism and the structure and function of proteins, nucleic acids, carbohydrates, and lipids. This course is intended for programs that do not require a biochemistry laboratory. Prereq: BIOL 411; CHEM 545 and CHEM 546, or CHEM 547 and CHEM 548, or CHEM 651 and CHEM 652.

**Equivalent(s):** BMCB 658**Grade Mode:** Letter Grading**BMCB 659 - General Biochemistry Lab****Credits:** 2

Structured laboratory experiments that provide training in analytical and preparative techniques fundamental to modern biochemistry and molecular biology. Coreq: BMCB 658. Special fee.

**Co-requisite:** BMCB 658**Equivalent(s):** BCHM 659, BMCB 659W**Grade Mode:** Letter Grading**BMCB 659W - General Biochemistry Lab****Credits:** 2

Structured laboratory experiments that provide training in analytical and preparative techniques fundamental to modern biochemistry and molecular biology. Coreq: BMCB 658. Special fee. UNHM only. Writing intensive.

**Co-requisite:** BMCB 658**Attributes:** Writing Intensive Course**Equivalent(s):** BCHM 659, BMCB 659**Grade Mode:** Letter Grading**BMCB 750 - Physical Biochemistry****Credits:** 3

Structure, interactions, and physical-chemical properties of biomolecules. Thermodynamic, kinetic, and spectroscopic methods for the study of proteins and nucleic acids. Prereq: CHEM 547 and CHEM 549 and CHEM 548 and CHEM 550 or equivalent; MATH 424B or equivalent; or permission.

**Equivalent(s):** BCHM 750**Grade Mode:** Letter Grading**BMCB 751 - Principles of Biochemistry****Credits:** 4

In-depth survey of biochemistry: macromolecular structure; structure and function of proteins, nucleic acids, carbohydrates, and lipids; introduction to metabolic pathways. Prereq: CHEM 547 and CHEM 548, or CHEM 651 and CHEM 652; or permission.

**Equivalent(s):** BCHM 751**Mutual Exclusion:** No credit for students who have taken BMCB 501.**Grade Mode:** Letter Grading**BMCB 752 - Principles of Biochemistry****Credits:** 4

In-depth survey of biochemistry: metabolism of amino acids, nucleotides, carbohydrates and lipids; synthesis and regulation of macromolecules; molecular biology of the eukaryotic cell. Prereq: BMCB 751 or permission.

**Equivalent(s):** BCHM 752**Mutual Exclusion:** No credit for students who have taken BMCB 501.**Grade Mode:** Letter Grading**BMCB 753 - Cell Culture****Credits:** 5

Principles and technical skills fundamental to the culture of animal and plant cells, tissues, and organs. Introduction to the techniques of sub-culturing, establishing primary cultures, karyotyping, serum testing, cloning, growth curves, cryopreservation, hybridoma formation and monoclonal antibody production, and organ cultures. Application of cell culture to contemporary research in the biological sciences. Prereq: BMS 503 and 504. Special fee. Lab.

**Equivalent(s):** ANSC 751, MICR 751, PBIO 751**Grade Mode:** Letter Grading**BMCB 754 - Molecular Biology Research Methods****Credits:** 5

Theory and application of current technologies to manipulate DNA. Hands-on research experience that includes DNA isolation and quantitation methods, cloning, PCR, DNA sequencing, and analysis of gene products. Prereq: GEN 604. Special fee. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** BCHM 754, BSCI 765, GEN 754, PBIO 754**Grade Mode:** Letter Grading**BMCB 755 - Protein Biochemistry Laboratory****Credits:** 5

Application of modern approaches to the characterization and purification of proteins. Emphasis on recombinant protein production and purification, analytical techniques for characterization of proteins, enzyme kinetics, and molecular visualization of protein structure. Prereq: one semester of biochemistry or permission. Special Fee.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**BMCB 760 - Pharmacology****Credits:** 4

Introduction to the basic principles and fundamental concepts of pharmacology, with a focus on molecular mechanisms and pathological basis of therapeutics and their curative effects. Topics include: foundations of pharmacology including pharmacodynamics and pharmacogenomics; drugs affecting other systems; chemotherapeutic drugs. Prereq: BMCB 658 or BMCB 751, or permission.

**Mutual Exclusion:** No credit for students who have taken BSCI 680.**Grade Mode:** Letter Grading**BMCB 763 - Biochemistry of Cancer****Credits:** 4

Evaluation of the hallmarks of cancer, including molecular mechanisms of carcinogenesis, roles of oncogenes and dysregulated cell development, function and metabolism, tumor immunology, and the biological basis of cancer therapy. Prereq: BMCB 658 or BMCB 751 or permission.

**Equivalent(s):** BCHM 763**Grade Mode:** Letter Grading**BMCB 790 - Undergraduate Teaching Experience****Credits:** 1-4

Provide academic support to graduate teaching assistants or faculty in preparing, presenting, and executing Biochemistry, Molecular and Cellular Biology lectures or labs. Permission required.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Letter Grading

**BMCB 794 - Protein Structure and Function****Credits:** 4

Analysis of how the three-dimensional architecture of soluble and membrane proteins contributes to their biochemical function; methods for determining the structure of proteins; protein folding; protein targeting; mechanisms of enzyme catalysis. Computer resources used for protein modeling and structural prediction. Prereq: BMCB 658 or BMCB 751 or permission.

**Equivalent(s):** BCHM 794**Grade Mode:** Letter Grading**BMCB 795 - Investigations in Molecular and Cellular Biology****Credits:** 1-4

Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply advanced knowledge and techniques of the major to a specific problem or question. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** BCHM 795, BCHM 795W, BMCB 795W**Grade Mode:** Letter Grading**BMCB 795W - Investigations in Molecular and Cellular Biology****Credits:** 1-4

Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply advanced knowledge and techniques of the major to a specific problem or question. Permission required.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** BCHM 795, BCHM 795W, BMCB 795**Grade Mode:** Letter Grading**BMCB 799 - Senior Thesis****Credits:** 1-4

Independent research project under the direction of a faculty sponsor for seniors in biochemistry, molecular and cellular biology. Final product is a written thesis. One or two semesters. Permission required.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** BCHM 699, BCHM 799, BCHM 799H, BMCB 799H**Grade Mode:** Letter Grading**BMCB 799H - Honors Senior Thesis****Credits:** 1-4

Independent research project under the direction of a faculty sponsor for seniors in biochemistry, molecular and cellular biology and in the Honors Program. Final product is a written thesis. One or two semesters. Permission required.

**Attributes:** Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** BCHM 799, BCHM 799H, BMCB 799**Grade Mode:** Letter Grading

## Bioengineering (BENG)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**BENG 725 - Cell Phenotyping and Tissue Engineering Laboratory****Credits:** 4

Introduction to culture and phenotyping of mammalian cells (cell line models), with applications to bioengineering and biomedical sciences. Skills, techniques, and knowledge covered include sterile technique, cell culture, cell line models, cell proliferation, cell survival, cell migration, cell adhesion, and drug response. Inquiry-based team projects investigate cell proliferation, cell death, transfection, flow cytometry, 3D scaffolds, or cell imaging. Prereq: BMS 503/504 or permission.

**Grade Mode:** Letter Grading**BENG 755 - Computational Molecular Bioengineering****Credits:** 4

Introduction to fundamental concepts in bioengineering with primary emphasis on understanding details of biomolecular structures integrated with molecular modeling, simulation, and visualization techniques. The course will introduce structural details of various biomolecules (proteins, nucleic-acids, sugars, and lipids), followed by concepts in thermodynamics and physical chemistry (such as intermolecular forces, energy, entropy, chemical potential, and Boltzmann's distribution), the applications of which will be discussed in the context of drug-receptor interactions, molecular recognition, biomolecular folding, enzyme catalysis, allosteric communication, diffusion, and transport. The laboratory will include training and learning about advanced simulation and visualization software engines. Preference will be given to bioengineering majors.

**Grade Mode:** Letter Grading**BENG 762 - Biomedical Engineering****Credits:** 4

Overview of the biomedical engineering through topical studies such as drug delivery and sensors. Discussion of modern engineering methods through primary research sources. Prereq: differential equations and statistics. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** CHE 762**Grade Mode:** Letter Grading**BENG 763 - Bioengineering Design I****Credits:** 2

Bioengineering design course will cover safety, regulations and ethics for development of bioengineering devices and processes. Topics include product design, benchmarks, design team functioning, marketing and finances. Students will also learn about current Good Manufacturing Practices, process validation and intellectual property considerations. Students will produce the following documents during the course: preliminary design, materials and supplies list, project schedule and budget, innovation map, FDA approval plan.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**BENG 764 - Bioengineering Design II****Credits:** 4

Team based laboratory course focuses on developing the project planned in BENG 763. Major report is due at mid-semester after first prototype is completed. A second report is due at the end of the semester to indicate improvements on initial design. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**BENG 766 - Biomaterials****Credits:** 4

Fundamental principles of biology and material science, along with latest topics in biomaterials research. Topics include cell biology, wound healing, host response to foreign materials, polymers, hydrogels, diffusion and methods of material characterization. Specific medical applications of biomaterials such as orthopedic and dental implants, heart valves, artificial blood vessels, cochlear and ophthalmic implants and tissue engineering. Laboratory. Students are expected to have some background in chemistry, mathematics, and high school biology. Also listed as CHE 766.

**Equivalent(s):** CHE 766**Grade Mode:** Letter Grading

## Biological Science (BSCI)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**BSCI 401 - The Secret Lives of Whales****Credits:** 4

The evolution and classification of whales living in their global ocean ecosystem will be investigated along with the influence and impact of humans on whale populations throughout history. Current research methods used to perform whale research will be presented. The implementation and current status of the effects of regulation, enforcement, management on the conservation of whale populations will be discussed. The impact of climate change, pollution and ocean water quality will be investigated.

**Attributes:** Biological Science(Discovery)**Grade Mode:** Letter Grading**BSCI #406 - Human Organism****Credits:** 0 or 4

Survey of biological chemistry, molecular and cell biology, and major plant and animal systems. Emphasis on basic biological principles. For non-biological science majors. Lecture and Lab. Cannot be taken for credit after completion of BIOL 412, BIOL 414, or equivalent. No credit for students who have completed BIOL 406. Special fee. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Equivalent(s):** BIOL 406**Grade Mode:** Letter Grading**BSCI 410 - Contemporary Health Issues****Credits:** 4

This course exposes students to the three major dimensions of health - physical, emotional, and social. Nutrition, infectious diseases, substance abuse and addiction, mental health, sexual health, aging and stress management are among the issues that will be discussed. Students will learn to intelligently relate health knowledge to the social issues of the day.

**Attributes:** Biological Science(Discovery)**Grade Mode:** Letter Grading**BSCI 421 - Diseases of the 21st Century****Credits:** 4

Provides a basic understanding of several different diseases that may be prevalent over the next century. Treatment and prevention of the disease are also discussed. Students will acquire a basic understanding of the research methodologies underlying several fields within the biological sciences, such as microbiology, immunology, and molecular biology.

Agents of biological warfare are also discussed. Prereq: ENGL 401.

**Attributes:** Biological Science(Discovery)**Equivalent(s):** UMST 599G**Grade Mode:** Letter Grading**BSCI 432 - Medical Terminology****Credits:** 2

This course is an introduction to medical terminology. The origin, roots, prefixes and suffixes of common scientific and medical terms are examined. Course is totally online and includes assigned online interactive material. Appropriate for biology majors, prePA, premed, and other interested majors.

**Grade Mode:** Letter Grading**BSCI 450 - The Small Microbial World****Credits:** 0 or 4

An introduction to the invisible world of microbes and microorganisms and their impact on human life and ecosystems. Laboratory will be an opportunity for science and non-science students to learn the scientific method while they participate in citizen or crowdsourced science and contribute to scientific knowledge. Vaccines, antibiotics, and other topics will be presented. Special fee.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Grade Mode:** Letter Grading**BSCI 599 - Special Topics in Biology****Credits:** 1-4

This course explores and investigates topics in biology that would not normally be covered in other courses in the curriculum.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**BSCI 620 - Global Science Exploration****Credits:** 4

This course includes a spring break trip abroad investigating living organisms in their natural habitat. Students will participate in pre-trip seminars on the country, local flora, fauna and habitats they will visit. Students will design a project to integrate their personal interests and objections with in-country investigation. Post-trip seminar will focus on preparation of project and its presentation. Prereq: BIOL 413 and 414, or BIOL 411 and 412. Permission required. May be repeated if the spring break trip is to a different country.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

**BSCI 650 - Antibiotic Discovery****Credits:** 0 or 4

Advanced students with microbiology experience will participate in a research project focused on the discovery of novel antibodies from soil bacteria. Each student will work with faculty to generate hypotheses and carry out one or more short antibiotic discovery and/or antibacterial chemical experiments. Satisfies the Advanced Microbiology requirement for Biotechnology majors. Prereq: (BMS 503 with a minimum grade of C- and BMS 504 with a minimum grade of C-) or BSCI 450 with a minimum grade of C-. No credit earned if previously taken BSCI 797/Antibiotic Discov Research and BSCI 798/Antibiotic Discovery. Special Fee.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**BSCI 670 - Clinical Pathophysiology****Credits:** 4

This course covers the principles and mechanisms of disease at the cellular, tissue, organ, and system levels, including responses to cell injury, death and adaptation, and inflammation. Acute and chronic disease processes as well as trauma are used to both understand the impact of these processes on body function as well as a means to gain a better understanding of integrative body systems. No credit if credit earned for BMS 794 or UMST 599 Clinical Pathophysiology. Prereq: BIOL 413 and BIOL 414 or BMS 507 and BMS 508.

**Equivalent(s):** BMS 704**Grade Mode:** Letter Grading**BSCI 680 - Pharmacology****Credits:** 4

This course is designed to cover the concepts of basic pharmacology and drug therapy. It includes examination of the body systems and the related drugs therapy within each system. It explores the basic drug groups, key similarities and differences among drugs in each group. Emphasis is placed on the mechanism of action for each group and how these medications act in relation to normative and pathophysiology. The therapeutic use and adverse effects of drugs as well as understanding recreational drug use will be included. No credit if credit received for UMST 599 Pharmacology. Prereq: BIOL 413 and BIOL 414 or BMS 507 and BMS 508.

**Mutual Exclusion:** No credit for students who have taken BMCB 760.**Grade Mode:** Letter Grading**BSCI 692 - Evolutionary Medicine****Credits:** 4

This course introduces the theory of evolution by natural selection and the influence of evolutionary theory on our understanding of the cause and treatment of human disease. Topics covered include evolutionary theory, natural selection, human evolution, pathogen evolution, evolutionary mismatch, and the evolution of aging, cancer, and reproduction. Prereq: GEN 604 or permission of the instructor. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**BSCI 695 - Exploring Biology Teaching****Credits:** 1-4

Students assist in teaching labs in undergraduate courses supervised by the lab coordinator/instructor. Responsibilities include facilitating lab endeavors, giving a presentation, and writing a report. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** BIOL 695**Grade Mode:** Letter Grading**BSCI 701 - Senior Seminar I****Credits:** 1

To be taken during the last two semesters of the senior year as students complete their Capstone project. Course emphasizes written and oral communication, discussion of current topics in biology, and career guidance. Fall and spring semester. Cr/F.

**Grade Mode:** Credit/Fail Grading**BSCI #735 - Cell Biology****Credits:** 4

This course is an upper level biology class that expands on the basic knowledge of cellular structure and function. The focus is on molecular biology and cell signaling. Experiments by preeminent scientists are explored and analyzed. Prereq: BIOL 413 and BIOL 414, CHEM 403 and CHEM 404, or equivalent.

**Equivalent(s):** BMCB 605**Grade Mode:** Letter Grading**BSCI 737 - Microbial Genomics****Credits:** 0 or 4

Microbial genomics (primarily bacteria and bacteriophages) and genome-scale approaches to addressing questions in microbial physiology and pathogenesis are the focus of the course. Large-scale sequencing projects, genome structure and evolution, metagenomics, and other challenges in comparative genomics are discussed. Hands-on wet laboratory and bioinformatics projects are included in this laboratory-lecture course. Prereq: GEN 604, BMS 503 and BMS 504. Special fee.

**Grade Mode:** Letter Grading**BSCI 740 - Aquatic Microbiology****Credits:** 4

Lectures and labs focus on Lake Massabesic and its use as the source of supply as the drinking water for approximately 160,000 New Hampshire residents. The course covers a basic history of the Lake, the importance of watershed protection, EPA regulations, and standards and the various techniques and methods available to analyze water for basic quality.

No credit for students who have earned credit for UMST 599 Aquatic Microbiology. Prereq: BMS 503 and BMS 504. Permission. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**BSCI 750 - Cancer Biology: From Benchtop Research to Therapeutic Interventions****Credits:** 4

The development and progression of cancer can be defined by several molecular and cellular biological characteristics. In this course, we will utilize primary literature to begin to understand (1) how specific cellular processes are altered during cancer initiation and progression; (2) how different cancers and the genetic landscape underlying them are being studied using models in the laboratory; and (3) how innovative therapeutics are being designed to target tumors based upon their individual molecular signatures. Prereq: GEN 604.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**BSCI 792 - Research****Credits:** 1-4

Advanced independent research under the direction of a faculty mentor. Content area to be determined in consultation with faculty member. Prereq: permission. Up to 4 credits may be applied to self-designed concentration. Up to 4 credits may be applied to the Capstone requirement. Fall and spring semester. Prereq: Permission of Faculty mentor. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**BSCI 793 - Internship****Credits:** 1-4

Field-based learning opportunities in the biological sciences through placement in the appropriate outside agency, under the direction of a faculty mentor and representative of outside agency. Content area to be determined in consultation with faculty mentor. Prereq: Permission. Up to 4 credits may be applied to self-designed concentration. Up to 4 credits may be applied to the Capstone requirement. Fall and spring semester. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**BSCI #794 - Clinical Microbiology Internship****Credits:** 4

Advanced instruction in clinical bacteriology, mycology, parasitology, and/or virology at a local hospital or reference laboratory. Isolation, identification, determination of antibiotic sensitivities, and modern advanced testing for common pathogens are emphasized. Prereq: BMS 602 and permission of instructor.

**Equivalent(s):** BMS 751, BMS 761**Grade Mode:** Credit/Fail Grading**BSCI 795 - Independent Study****Credits:** 1-4

Advanced individual study under the direction of a faculty mentor. Content area to be determined in consultation with faculty mentor. Prereq: permission. Up to 4 credits may be applied to self-designed concentration. Up to 4 credits may be applied to the Capstone requirement. Fall and spring semester. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**BSCI 797 - Special Topics in Biology****Credits:** 1-4

This course explores and investigates topics in biology and biotechnology that would not normally be covered in other courses in the curriculum.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**BSCI 798 - Special Laboratory Topics in Biology****Credits:** 0-4

This laboratory course explores and investigates advanced topics in biology that would not normally be covered in other courses in the curriculum.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading

## Biology (BIOL)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**BIOL 400 - Professional Perspectives on Biology****Credits:** 1

Where can a degree in biology take me? This course views the scope of biology and explores professional opportunities for biological science majors. Guest speakers from on- and off-campus present seminars and lead discussions on contemporary issues in biology. This course will help you learn the skills required to succeed in biology and develop strategies for college success. Today, the field is multidimensional, offering many career opportunities for the future. Required for all first semester biology majors. Cr/F.

**Grade Mode:** Credit/Fail Grading**BIOL 402 - Biology in our Daily Lives****Credits:** 4

Students will learn about the nature and practice of science as it relates to biology, and the ways in which our activities have a biological impact on the world around us. Throughout the course, the students will examine the biological messages with which we are constantly bombarded, and by linking background scientific principles to those messages, practice distinguishing science from pseudoscience.

**Attributes:** Biological Science(Discovery)**Grade Mode:** Letter Grading**BIOL 408 - Plants and Civilization****Credits:** 4

Global experience of human interactions with plants, and the ways in which plants have contributed to the development and the flourishing of human societies. Includes role of plants in providing sustenance, clothing and shelter, quest for spices, the historical consequences of plant explorations and exploitations, the power to heal or kill, plants in mythology and spiritual endeavors, plants that alter consciousness, plant diseases and human history, plants as energy for society, and the Green Revolution in global change and feeding the world in the future. Special fee.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Equivalent(s):** PBIO 400**Grade Mode:** Letter Grading**BIOL 409 - Green Life: Introducing the Botanical Sciences****Credits:** 0 or 4

All human and other animal life on earth depends upon green life: i.s., the plant world. In its diverse forms, green life is the ultimate source of our food, and of the atmospheric breath of life: oxygen. This course explores the structure, function, growth, reproduction, and remarkable evolutionary diversity of plants in their natural and human-influenced environments. Special Fee. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Equivalent(s):** BOT 412, PBIO 412**Grade Mode:** Letter Grading**BIOL 410 - Principles of Molecular and Cellular Biology****Credits:** 3

Introduction to structure and function of cells, tissues and organs, physiological processes; genes and heredity. No Laboratory. All COLSA and pre-professional health students should take BIOL 411, (with lab).

**Attributes:** Biological Science(Discovery)**Grade Mode:** Letter Grading



**BIOL 411 - Introductory Biology: Molecular and Cellular****Credits:** 0 or 4

Introduction to structure and function of cells; tissues and organs; physiological processes; genes and heredity. Required for majors in the biological sciences. Special fee. Lab. Students not permitted to enroll in BIOL 411 and BIOL 412 in the same semester.

**Attributes:** Biological Science(Discovery); Discovery Lab Course; Inquiry (Discovery)**Equivalent(s):** BIOL 411H**Mutual Exclusion:** No credit for students who have taken BIOL 413.**Grade Mode:** Letter Grading**BIOL 411H - Honors/Principles of Biology I****Credits:** 0 or 4

Introduction to structure and function of cells, tissues and organs, physiological processes and genes and heredity. Required for majors in the biological sciences. Special fee. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course; Honors course; Inquiry (Discovery)**Equivalent(s):** BIOL 411**Mutual Exclusion:** No credit for students who have taken BIOL 413.**Grade Mode:** Letter Grading**BIOL 412 - Introductory Biology: Evolution, Biodiversity and Ecology****Credits:** 0 or 4

Evolution is the paradigm through which we understand Biology. This course will introduce students to evolutionary concepts that underlie the tremendous biodiversity present on Earth, and explore the ecological interactions that occur among individuals and species. Indoor and outdoor lab activities. Required for majors in the biological sciences. Students are not permitted to enroll in BIOL 411 and BIOL 412 in the same semester. Special Fee. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course; Inquiry (Discovery)**Equivalent(s):** BIOL 412H**Mutual Exclusion:** No credit for students who have taken BIOL 414.**Grade Mode:** Letter Grading**BIOL 412H - Honors/Introductory Biology: Evolution, Biodiversity, and Ecology Laboratory****Credits:** 0 or 4

Evolution is the paradigm through which we understand Biology. This course will introduce students to evolutionary concepts that underlie the tremendous biodiversity present on Earth, and explore the ecological interactions that occur among individuals and species. Indoor and outdoor lab activities. Required for majors in the biological sciences. Students are not permitted to enroll in BIOL 411 and BIOL 412 in the same semester. Special Fee. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course; Honors course; Inquiry (Discovery)**Equivalent(s):** BIOL 412**Mutual Exclusion:** No credit for students who have taken BIOL 414.**Grade Mode:** Letter Grading**BIOL 413 - Principles of Biology I****Credits:** 0 or 4

Lecture and Laboratory introduction to biological principles; cell structure, function, replication, energetics and transport mechanisms; physiological processes; Mendelian, molecular genetics and gene technology. Required for students majoring in the life sciences. Special fee. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course; Inquiry (Discovery)**Mutual Exclusion:** No credit for students who have taken BIOL 411, BIOL 411H.**Grade Mode:** Letter Grading**BIOL 414 - Principles of Biology II****Credits:** 0 or 4

Lecture and laboratory survey of the five kingdoms of life; physiology of cells, tissues, organs, and organ systems; evolution; human impact on the biosphere. Required for students majoring in the life sciences. Cannot be taken for credit after BIOL 412 or equivalent. Special fee. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Mutual Exclusion:** No credit for students who have taken BIOL 412, BIOL 412H.**Grade Mode:** Letter Grading**BIOL 420 - Introduction to Forensic Sciences****Credits:** 0 or 4

Explore the forensic sciences! How do you collect, preserve, and analyze evidence related to a crime scene investigation? Hear from the experts and apply scientific principles and techniques in laboratory exercises that follow a crime scene scenario. The goal of this class will be to provide students with an understanding of what criminalistics entails and to prepare them for additional, more in-depth classes in criminalistics or forensic science. Special fee.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Grade Mode:** Letter Grading**BIOL 430 - Biology of the City****Credits:** 4

This course explores biological systems, functions, and interaction of organisms in an urban environment. Using the campus as our laboratory, the course will progress from exploring the effects of urbanization on biodiversity, biological responses to urbanization, urban forestry, urban agriculture, and conclude with topics in sustainable urban development and conservation. Students in the course will develop an understanding of ecological concepts, problems, and solutions to improving ecological systems of urban areas.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Grade Mode:** Letter Grading**BIOL 444A - Biotechnology and Society****Credits:** 4

The history and science of biotechnology and genetic engineering of bacteria, plants, and animals including humans. Applications of DNA technology, cloning and genetic engineering to agriculture, biomedicine, industrial products, and environmental problems. Discussion of economic, social, environmental, legal, and ethical issues related to the applications of biotechnology and genetic engineering.

**Attributes:** Environment,TechSociety(Disc); Inquiry (Discovery)**Mutual Exclusion:** No credit for students who have taken BIOT 422, BSCI 422.**Grade Mode:** Letter Grading

**BIOL 444B - Current Controversial Issues in Biology****Credits:** 4

An inquiry into current controversial issues in biology and their scientific and technical bases, but with an emphasis on exploring the various perspectives or beliefs related to each topic and their social and environmental implications.

**Attributes:** Biological Science(Discovery); Inquiry (Discovery)**Grade Mode:** Letter Grading**BIOL 495 - Research Experience in Biological Sciences****Credits:** 1-2

Hands-on research experience for high school students and UNH freshmen under the supervision of a Biological Sciences faculty member. This independent-study course introduces students to the research process and requires them to undertake a research project that involves laboratory and/or field work. Before a student can register for the course, he/she must meet with a Biological Sciences faculty member who will serve as mentor and supervisor, and the two of them must have a formal agreement on the specific research activities that the student must carry out.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Letter Grading**BIOL 510 - Mushrooms, Molds, and Mildews: Introduction to the Fungal Kingdom****Credits:** 4

Fungi are a fascinating group of organisms that occupy nearly every habitat on the planet. We encounter fungi in everyday life from the dangerous to the delicious. This course is a fun, approachable introduction to the world of fungi. Students will learn about the role fungi play in human society, review basic concepts of fungal biology and discuss important issues of our time: how we use fungi to make medicines, how fungi feed us, how plant diseases and food spoilage affect food supply, and how fungi contribute to ecosystem functioning.

**Grade Mode:** Letter Grading**BIOL 520 - Our Changing Planet****Credits:** 4

Ecosystem interrelations and factors critical to maintain sustainability will be addressed in this course. Environmental issues such as water usage, pollution, and treatment; air and soil quality; fossil fuels and alternative energy sources will be presented. Not for credit if credit earned for ENE 520.

**Attributes:** Environment,TechSociety(Disc)**Equivalent(s):** CIE 520, ENCV 520, ENE 520**Grade Mode:** Letter Grading**BIOL 528 - Applied Biostatistics I****Credits:** 4

Knowledge of biostatistics is essential to understanding our observations of life on Earth and properly design and conduct scientific research. Students develop skills in organizing data and performing, presenting, and interpreting statistical analyses. Theoretical concepts are applied using statistical software(s) and prepared biological data. Topics include descriptive statistics, continuous and discrete probability distributions, inferential statistics, confidence intervals, hypothesis testing for a difference of means and proportions, linear regression, non-parametric hypothesis testing, and graphing.

**Attributes:** Quantitative Reasoning(Disc)

**Mutual Exclusion:** No credit for students who have taken ADM 430, ADMN 420, ADMN 510, EREC 525, HHS 540, MATH 439, MATH 539, MATH 644, PSYC 402, PSYC 402H, SOC 402, SOC #402H, SOC 502, SOC 502H.

**Grade Mode:** Letter Grading**BIOL 541 - Ecology****Credits:** 0 or 4

Physical and biological factors affecting distribution, abundance, and adaptations of organisms. Population, community, and ecosystem structure and function. Special fee. Lab.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** (BIOL 411 with a minimum grade of D- or BIOL 411H with a minimum grade of D- or BIOL 413 with a minimum grade of D- or NR 439 with a minimum grade of D-) and (BIOL 412 with a minimum grade of D- or BIOL 412H with a minimum grade of D- or BIOL 414 with a minimum grade of D-).

**Equivalent(s):** BIOL 541W**Grade Mode:** Letter Grading**BIOL 544 - Your Genes, Your Life****Credits:** 4

How do mutations accumulate to cause cancer? How does genetic variation underlie evolution? This course examines technological advances to read your DNA sequence, your genome, and how the genome can be modified by gene-editing. Students deliberate ethics underlying gene therapy, improving immune therapy, and modifying human embryos. The course uses an inquiry approach to illuminate how knowing your genome predicts some aspects of your life, but other features depend on genome interaction with your environment.

**Attributes:** Environment,TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** BIOL 404, BIOL 444A**Grade Mode:** Letter Grading**BIOL #550 - Mushroom Madness****Credits:** 3

An intensive 2-week summer field and lab course that emphasizes the identification of mushrooms and other macrofungi that occur in New England forests. The role of mycorrhizal fungi, decomposers, and pathogens in forest ecosystems will be examined. Recent changes in our understanding of the evolution and systematics of macrofungi will be explored. Collecting trips to the White Mountain National Forest, NH and Massachusetts state and town forests will be followed by lab identification sessions that utilize traditional methods (microscopy, spore prints, staining reactions) as well as modern molecular techniques (DNA barcoding, RFLP). Smart phone apps will be used for recording field notes and images, and for uploading observations to on-line repositories (iNaturalist and MushroomObserver). One overnight field trip will be scheduled. Special fee.

**Grade Mode:** Letter Grading**BIOL 566 - Systematic Botany****Credits:** 0 or 4

Scientific basis of plant taxonomy and the identification and classification of major plant families, native trees, shrubs, and wildflowers. Field trips, plant collection. Lab. Special fee.

**Prerequisite(s):** (BIOL 412 with a minimum grade of D- or BIOL 412H with a minimum grade of D- or BIOL 414 with a minimum grade of D- or BIOL 409 with a minimum grade of D-).

**Equivalent(s):** PBIO 566**Grade Mode:** Letter Grading

**BIOL 600 - Field Experience****Credits:** 1-4

A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**BIOL 601 - Biology and Ecology of Plants****Credits:** 4

Because plants can't move, they have evolved extraordinary adaptations that allow them to inhabit a wide variety of environments and respond to environmental changes. This course introduces students to these adaptations by focusing on how the relationship between plants and their environment has influenced their morphology, physiology, community structure, and distribution. Emphasis is on terrestrial plants. Labs will be field-based. Lab.

**Prerequisite(s):** (BIOL 412 with a minimum grade of D- or BIOL 412H with a minimum grade of D- or BIOL 414 with a minimum grade of D-).**Grade Mode:** Letter Grading**BIOL #633 - Data Analysis for Life Science****Credits:** 4

Expand your statistical knowledge and resume by learning R. Use project-based learning to explore topics such as inequalities of life expectancy, heart disease and risk behaviors, biomagnification of ecotoxins, and impacts of ticks on wildlife populations while learning statistical skills and R. In this course students will learn to become proficient in R (data manipulation, graphing, hypothesis testing, importing and cleaning data) and learn to effectively communicate statistical results.

**Grade Mode:** Letter Grading**BIOL 675 - Medical Botany****Credits:** 4

This course is an integrated study of the medical, psychoactive, and poisonous plants, their active constituents their physiological effects on people, their mode of action and their role in historical and current medical practice. Emphasis is placed on the impact that plants have on human health. Students will take an active role in class, and will develop their own knowledge of medicinal plants through guided discussions and in-class group activities.

**Prerequisite(s):** (BIOL 411 with a minimum grade of D- or BIOL 411H with a minimum grade of D- or BIOL 413 with a minimum grade of D-) and (BIOL 412 with a minimum grade of D- or BIOL 412H with a minimum grade of D- or BIOL 414 with a minimum grade of D-).**Grade Mode:** Letter Grading**BIOL 695 - Biology Teaching Practices****Credits:** 1-4

Students assist instructor in biology course labs. Responsibilities may include assisting instructors with field trips, lab set-up and clean-up, helping students during lab and field exercises, presenting material, and creating a project that enhances the curriculum. You may be expected to present material or create a project that enhances the curriculum. This course is by invitation only.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** BSCI 695**Grade Mode:** Letter Grading**BIOL 700 - Current and Controversial Issues in Biology****Credits:** 4

This course explores current issues in the biological sciences that are controversial and have a significant impact on individuals and society. Issues related to human population growth, evolution, cloning, synthetic biology, genetically modified organisms, free will, etc. Biology capstone. Only open to Animal Science, Zoology, Neuroscience and Behavior, Biology, Marine & Freshwater Biology, and Sust Agriculture& Food Systems majors.

**Grade Mode:** Letter Grading**BIOL 701 - Plant Physiology****Credits:** 4

Knowledge about principles of plant physiology is critical to understand how plants work and what happens between planting a seed and picking up a flower or a fruit. This course focuses on fundamentals of plant physiology and metabolism using lecture and laboratory investigations. Lecture topics include: plant-water relations, mineral nutrition, photosynthesis and respiration, plant metabolism, signaling and hormones, growth and development, and plant-environment interactions. Labs will be project-based and students will conduct experiments to explore basic plant processes.

**Prerequisite(s):** (SAFS 421 with a minimum grade of D- or BIOL 409 with a minimum grade of D- or BIOL 411 with a minimum grade of D- or BIOL 411H with a minimum grade of D- or BIOL 413 with a minimum grade of D-) and (BIOL 412 with a minimum grade of D- or BIOL 412H with a minimum grade of D- or BIOL 414 with a minimum grade of D-) and (CHEM 411 with a minimum grade of D- or CHEM 403 with a minimum grade of D-).**Grade Mode:** Letter Grading**BIOL #702 - Lab Techniques in Plant Physiology and Biochemistry****Credits:** 4

The course provides a hands-on experience with instrumentation and experimental procedures for analysis of plant growth and metabolism. Experiments demonstrate the regulation of plant growth and development in response to environmental and chemical factors, analysis of cellular contents and processes, and use of modern instrumentation and analytical tools for physiological and biochemical studies. Experiments deal with plant water relations, photosynthesis, plant hormones, enzyme kinetics, use of spectrophotometry and fluorometry, aseptic procedures, and liquid and thin-layer chromatography. Special lab fee.

**Prerequisite(s):** BIOL 411 with a minimum grade of D- and BIOL 412 with a minimum grade of D- and BIOL 701 with a minimum grade of D-.**Equivalent(s):** GEN 702**Grade Mode:** Letter Grading**BIOL 704 - Plant-Microbe Interactions****Credits:** 3

Microbes and plants have developed intriguing strategies to encourage, resist or profit from their coexistence. The primary objective of the course is to provide students with a comprehensive overview of the various ways in which microbes interacts with plants, the outcomes of that interplay, and applications of these interactions and explore how these interactions impact ecosystem function.

**Prerequisite(s):** (BIOL 411 with a minimum grade of D- or BIOL 411H with a minimum grade of D- or BIOL 413 with a minimum grade of D-) and (BIOL 412 with a minimum grade of D- or BIOL 412H with a minimum grade of D- or BIOL 414 with a minimum grade of D-) and (GEN 604 with a minimum grade of D- or (BMS 503 with a minimum grade of D- and BMS 504 with a minimum grade of D-)).**Grade Mode:** Letter Grading

**BIOL 706 - Data Science with R for the Life Sciences****Credits:** 4

Introduces students to the basic data analysis and programming tools commonly used throughout the life sciences. Students will become proficient in R programming, data wrangling and cleaning, the principles of open and reproducible science, SQL database management, version control via Git/Github, building maps, and Bash command lines. Data sets and case studies from across the life sciences will be used throughout the course. The class culminates with an small group project.

**Grade Mode:** Letter Grading**BIOL 709 - Plant Stress Physiology****Credits:** 3

Plants cannot move in order to avoid challenging environmental conditions. Hence, plants developed other mechanisms that allow them to cope with stress. This course focuses on the mechanisms deployed by plants to respond to stressful conditions, some responses being nothing short of chemical and biological warfare. Biotic and abiotic stresses covered include pathogens, herbivores, drought, salinity, temperature, UV radiation, and heavy metals. Agricultural and ecological implications are discussed.

**Equivalent(s):** PBIO 709**Grade Mode:** Letter Grading**BIOL 711 - Experimental Design & Analysis****Credits:** 4

Design and analysis of biological and ecological research experiments. "Real world" studies used to discuss the identification of hypotheses, appropriate experimental design, and the application of statistical analyses including ANOVA, ANCOVA, correlation and regression, cluster analysis, classification and ordination techniques. Theoretical statistical concepts tailored to consider students' own thesis and dissertation research, allowing statistical problems to be addressed at various stages of the research process. Common computer packages used for analyses include Excel, JMP, Systat, and R.

**Grade Mode:** Letter Grading**BIOL #713 - Biochemistry of Photosynthesis****Credits:** 4

Physiology and biochemistry of photosynthesis in higher plants and microorganisms: light reactions, electron transport, membrane structure and function, carbon assimilation pathways, energy conservation, and metabolic regulation. Agronomic and ecological aspects of photosynthesis are examined. (Not offered every year.) Special fee.

**Prerequisite(s):** BIOL 701 with a minimum grade of D- or (BMCB 658 with a minimum grade of D- and BMCB 659 with a minimum grade of D-).**Grade Mode:** Letter Grading**BIOL 714 - Model Organisms in Biological and Medical Research****Credits:** 2

Animals, plants, and microbes serve as powerful tools for both basic and biomedical research. This course integrates historical, philosophical, sociological, and biological perspectives to examine how models are chosen and used. and how to evaluate their strengths and weaknesses. Students will study particular model species in depth, and address general epistemological questions about the choice and use of model organisms. This course is designed for graduate students and advanced undergraduates interested in research. 58 hours of Undergrad Coursework, including advanced study in at least one specified area required.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**BIOL 720 - Plant-Animal Interactions****Credits:** 4

Animals and plants engage in a range of interactions, from plant-pollinator and plant-ant mutualisms to plant-herbivore and carnivorous plant antagonisms. This course will explore the consequences of a variety of interactions on the evolution of traits in both animals and plants, considering implications for both conservation and agriculture. Weekly recitation.

**Prerequisite(s):** (BIOL 412 with a minimum grade of D- or BIOL 412H with a minimum grade of D- or BIOL 414 with a minimum grade of D-).**Grade Mode:** Letter Grading**BIOL 752 - New England Mushrooms: a Field and Lab Exploration****Credits:** 4

This is a hands-on field, lab and lecture course in the identification, classification, life histories, and ecology of mushrooms and other macrofungi. Lectures focus on macrofungal ecology and systematics. Laboratory instruction emphasizes morphological, microscopic, and molecular identification techniques, plus the use of smart-phone field note recording and on-line resources. Several field trips are required in addition to the weekly laboratory. Previous experience with fungi is not required. Grades are based on a collection, a project, and presentations. **Prerequisite(s):** ((BIOL 411 with a minimum grade of D- or BIOL 411H with a minimum grade of D- or BIOL 413 with a minimum grade of D-) or (BIOL 412 with a minimum grade of D- or BIOL 412H with a minimum grade of D- or BIOL 414 with a minimum grade of D-)) or BIOL 409 with a minimum grade of D-.

**Equivalent(s):** BOT 752, PBIO 752**Grade Mode:** Letter Grading**BIOL 770 - Senior Seminar in Biology****Credits:** 2

Explore and synthesize your undergraduate biological knowledge and skills through an integrated outlook at a topic relating to your professional future. Each semester revolves around a different overarching topic on which students read assigned topical papers, prepare critical analyses, and give presentations to the class.

**Grade Mode:** Letter Grading**BIOL 780 - Capstone Companion Course****Credits:** 1

This course is the required companion course to a student's individual capstone experience. It must be taken during the same semester as the individual experience, or in the fall immediately following a summer experience. This course will help connect a student's individual capstone experience to their broader academic program, and will be a forum for sharing individual experiences with peers. Thesis students should enroll in BIOL 780 during the second semester of the thesis. Should also be taken with a pre-approved individual capstone experience.

**Grade Mode:** Credit/Fail Grading**BIOL 795 - Independent Investigations in Biology****Credits:** 1-4

Independent study in a topic related to Biology, arranged by the student with a faculty sponsor. Enrollment by permission only.

**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 5 times.**Equivalent(s):** BIOL 795W**Grade Mode:** Letter Grading



**BIOL 795W - Independent Investigations****Credits:** 1-4

Topics may include teaching or research practicum in a biological science, supervised by a faculty member.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** BIOL 795**Grade Mode:** Letter Grading**BIOL 799 - Honors Senior Thesis****Credits:** 2-8

Independent research requiring a written proposal, a thesis, and a final public presentation (e.g. the Undergraduate Research Conference). Intended for biology majors completing biology Honors-in-major requirements. Contact biology program coordinator prior to senior year to arrange supervision and obtain permission. Two consecutive semesters. (4 credit minimum total; 8 credits maximum).

**Attributes:** Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Biomedical Science (BMS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**BMS 401 - Professional Perspectives in Biomedical Sciences****Credits:** 1

Introduction to the major and the options in Biomedical Sciences. Strategies for successfully achieving academic and professional goals in the biomedical sciences. Professional opportunities for BMS majors are presented. Cr/F.

**Equivalent(s):** MEDT 401, MLS 401**Grade Mode:** Credit/Fail Grading**BMS 405 - In Sickness and in Health: Understanding Why Bodies Fail****Credits:** 4

This course describes the basic structure and function of various organs and systems, then discuss many common diseases and conditions that impact humans, such as meningitis, Alzheimer's, diabetes, HIV/AIDS, asthma, and schizophrenia. Primary focus is on the physical process of disease but the course will also examine the emotional and social impact of certain diseases.

**Attributes:** Biological Science(Discovery)**Grade Mode:** Letter Grading**BMS 407 - Germs 101****Credits:** 4

Societal and technological impact of the invisible microbial world on our lives and on the planet. Weekly extra-class activities enable students to use the scientific method of inquiry to explore topics like bacteria that use sunlight to live or use of bacteria in genetic engineering. Presents germs from different perspectives: as living organisms, as human enemies or friends, and as represented in newspapers or on TV. Especially useful for people with microphobia. No credit for BMS or Biology majors.

**Attributes:** Biological Science(Discovery)**Equivalent(s):** BIOL 407, BMS 408, MICR 407**Grade Mode:** Letter Grading**BMS 408 - Germs 101****Credits:** 4

Online version of BMS 407. Societal and technological impact of the invisible microbial world on our lives and on the planet. Weekly extra-class activities enable students to use the scientific method of inquiry to explore topics like bacteria that use sunlight to live or the use of bacteria in genetic engineering. Presents germs from different perspectives: as living organisms, as human enemies or friends, and as represented in newspapers or on TV. Especially useful for people with microphobia. No credit for BMS or Biology majors. Special fee.

**Attributes:** Biological Science(Discovery)**Equivalent(s):** BMS 407, MICR 407**Grade Mode:** Letter Grading**BMS 501 - Microbes in Human Disease****Credits:** 4

Identification, pathogenesis, epidemiology, treatment, and prevention of medically important microorganisms. The biology of clinically relevant bacteria, viruses, fungi, and parasites is presented in relation to disease progress and host defense mechanisms. Clinical correlations that indicate microbes are causative agents of disease are emphasized. The laboratory introduces techniques for identification of pathogenic microorganisms to reinforce and expand the theoretical content. Special fee. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Equivalent(s):** BMS 501H, MICR 501, MICR 501H, MICR 502**Grade Mode:** Letter Grading**BMS 503 - General Microbiology****Credits:** 3

Principles of microbiology; morphology, physiology, genetics, culture, and classification of bacteria and other microorganisms; relationships of microbes to agriculture, environment, industry, sanitation, and infectious diseases. Prereq: BIOL 411 and BIOL 412 or equivalent; CHEM 403 and CHEM 404 or equivalents.

**Co-requisite:** BMS 504**Equivalent(s):** MICR 503**Grade Mode:** Letter Grading**BMS 504 - General Microbiology Laboratory****Credits:** 2

Practical laboratory training in general microbiology. Topics include safe handling, visualization, and physiological identification of microorganisms with special attention given to aseptic technique. Prereq: BIOL 411 and BIOL 412 and CHEM 403 and CHEM 404 or equivalents. Coreq: BMS 503. Special fee.

**Co-requisite:** BMS 503**Grade Mode:** Letter Grading**BMS 507 - Human Anatomy and Physiology I****Credits:** 0 or 4

Cellular and systematic aspects of the human body. Laboratory exercises utilize preserved specimens, dissectible models, living tissue and computer-aided instruction. Systems covered include: the cell, chemistry, tissues, integument, osseous tissue and the skeleton, muscular tissue and muscles, nerves, the brain, spinal cord, autonomic nervous system, and special senses. Lab. Special fee.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Mutual Exclusion:** No credit for students who have taken ANSC 511.**Grade Mode:** Letter Grading



**BMS 508 - Human Anatomy and Physiology II****Credits:** 0 or 4

Cellular and systematic aspects of the human body. Laboratory exercises utilize preserved specimens, dissectible models, living tissue and computer-aided instruction. Systems covered include: endocrine, blood, cardiovascular, respiratory, immune, digestive and metabolism, urinary, acid-base and electrolyte balance, reproductive. Prereq: BMS 507. Lab. Special fee.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Mutual Exclusion:** No credit for students who have taken ANSC 512.**Grade Mode:** Letter Grading**BMS 560 - Body Fluids****Credits:** 3

The study of diseases and disorders through the analysis of extra-vascular body fluids. Emphasizes renal anatomy and physiology, and diseases and metabolic disorders affecting renal function.

**Equivalent(s):** BMS 660, MEDT 665, MLS 660, MLS 665**Grade Mode:** Letter Grading**BMS 561 - Body Fluids Laboratory****Credits:** 1

Practical experience in the performance and clinical correlation of urinalysis and selected body fluid procedures. Special fee.

**Co-requisite:** BMS 560**Equivalent(s):** BMS 661, MEDT 665, MLS 661, MLS 665**Grade Mode:** Letter Grading**BMS 600 - Field Experience****Credits:** 1-4

Supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. Only 4 credits can be used toward the major. Permission required. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** BMS 600W, MICR 600, MICR 600W**Grade Mode:** Credit/Fail Grading**BMS #601 - Bacteriology of Food****Credits:** 0 or 5

Lectures and laboratories address modern technical concepts of microbiology, physiology, and biochemistry related to food sanitation. Theoretical and practical approach serves as an integrative experience. Food sanitation is a serious public health issue in the meat, dairy, fish, and water industries. Benefits students seeking employment in public health or sanitary microbiology fields. Topics include food as a substrate for microorganisms, causes of food spoilage, food borne disease outbreaks, public health complications, isolation and identification of food spoiling microorganisms, and essentials for food safety and sanitation. Prereq: BMS 503 and BMS 504 or equivalent. (Not offered every year.) Special fee. UNHM only.

**Equivalent(s):** MICR 603**Grade Mode:** Letter Grading**BMS 602 - Pathogenic Microbiology****Credits:** 3

An introduction to microbial disease, with a focus on bacterial and viral diseases in humans and animals. This course examines the clinical presentation, laboratory diagnosis, and treatment of specific microbial pathogens. Molecular aspects of both microbial infection and host immune response are discussed. Case studies based on real clinical and research microbiology problems are presented. Prereq: BMS 501, or BMS 503 and BMS 504.

**Equivalent(s):** MICR 602, MICR 700, MICR 800**Grade Mode:** Letter Grading**BMS 603 - Pathogenic Microbiology Laboratory****Credits:** 2

An introduction to morphologic, cultural, biochemical and pathogenic characteristics of microorganisms causing human and animal diseases. Laboratory exercises focus on both classical and modern laboratory diagnostic testing. Prereq: BMS 501, or BMS 503 and BMS 504. Special fee.

**Co-requisite:** BMS 602**Grade Mode:** Letter Grading**BMS 610 - Biomedical Lab Management****Credits:** 4

Overview of biomedical laboratory management, including lab operation, compliance, financial management, personnel management, information systems, and leadership. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** MEDT 610, MLS 610**Grade Mode:** Letter Grading**BMS 623 - Histology: Microscopic Cellular Structure and Function****Credits:** 4

Cellular structure, function, and physiology, as well as the interactions between cells in different organ systems, are examined at the microscopic level. Digital microscopic images are utilized to examine the cellular structure of all organ systems and the interactions between cells in these organs. Prereq: ANSC 511 and ANSC 512, or BMS 507 and BMS 508. Hybrid course with online lab.

**Grade Mode:** Letter Grading**BMS 635 - Preceptorial in Prehospital Care****Credits:** 2

Practice and evaluation of prehospital care. Understand the roles of different provider levels in a healthcare setting. Students participate in ambulance activities, then discuss assessment and treatment of patients in the prehospital setting. Licensure by the New Hampshire Bureau of EMS required before course start date. Prereq: KIN 684 and KIN 685 or equivalent. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Credit/Fail Grading**BMS 640 - Phlebotomy Theory****Credits:** 2

Theory and demonstration of procedures involved in blood collection with an emphasis on safety and professionalism. Hands-on practice of selected techniques. Special fee.

**Equivalent(s):** MLS 640, MLS 650A**Grade Mode:** Letter Grading

**BMS 641 - Phlebotomy Clinical Internship****Credits:** 1-2

Students obtain experience and proficiency in routine blood collection techniques at a health care facility (80 to 120 hours). Prereq: BMS 640. Special fee. Cr/F.

**Equivalent(s):** MLS 641, MLS 650B**Grade Mode:** Credit/Fail Grading**BMS 642 - Clinical Immunology and Serology****Credits:** 2

Innate and specific immunity in the context of chemical and cellular responses to antigenic challenge. Also introduces the immunologic basis of autoimmunity, immune proliferation and deficiency, and hypersensitivity. Current clinical analytical methodologies and diagnostic criteria used to identify, differentiate and/or monitor these responses and conditions included. Prereq: BIOL 411 and BIOL 412, or BMS 507 and BMS 508, or ANSC 511 and ANSC 512.

**Equivalent(s):** MEDT 651, MLS 642, MLS 651**Grade Mode:** Letter Grading**BMS 643 - Clinical Serology Laboratory****Credits:** 2

Performance, interpretation and application of serological techniques for the diagnosis of immune system disorders. Special fee.

**Co-requisite:** BMS 642**Equivalent(s):** MEDT 651, MLS 643, MLS 651**Grade Mode:** Letter Grading**BMS 644 - Clinical Hematology****Credits:** 3

Human blood cell physiology in both health and disease. Includes benign and malignant conditions of red blood cells and white blood cells.

**Equivalent(s):** MLS 644, MLS 652**Grade Mode:** Letter Grading**BMS 645 - Clinical Hematology Laboratory****Credits:** 2

Analysis of whole blood for cellular components with special emphasis on differentiating benign from malignant processes, as well as cellular identification by morphologic characteristics and cytochemical staining. Special fee.

**Co-requisite:** BMS 644**Equivalent(s):** MLS 645, MLS 652L**Grade Mode:** Letter Grading**BMS 646 - Clinical Hemostasis****Credits:** 1

Introduction to hemostasis through evaluation of platelets, blood vessels, coagulation factors and fibrinolysis, including dysfunction and disease states. Pre- Coreq: BMS 644 or permission.

**Grade Mode:** Letter Grading**BMS 650 - Molecular Diagnostics****Credits:** 4

Fundamental principles of molecular technology and techniques used in clinical laboratories such as nucleic acid extraction, DNA amplification, sequencing and hybridization, gel electrophoresis, and chromosome analysis. Prediction and detection of human disease (infectious disease, cancer, and other inherited disease), identity testing, molecular epidemiology, pharmacogenetics, and ethical issues. Previous knowledge of genetics and biochemistry lab techniques is highly recommended.

**Attributes:** Environment, TechSociety(Disc)**Equivalent(s):** BMS 755, BSCI 765, MLS 755**Grade Mode:** Letter Grading**BMS 655 - Human and Animal Parasites****Credits:** 3

Introduction to the parasitic process in humans and different animals indigenous to domestic and foreign areas of the world. Topics include epidemiology, infection, control, genetics, and immunology, as well as global economic consequences. Prereq: BMS 503 and BMS 504.

**Grade Mode:** Letter Grading**BMS 656 - Immunohematology****Credits:** 3

The immunology of blood, including blood group systems and the critical role they play in safe transfusion medicine. Additional topics include blood collection, component use, transfusion reactions, and transfusion-transmitted infections.

**Equivalent(s):** MEDT 653, MLS 653, MLS 656**Grade Mode:** Letter Grading**BMS 657 - Blood Banking Laboratory****Credits:** 1

Hands-on experience in clinical blood banking practices including blood typing, antibody screening and identification, cross matching, and confirmatory testing. Special fee.

**Co-requisite:** BMS 656**Equivalent(s):** MEDT 653, MLS 653, MLS 657**Grade Mode:** Letter Grading**BMS 658 - Medical Biochemistry****Credits:** 3

Use of body fluids to assess specific disease states including the pathophysiology of the disease, pre-analytical issues, analytical methodologies, and instrumentation. Topics include the biochemistry of analytes (amino acids, proteins, enzymes, tumor markers, non-protein nitrogen metabolites, carbohydrates, lipids, electrolytes, blood gases, etc.), clinical endocrinology, toxicology and therapeutic drug monitoring. Prereq: BMCB 658 and BCB 659; BIOL 528, or equivalents.

**Equivalent(s):** MEDT 654, MLS 654, MLS 658**Grade Mode:** Letter Grading**BMS 659 - Clinical Chemistry Laboratory****Credits:** 2

Measurement of blood analytes such as proteins, glucose, electrolytes, and cholesterol, etc. Screening for drugs in urine and evaluation of clinical significance in human specimens. Principles of spectrometry, immunoassay, point-of-care testing, chromatography, mass spectrometry, electrophoresis, automation, and ion selective electrodes, with emphasis on instrumentation, quality control, and pre-analytical and analytical issues. Special fee.

**Co-requisite:** BMS 658**Equivalent(s):** MLS 654L, MLS 659**Grade Mode:** Letter Grading**BMS #699 - Independent Study in Biomedical Science****Credits:** 1-6

In-depth studies under faculty supervision. Permission required. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Equivalent(s):** BMS 696, BMS 696W, BMS 699W**Grade Mode:** Credit/Fail Grading

**BMS 699W - Independent Study in Biomedical Science****Credits:** 1-6

In-depth studies under faculty supervision. Permission required. Writing intensive. Cr/F.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 16 credits.**Equivalent(s):** BMS 696, BMS 696W, BMS #699**Grade Mode:** Credit/Fail Grading**BMS 702 - Endocrinology****Credits:** 4

Structure and function of vertebrate endocrine systems through the lens of physiology, biochemistry, and cell and molecular biology, with special reference to mammals. Current investigations of the body's major endocrine glands, such as the brain, thyroid, pancreas, adrenals and gonads, as regulators and integrators of biological systems. BMS 605 recommended. Prereq: BMS 658 or BMS 751.

**Equivalent(s):** ANSC 702, BCHM 702**Grade Mode:** Letter Grading**BMS 703 - Infectious Disease and Health****Credits:** 4

Principles underlying the nature of infectious disease agents, including representative parasites, fungi, bacteria, viruses, and prions. Established pathogens and emerging human and animal disease agents highlighting zoonotic diseases. Epidemiology, pathogenesis, host immune response, disease transmission, treatment, and control. Weekly review and discussion of current world disease events. Prereq: BMS 503 and BMS 504.

**Equivalent(s):** MICR 702**Grade Mode:** Letter Grading**BMS 704 - Pathologic Basis of Disease****Credits:** 4

Principles and mechanisms of disease at the cellular and tissue levels, including responses to cell injury, death and adaptation, inflammation, circulatory disturbances, disorders of the immune system, and neoplasia. ANSC 511 and ANSC 512, or BMS 507 and BMS 508 recommended.

**Equivalent(s):** ANSC 704**Grade Mode:** Letter Grading**BMS 705 - Immunology****Credits:** 3

An introduction to the fundamental mechanisms of immune function. Topics include the cells and organs of the immune system, humoral and cellular immune responses, the generation of immune cells, and how immune cells fight various infectious pathogens. Coreq: BMS 715 for BMS:MM majors only. Prereq: BMS 503 and BMS 504.

**Equivalent(s):** MICR 705**Grade Mode:** Letter Grading**BMS 706 - Virology****Credits:** 3

Principles of animal and selected plant and bacterial virology in relation to infection and disease. Emphasizes the molecular biology of viruses, viral replication, isolation, propagation, assay, pathogenesis, diagnosis, detection, epidemiology, and control. Coreq: BMS 708 for BMS:MM majors only. Prereq: BMS 503 and BMS 504.

**Equivalent(s):** MICR 706**Grade Mode:** Letter Grading**BMS 708 - Virology Laboratory****Credits:** 2

Principles and practices of animal, selected plants, and bacterial virological methods for the propagation, detection and enumeration of viruses. Prereq: BMS 503 and BMS 504. Coreq: BMS 706. Special fee.

**Co-requisite:** BMS 706**Equivalent(s):** MICR 708**Grade Mode:** Letter Grading**BMS 711 - Toxicology****Credits:** 4

Examination of mechanisms by which chemicals and other toxicants produce adverse effects in biological systems. Consideration of toxicant exposure and absorption, systemic and cellular distribution and metabolism, altered cellular mechanisms, and systemic and organ-specific effects of toxicity. Case-based discussions of toxicants affecting humans and other species in environmental and clinical contexts. Prereq: BMS 658.

**Grade Mode:** Letter Grading**BMS 712 - Experiences in Applied Veterinary Diagnostics****Credits:** 2

Students interact with different components of a working veterinary diagnostic laboratory. Through group reviews of New Hampshire Veterinary Diagnostic Lab cases, students learn about diseases using cases tailored to individual student interests. Pathologists and NHVDL staff provide information on disease processes, pathogenesis, and testing modalities. Students observe diagnostic techniques and archived gross and digital tissue specimens. Emphasis is on integrating knowledge of anatomy, physiology, microbiology, immunology, etc. within the context of molecular pathogenesis. Prereq: BMS 507 and BMS 508, or ANSC 511 and ANSC 512.

**Repeat Rule:** May be repeated for a maximum of 4 credits. May be repeated up to 2 times.

**Grade Mode:** Letter Grading**BMS 715 - Immunology Laboratory****Credits:** 2

This applied immunology laboratory course highlights both historic and current methodologies important for elucidation and diagnosis of immune function. Techniques used to study phagocytosis, antibody production, immunodiffusion, and T-cell function will be introduced. Applications of the antibody technologies to other scientific disciplines (ELISA, immunofluorescence microscopy, immunoblotting, etc.) will also be covered. Prereq: BMS 503 and BMS 504. Special fee.

**Co-requisite:** BMS 705**Equivalent(s):** MICR 715**Grade Mode:** Letter Grading**BMS 715W - Immunology Laboratory****Credits:** 2

This applied immunology laboratory course highlights both historic and current methodologies important for elucidation and diagnosis of immune function. Techniques used to study phagocytosis, antibody production, immunodiffusion, and T-cell function will be introduced. Applications of the antibody technologies to other scientific disciplines (ELISA, immunofluorescence microscopy, immunoblotting, etc.) will also be covered. Prereq: BMS 503 and BMS 504. Special Fee.

**Co-requisite:** BMS 705**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**BMS #716 - Public Health: Food- and Water-borne Diseases****Credits:** 4

How and why food-borne and water-borne agents (virus, protozoal, bacterial and toxic material) are still prevalent within our society with focus on the roles of government, disease and epidemiology, and sources of anthropogenic pollution. Field trips to wastewater plant and/or drinking water plant, town meetings and/or public policy hearings. Prereq: BMS 503 and BMS 504. Special fee. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** MICR 714**Grade Mode:** Letter Grading**BMS 718 - Mammalian Physiology****Credits:** 4

Advanced study of the systems that control mammalian functions with emphasis on cellular and molecular mechanisms. Includes the nervous, muscular, cardiovascular, renal, gastrointestinal, and endocrine systems. Prereq: at least one semester of animal/human physiology, or one semester of anatomy and physiology. Permission required. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ANSC 718**Grade Mode:** Letter Grading**BMS 719 - Host-Microbe Interactions****Credits:** 4

An examination of the way microorganisms interact with their hosts, with an emphasis on the pathogenic and commensal organisms of humans. Course material is introduced via reading, analysis and group presentations of primary scientific literature. Students are not only introduced to different types of host-microbe interactions, but different methods, systems and model organisms used to study these interactions. Prereq: BMS 501, or BMS 503 and BMS 504; GEN 604.

**Grade Mode:** Letter Grading**BMS 720 - Mycology, Parasitology, and Virology****Credits:** 3

Theoretical basis of the pathogenesis, epidemiology, and diagnosis of fungal, parasitic, and viral infections. Prereq: BMS 602 and BMS 603.

**Equivalent(s):** MEDT 720, MLS 720**Grade Mode:** Letter Grading**BMS 721 - Mycology, Parasitology, and Virology Laboratory****Credits:** 2

Practical experience in medical mycology and parasitology diagnostic techniques. Isolation and identification of mycological and parasitological specimens. Principles and practices of proper specimen collections, analysis, and interpretation of results. Special fee.

**Co-requisite:** BMS 720**Equivalent(s):** MLS 720L, MLS 721**Grade Mode:** Letter Grading**BMS 725 - Cell Phenotyping and Tissue Engineering Laboratory****Credits:** 4

Introduction to culture and phenotyping of mammalian cells (cell line models), with applications to bioengineering and biomedical sciences. Skills, techniques, and knowledge covered include sterile technique, cell culture, cell line models, cell proliferation, cell survival, cell migration, cell adhesion, and drug response. Inquiry-based team projects investigate cell proliferation, cell death, transfection, flow cytometry, 3D scaffolds, or cell imaging. Prereq: BMS 503, BMS 504.

**Equivalent(s):** BMS 620**Grade Mode:** Letter Grading**BMS 730 - Ethical Issues in Biomedical Science****Credits:** 4

An examination of the importance of scientific integrity in the biomedical sciences. Students are introduced to the ethical issues that scientists must be familiar with when conducting research. Issues include scientific record keeping, authorship and peer review, conflicts of interest, use of animals and humans in research, and recombinant DNA technology. Class is discussion-based, encouraging both an appreciation of established guidelines and an opportunity to critically examine them. Prereq: BIOL 411; GEN 604; BMS 503 and BMS 504. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** MICR 718**Grade Mode:** Letter Grading**BMS 735 - Molecular and Cellular Parasitology****Credits:** 4

Parasites continue to present a major challenge to public health. Despite their significant impact on human health, many aspects of the molecular and cellular biology of these diverse organisms remain unknown. This course explores the latest research on these fascinating organisms through analysis and discussion of original research papers focusing on three of the major human parasites. Prereq: BMS503; GEN 604; BMS 655 or BMS 720 or permission.

**Grade Mode:** Letter Grading**BMS 740 - Human Microbiome****Credits:** 4

The human microbiome is a new, rapidly growing field of microbiology that has already made important contributions to the understanding of human health. This laboratory course utilizes current research methodology to investigate the microbiome of the human skin. Students gain hands-on experience in PCR, genomics, bioinformatics, and modern clinical identification techniques. They also generate primary data to make their own contribution to this important field of research. Prereq: GEN 604; BMS 501, or BMS 503 and BMS 504. Special fee. Lab.

**Grade Mode:** Letter Grading**BMS 747 - Case Studies in Bloodbanking****Credits:** 1

Patient case studies are analyzed in immunohematology. Correlation of patient history with clinical presentation and interpretation of clinical laboratory results. Learn to interpret given information, recognize abnormal results and their clinical significance, generate etiologic possibilities, and determine the best diagnosis for the patient condition including appropriate treatment and recommended follow-up testing. Prereq: BMS 656 and BMS 657.

**Grade Mode:** Letter Grading**BMS 748 - Case Studies in Medical Biochemistry****Credits:** 1

Patient case studies are analyzed in medical biochemistry. Correlation of patient history with clinical presentation and interpretation of clinical laboratory results. Learn to interpret given information, recognize abnormal results and their clinical significance, generate etiologic possibilities, and determine the best diagnosis for the patient condition including appropriate treatment and recommended follow-up testing. Prereq: BMS 658 and BMS 659.

**Grade Mode:** Letter Grading



**BMS 749 - Case Studies in Hematology and Immunology****Credits:** 2

Patient case studies are analyzed in hematology and immunology. Correlation of patient history with clinical presentation and interpretation of clinical laboratory results. Learn to interpret given information, recognize abnormal results and their clinical significance, generate etiologic possibilities, and determine the best diagnosis for the patient condition including appropriate treatment and recommended follow-up testing. Prereq: BMS 642, BMS 643, BMS 644, and BMS 645.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**BMS 750 - Case Studies in Microbiology****Credits:** 2

Patient case studies are analyzed in microbiology. Correlation of patient history with clinical presentation and interpretation of clinical laboratory results. Learn to interpret given information, recognize abnormal results and their clinical significance, generate etiologic possibilities, and determine the best diagnosis for the patient condition including appropriate treatment and recommended follow-up testing. Prereq: BMS 602, BMS 603, BMS 720, BMS 721.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**BMS 751 - Advanced Clinical Microbiology Internship****Credits:** 5

Instruction and clinical practice of microbiology-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of proper specimen collection, clinical diagnosis testing, and interpretation of results. Special fee.

**Equivalent(s):** BMS 751W, MEDT 751, MLS 751, MLS 751W**Grade Mode:** Letter Grading**BMS 752 - Advanced Hematology Internship****Credits:** 5

Instruction and clinical practice of hematology-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of special hematology procedures including diagnostic staining, advanced hemostasis studies, and evaluation of blood cells in disease states.

**Equivalent(s):** BMS 752W, MEDT 752, MLS 752, MLS 752W**Grade Mode:** Letter Grading**BMS 753 - Advanced Immunohematology Internship****Credits:** 5

Introduction and clinical practice of immunohematology-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of advanced blood-banking procedures, including antibody identification, and component therapy.

**Equivalent(s):** BMS 753W, MEDT 753, MLS 753, MLS 753W**Grade Mode:** Letter Grading**BMS 754 - Advanced Clinical Chemistry Internship****Credits:** 5

Instruction and clinical practice of clinical chemistry-related techniques and their applications in the medical laboratory setting. Includes the principles and practices of advanced laboratory analysis of body fluid chemistries. Enzymology, isotopes, hormones, blood gases, and toxicology. Theory, operation, evaluation and maintenance of automated chemistry systems.

**Equivalent(s):** BMS 754W, MEDT 754, MLS 754, MLS 754W**Grade Mode:** Letter Grading**BMS 761 - Clinical Microbiology Internship****Credits:** 20

Advanced instruction in clinical bacteriology, mycology, parasitology, and virology at local hospital or reference laboratory. Isolation, identification, and antibiotic sensitivities for common pathogens are emphasized. Special fee.

**Equivalent(s):** BMS 754W, MEDT 761, MLS 754W, MLS 761**Grade Mode:** Letter Grading**BMS 790 - Undergraduate Teaching Experience****Credits:** 1-4

Provide academic support to graduate teaching assistants or faculty in preparing, presenting, and executing Biomedical Science lectures or labs. Permission required.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** MICR 790**Grade Mode:** Letter Grading**BMS 795 - Investigations in Biomedical Science****Credits:** 1-8

Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply knowledge and techniques of the major to a specific problem or question. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** BMS 795W, MICR 795, MICR 795W**Grade Mode:** Letter Grading**BMS 795W - Investigations in Biomedical Science****Credits:** 1-8

Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply knowledge and techniques of the major to a specific problem or question. Permission required.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** BMS 795, MICR 795W**Grade Mode:** Letter Grading**BMS 799 - Senior Thesis****Credits:** 1-4

Independent research project under the direction of a faculty sponsor for seniors in biomedical sciences. Final product is a written thesis. One or two semesters. Permission required.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** BMS 799H**Grade Mode:** Letter Grading**BMS 799H - Senior Honors Thesis****Credits:** 1-4

Independent research project under the direction of a faculty sponsor for seniors in biomedical sciences and in the Honors Program. Final product is a written thesis. One or two semesters. Permission required.

**Attributes:** Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** BMS 799**Grade Mode:** Letter Grading



# Biotechnology (BIOT)

## BIOT 415 - Millyard Scholars Seminar

**Credits:** 2

Through in-class activities, workshops and guest speakers, students in the Millyard Scholars Program will explore career paths, and develop resources and skills for academic success. All student work, planning and experiences will be showcased in a digital portfolio.

**Equivalent(s):** BSCI 415

**Grade Mode:** Letter Grading

## BIOT 418 - Phage Bioinformatics Lab

**Credits:** 2

In the course, students undertake a hands-on undergraduate research experience to describe, document, and publish the discovery of new bacteriophages (bacterial viruses). In doing so, students will elucidate how the genome codes biological information. The aim of the course is for students to develop further research and computational analysis skills while preparing to publish their scientific discoveries. The course will focus on research data analysis and presentation of research data to scientists and the public.

**Equivalent(s):** BSCI 418

**Grade Mode:** Letter Grading

## BIOT 422 - Biotechnology and Society

**Credits:** 4

Provides a basic understanding of genetic engineering. Techniques discussed include cloning, gene transfer, the polymerase chain reaction (PCR), in vitro fertilization, organ transplants, and paternity testing. Ethical issues involved with each technological advance are examined.

**Attributes:** Biological Science(Discovery)

**Equivalent(s):** BSCI 422

**Mutual Exclusion:** No credit for students who have taken BIOL 444A.

**Grade Mode:** Letter Grading

## BIOT 501 - Ethical Issues in Biology

**Credits:** 4

This course is an introduction to the ethical issues associated with current and future use of biotechnology. Students will think critically about different ethical problems that emerge from scientific research and its applications to medical technology. The focus will be on personal and public policy decision making. Prereq: BIOL 413 and 414 or BIOL 411 and BIOL 412.

**Attributes:** Writing Intensive Course

**Equivalent(s):** BSCI 501

**Grade Mode:** Letter Grading

## BIOT 502 - Introduction to Biotechnology Manufacturing

**Credits:** 4

Introduction to the terminology and practices of the biotechnology industry, with an emphasis on the business, regulatory, legal, and basic scientific underpinnings of modern biotechnology in the commercial and government sectors.

**Equivalent(s):** BSCI 502

**Grade Mode:** Letter Grading

## BIOT 510 - Introduction to Biofabrication

**Credits:** 4

This project-based course introduces students to the techniques and challenges of biofabrication. Students learn how additive manufacturing is used to combine cells with a variety of biolinks to create living tissues such as skin, cartilage, vascularized bone, and blood vessels. During this process students learn how to design for and operate 3D printing and bioprinting equipment. An emphasis will be placed on the ways in which this emerging technology impacts our society.

**Attributes:** Environment,TechSociety(Disc)

**Equivalent(s):** BSCI 510

**Grade Mode:** Letter Grading

## BIOT 515 - Second Year Millyard Scholars Seminar

**Credits:** 2

The Millyard Scholars Second Year Seminar will introduce students to a series of data analytics methods employed in biotech research and clinical settings in order to promote problem solving and critical thinking skills. Recent data generated from the biotech research and from clinical trials will form the basis of the data analyzed during the course. Guest speakers will help inform discussions about the importance of data analytics in biotechnology and in clinical settings. Cr/F.

**Grade Mode:** Credit/Fail Grading

## BIOT 655 - Advanced Phage Biology

**Credits:** 4

Students undertake an advanced exploration of bacteriophage biology through wet-lab and/or bioinformatic investigation of previously-discovered bacterial viruses. In the setting of bacteriophage genome study, students develop working fluency with coding of genetic information, annotation of genomes, publication and presentation of discoveries, and design of experiments to assess questions in viral structure and function. Prereq: BSCI 418 or BMS 503.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

## BIOT 704 - New and Emerging Biotechnology

**Credits:** 4

In this course students investigate emerging technologies, innovations and new products in the biotechnology industry, through case studies and scientific literature. Modern biotechnology focuses mainly on medicine. New treatments for rare and complex diseases as well as genetic testing to identify genetically-inherited diseases are continually being developed and discovered. Technology that makes these and other advances possible is the focus of this course. Prereq: GEN 604 with minimum grade of C-.

**Attributes:** Writing Intensive Course

**Grade Mode:** Letter Grading

## BIOT 747 - Industrial Microbiology and Fermentation

**Credits:** 0 or 5

Production of biologics and food by the biotechnology and agribusiness industries is the major focus of this course. Development of procedures for fermentation and bioprocessing, from proof of concept through scale-up stages will be emphasized, utilizing both theory and quantitative understanding as well as hands-on wet lab experience with modern bioprocessing equipment. Troubleshooting, safety, and QC considerations will be addressed. Prereq: BMS 503, BMS 504. Special fee.

**Equivalent(s):** BSCI 606, BSCI 747

**Grade Mode:** Letter Grading

**BIOT 753 - Cell Culture Lecture****Credits:** 3

Fundamental biological principles that underlie cell culture and its applications are the foundation of the lecture component of this course. Applications of cell culture techniques to current research areas in academic and biopharmaceutical settings will be discussed. Prereq: BMS 503 and BMS 604.

**Co-requisite:** BIOT 754**Equivalent(s):** BENG 620, BMCB 753, BMS 620**Grade Mode:** Letter Grading**BIOT 754 - Cell Culture Lab****Credits:** 2

Fundamental biological principles that underlie cell culture and its applications are the foundation of the lecture component of this course. Applications of cell culture techniques to current research areas in academic and biopharmaceutical settings will be discussed. Prereq: BMS 503 and BMS 504. Special Fee.

**Co-requisite:** BIOT 753**Equivalent(s):** BENG 620, BMCB 753, BMS 620**Grade Mode:** Letter Grading**BIOT 755 - Advanced Therapies****Credits:** 4

In this course students will gain an understanding of the fundamentals of biomaterials, gene therapy, cell therapy, and tissue engineering. We will cover chemical, structural, and biological aspects of therapeutic materials along with systemic literature reviews involving advanced therapy medical products (ATMPs) utilizing molecules, genes, cells, and tissues. We will also discuss synthetic polymers and biomolecules such as peptides, proteins, polysaccharides and oligonucleotides. No credit for students who have taken BSCI 797 "SpcTop/Advanced Therapies". Prereq: CHEM 404 with a minimum grade of C- and (BIOL 414 with a minimum grade of C- or BIOL 412 with a minimum grade of C-).

**Grade Mode:** Letter Grading**BIOT 760 - Numerical & Statistical Analysis in Biotechnology****Credits:** 0 or 4

In this course, students will gain an understanding of how best to conduct data analysis experiments utilizing data specific to biotechnology applications. Hands-on exercises involve using computer software programs such as Matlab and JMP. Data input/manipulation, descriptive and inferential statistics, hypothesis testing, curve fitting, and Matlab coding will be covered. Upon completion of the course, students should be able to conduct data analysis experiments within the context of biotech. No credit for students who have taken BSCI 797 "SpcTop/Num & Statistical Analysis". Prereq: CHEM 403 with a minimum grade of C- and (BIOL 413 with a minimum grade of C- or BIOL 411 with a minimum grade of C-).

**Grade Mode:** Letter Grading**BIOT 765 - Nucleic Acid Techniques****Credits:** 4

Laboratory course focused on application of molecular biology techniques for the extraction, detection, and use of nucleic acids. Emphasis is on recombinant DNA cloning and bioengineering techniques in biotechnology. Special fee. Prereq: GEN 604.

**Equivalent(s):** BMCB 754, BMS 650, BSCI 765**Grade Mode:** Letter Grading**BIOT 766 - Protein and Immunologic Techniques****Credits:** 0 or 4

Laboratory course focused on application of molecular biology techniques for the isolation, quantitation, detection, analysis, and use of proteins. Substantial emphasis on the use of immunoassays and antibodies in protein work. Modern proteomics techniques are also discussed. Emphasis on recombinant protein expression in the field of biotechnology. Prereq: GEN 604. Special fee.

**Equivalent(s):** BSCI 766**Grade Mode:** Letter Grading**BIOT 770 - Stem Cell and Biomaterials Engineering Laboratory****Credits:** 0 or 4

Introduction to stem cells and how biomaterials are utilized in their applications involving biotechnology and biomedical engineering. Lab topics such as aseptic technique, stem cell cultures, biomaterials engineering, bioprinting, biocompatibility and bioactivity analyses will be covered. Lectures will focus on the current literature while the lab portion involves inquiry-based projects that will investigate how biomaterials and molecules modulate stem cell proliferation and differentiation. Prereq: CHEM 403 with a minimum grade of C- and (BIOL 414 with a minimum grade of C- or BIOL 412 with a minimum grade of C-).

**Grade Mode:** Letter Grading**BIOT 775 - Biopharmaceutical Production Processes****Credits:** 0 or 5

This course will provide students with an overview of biopharmaceutical production processes through lectures. The course begins by introducing students to the proteins and biotechnology companies and to cGMP. During lab, students will use mammalian cells to produce and monoclonal antibody, by developing manufacturing SOPs, including upstream and downstream processing, and quality control and assurance. Students will also gain experience with T-cell culture as part of the CAR-T technology utilized in personal medicine. Prereq: CHEM 651/CHEM 653.

**Mutual Exclusion:** No credit for students who have taken ANSC 651, CHE 651.**Grade Mode:** Letter Grading**BIOT 777 - Molecular Biology and Biotechnology****Credits:** 0 or 5

The organization, expression, and control of RNA and protein-coding genes in prokaryotic and eukaryotic cells. The focus of the course is on mechanisms of genetics at the molecular level and the application of modern techniques to laboratory biotechnology projects. Prereq: GEN 604. Special Fee.

**Equivalent(s):** BSCI 777**Grade Mode:** Letter Grading**BIOT 780 - Techniques in Microscopy and Image Analysis****Credits:** 0 or 4

Laboratory course focused on application of microscopy techniques (light, fluorescent, confocal) and the subsequent analysis strategies for investigating biological specimens. Special focus will be directed towards cellular microscopy-based assays, both structural and functional. Image analysis topics will touch on filtering, segmentation, and registration. Prereq: BMS 504 with a minimum grade of C-.

**Grade Mode:** Letter Grading

**BIOT 799 - Seminar in Biotechnology****Credits:** 2

The seminar in biotechnology will run from time to time with different topics, including the following: 1) Cutting-edge issues facing the biotechnology industry. 2) Instrumentation and technologies utilized in the biotechnology industry.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Credit/Fail Grading

## Business (BUS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**BUS 400 - Introduction to Business****Credits:** 4

Introduces the study of business: examines the origins and development of American business, its place in a global economy, and its legal and ethical roles in modern society. Includes an overview of the functional areas of business such as finance, marketing, and organizational behavior. Designed for business majors as well as for students considering a major in business.

**Equivalent(s):** ADMN 400**Grade Mode:** Letter Grading**BUS 405 - Introduction to Business Computer Applications****Credits:** 4

This course is designed to prepare students for both their computer related course work in other classes, but also for both internship and permanent professional problems. The skills and knowledge contained in this class are critical to early student success, and should be taken on arrival to the UNHM Business program. These skills are: word processing, presentation development, database creation and access, and spreadsheet data display and analysis. Open to all majors.

**Equivalent(s):** COMP 411**Grade Mode:** Letter Grading**BUS #410 - Introduction to Entrepreneurship****Credits:** 4

This course explores the structure and framework of entrepreneurial endeavors, both inside and outside of the business world. Questions to be addressed include: What is entrepreneurship? What is opportunity recognition and selection? How can you create and define connective advantage? How can you think about people in the entrepreneurial context? How can you garner support (financial and other) for an entrepreneurial venture? What do you do when nothing works as planned?.

**Grade Mode:** Letter Grading**BUS 430 - Introduction to Business Statistics****Credits:** 0 or 4

The use of statistical methods for managerial decision making. Emphasis is on understanding concepts, including inferences from sample data and model formulation, as aids in decision-making. Lab: Using class-focused statistics problems, designed to provide opportunity to develop course-specific problem solving strategies; to adapt from mathematical to statistical thinking; to analyze and communicate significance and meaning of numerical outcomes; to develop course-specific test taking prowess. Prereq: MATH 420 or MATH 425 or equivalent.

**Attributes:** Quantitative Reasoning(Disc)

**Mutual Exclusion:** No credit for students who have taken ADM 430, ADMN 420, ADMN 510, BIOL 528, EREC 525, HHS 540, MATH 439, MATH 539, MATH 644, PSYC 402, PSYC 402H, SOC 402, SOC #402H, SOC 502, SOC 502H.

**Grade Mode:** Letter Grading**BUS 453 - Leadership for Managers****Credits:** 4

This course provides the critical element of analytical and intellectual examination and reflection of certain core issues in the practice of leadership. These objectives are achieved through open discussion, honest self-assessment, experiential exercises, and observation of real-life leadership practice. What is valued in this course are honest relationships and dialogue, risk-taking, dedication to the topic of leadership, initiative, and exploring the confusion and gray areas involved in these topics. Prereq: BUS 400. Only open to Business Admin majors.

**Grade Mode:** Letter Grading**BUS 455 - Management of Human Resources****Credits:** 4

This course emphasizes the development of skills for dealing with selected aspects of human resource management. It aims to enhance the students' ability to apply theoretical concepts and alternative approaches for dealing with common issues concerning the human side of the enterprise. The course is geared to serve the needs of line and staff administrators in supervisory positions. Thus, it strives to train students and facilitate the development of better understanding of human resources issues as they relate to other managerial functions, organizational behavior, and the ability of managers and the organization to achieve prescribed goals. Prereq: BUS 400 or permission of instructor.

**Grade Mode:** Letter Grading**BUS 492 - American Business History****Credits:** 4

This course explores the historical development of American business institutions from the colonial era to the present. Thematic units organize the material focusing in turn on the most significant developments in the American business environment. The goal is a cumulative understanding of the development of the system. A great deal of our discussion and reading centers on the interaction of market operations and social values and how these interactions influenced the business environment at different times. It is the study of business in the context of past times that makes this course different from a course in business methods or institutions. Through the study of the past students develop their critical thinking and writing skills.

**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading

**BUS 520 - Training and Development****Credits:** 4

Students interested in career options in training and development of human resources development learn some of the theoretical bases, core practices, competencies, and issues of this professional field, as well as considerations for global training and development. They are exposed to research and discoveries on skills and knowledge related to training and adult learning, and models for effective training. They learn the most current trends and issues in international training and development, including the push for management and leadership training for intercultural understanding. Prereq: BUS 400, BUS 455, or permission from instructor.

**Grade Mode:** Letter Grading**BUS 530 - Personal Finance****Credits:** 4

This course is designed to give students some expertise in the life decisions that almost everyone must make concerning tax planning, purchasing or renting of a home or automobile, medical, life, auto and home insurance needs. Investments and planning for retirement among other financial decisions that adults must make.

**Attributes:** Quantitative Reasoning(Disc)**Grade Mode:** Letter Grading**BUS 532 - Introduction to Financial Accounting****Credits:** 4

Fundamental concepts of accounting and their impact on the business world and society as a whole. Emphasis on the recording of economic transactions, and preparation and analysis of financial statements. No credit for students who have had ACFI 501, ACFI 502, ADMN 502.

**Grade Mode:** Letter Grading**BUS 533 - Introduction to Managerial Accounting****Credits:** 4

Emphasizes how organizational managers use accounting information to support their functions of planning, control, and decision making. Examples taken from corporations, small business, and not-for-profit organizations. No credit for students who have received credit for ACFI 503, ADMN 503.

**Grade Mode:** Letter Grading**BUS 535 - Federal Taxation****Credits:** 4

Introduction to the basics of the federal income tax rules for individuals. Basic concepts in federal taxation include gross income, exclusions, adjusted gross income, deductions, exemptions, and credits. Additional tax concepts included are cash and accrual methods, passive loss rules, and like-kind exchange. No credit for taking BUS 710 (Federal Taxation) or BUS 675 (Special Topic Federal Taxation).

**Equivalent(s):** BUS 710**Grade Mode:** Letter Grading**BUS 565 - Selling and Sales Management****Credits:** 4

The sales and selling management (SSM) course covers both the strategies, and the tactics, of selling, from the wide-ranging perspectives of sales people and customers. Management topics include: motivation and behavior, sales methodologies, channel optimization, recruiting and selecting representatives, training, compensation, and evaluation. Class also covers in-depth through the class practice sales tactics such as: prospecting and sales call planning, communicating the sales message, negotiating for win-win situations, overcoming objections, closing the sale, and follow-up management. Reflecting the nature of practice selling, the SSM course is offered in a short series of longer days. Prereq: none, but BUS 400 or BUS 610 is encouraged. No credit earned if credit earned for BUS 675 if listed as Selling and Sales Management.

**Grade Mode:** Letter Grading**BUS 575 - Students Consulting Organizations****Credits:** 2

A hands-on course where students will work directly with organizations in the Manchester area helping to solve, marketing, financial, managerial, and technology issues. Clients are secured through the SBDC at UNH. The class will meet once a week for one hour where strategy sessions with the clients take place, lectures on business strategy are given, and presentations from guest speakers will be given. It is expected that students will have to do some outside work based on the needs of the clients. At the end of the semester, students will make a formal, professional presentation and provide a document for action to the client. This course can be applied to the management option requirement. Prereq: BUS 400.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Letter Grading**BUS #600 - New Venture Creation****Credits:** 4

An opportunity for students to identify and create a new business venture via a business plan. Elements of a business plan are examined as well as review of the other entrepreneurial course that move up the minor. Prereq: BUS #410, BUS 453, BUS 550, BUS 565.

**Grade Mode:** Letter Grading**BUS 601 - Financial Management****Credits:** 4

Study of investment, finance, and dividend decisions of the business firm. Topics include capital budgeting, designing and issuing securities, management of working capital and evaluating manager performance. Prereq: completion of Introductory Business Core or permission.

**Grade Mode:** Letter Grading**BUS 603 - Intermediate Financial Accounting I****Credits:** 4

The first of two in-depth financial accounting courses. Course provides student with the in-depth understanding of the theory, conceptual framework, and development of generally accepted accounting principles giving them the knowledge necessary to properly account for and present information in financial statements prepared for external uses. Topics include the income statement, the statement of cash flows and balance sheet with an emphasis on asset accounts. Prereq: BUS 532 and BUS 533. No credit if credit received for BUS 675 Intermediate Accounting I.

**Grade Mode:** Letter Grading

**BUS 610 - Marketing Principles and Applications****Credits:** 4

Studies the process of planning and distributing goods and services to the marketplace. Topics include product planning, pricing, promotion, and distribution. Emphasis on the application of marketing principles to real world business cases. Prereq: BUS 400, ECN 412.

**Equivalent(s):** ADMN 585**Grade Mode:** Letter Grading**BUS 615 - Intermediate Financial Accounting II****Credits:** 4

The second of two in-depth financial accounting courses. Course provides students with an in depth understanding of the theory, conceptual framework, and development of generally accepted accounting principles giving them the knowledge necessary to properly account for and present information in financial statements prepared for external users. Topics include time value of money, current and non-current liabilities, leases, deferred taxes, retirement benefits, stockholders equity, earning per share, accounting changes and errors, and statement of cash flows. No credit if credit received for BUS 675 Intermediate Accounting. Prereq: BUS 532, BUS 533, BUS 603.

**Grade Mode:** Letter Grading**BUS 620 - Organizational Behavior****Credits:** 4

Applications of behavioral science concepts to work settings. Topics include worker incentives and perceptions toward work, group versus individual decision making, conflict resolution, interpersonal and leadership skills, and the study of other behaviors relevant to effective managing of a business organization. Prereq: PTC 500.

**Attributes:** Writing Intensive Course**Equivalent(s):** ADMN 575**Grade Mode:** Letter Grading**BUS 629 - Adv Managerial Accounting****Credits:** 4

Further develop the basic managerial accounting knowledge base and skill set. Emphasis on the cost accounting concepts and techniques used to produce the information needed to make both planning and control decisions as well as cost analysis, overhead allocation, transfer pricing, and decision making. Prereq: BUS 532; BUS 533. No credit if received for BUS 675 Intermediate Accounting.

**Grade Mode:** Letter Grading**BUS 635 - Entrepreneurial Application through Enactus****Credits:** 3

This is a three credit project driven course aimed at teaching students an understanding of free enterprise through the application of economic activities within the community. In addition, students will have special topic sessions on leadership, time management, public speaking, project management, and fundraising. Emphasis on teamwork. Course is open to all students who have junior or senior level standing, in and out of the business program. Prereq: junior or senior level standing. Special fee.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**BUS 640 - Business Communication and Conflict****Credits:** 4

This course is designed to give students a comprehensive view of communication, its scope and importance in business, and the role of communication in establishing a favorable outside the firm environment as well as an affective internal communications program. The various types of business communication media are covered. This course also develops an awareness of the importance of succinct written expression to modern business communication. Prereq: Completion of Introduction to Business Core and BUS 455; or Approval by instructor.

**Equivalent(s):** ADM 640**Grade Mode:** Letter Grading**BUS 661 - Integrated Marketing Communication****Credits:** 4

Integrated Marketing Communications (IMC) is a fast evolving field in business and marketing. This course covers the full spectrum of planning, budgeting, data collection and analysis, creative tools and models, including perspectives on both Business to Consumer and Business to Business, IMC. Special emphasis for: cultural, lifestyle and ethnic sensitivity, global versus individual country tactics, and the fast evolving techniques of social and mobile marketing. All of the above are in the context of building brands and customer loyalty. Prereq: BUS 400 and BUS 610. No credit earned if credit earned for BUS 675 or BUS #685 if listed as Marketing Communication.

**Grade Mode:** Letter Grading**BUS 662 - Digital Marketing Applications****Credits:** 4

This course introduces students to a broad range of marketing applications and digital marketing concepts. The goal is to provide them with hands-on learning opportunities to apply these concepts to real-world marketing problems. A range of marketing and data management tools will be taught to foster understanding and student credentialing on a variety of key 'Software as a Service' platforms. No credit if students have taken BUS 675 - Special Topics - Marketing Demand Applications. Prereq: BUS 400, BUS 610.

**Grade Mode:** Letter Grading**BUS 663 - Services Marketing and Operations Management****Credits:** 4

This course is designed to prepare students for NH business and marketing careers by understanding the issues, challenges, and terminology inherent in industries as diverse as health care, construction, education, professional and technical offices, transportation, information and publishing, tourism, retailing, etc. Case studies are used throughout the term. We study many of these sectors, both as academicians and as consumers, to build a portfolio of understanding across divergent sectors. Students learn about services marketing strategies and management models that: increase customer satisfaction, improve customer retention and create dominant service brands that can create a competitive advantage for firms in any given industry. Prereq: BUS 400; BUS 610. No credit if credit earned for BUS 675 or BUS #685 if listed as Services Marketing.

**Grade Mode:** Letter Grading



**BUS 665 - International Marketing Strategy Management****Credits:** 4

The primary missions of the International Marketing Strategy Management (IMSM) course are to help students to: (1) develop understanding and knowledge of the important role International marketing plays in business (2) develop and improve global thinking, problem solving and integrative skills in a case based context (3) learn and apply the varying tools and models for evaluating when, where are how international marketing investments should be made. (4) understand and implement special approaches for cultural and ethnic differences in taste and attitudes, including trade legalities and regulations. Prereq: BUS 400 and BUS 610. No credit if credit earned for BUS 675 or BUS #685 if listed as International Marketing.

**Grade Mode:** Letter Grading**BUS 675 - Special Topics in Business Administration****Credits:** 1-4

Provides students with an opportunity to explore a topic in business administration such as marketing, management, finance, or accounting. Topics will vary. Barring duplication of subject, may be repeated for credit. Prereq: Completion of Introductory Business Core or permission.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**BUS #685 - Applications in Business Management****Credits:** 4

Selected topics. Topics will vary. Barring duplication of subject, may be repeated for credit.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ADM 685**Grade Mode:** Letter Grading**BUS 690 - Business Program Internship****Credits:** 1-4

Supervised internship practicum within the private, public or non-profit sector. Focus is for the student to gain valuable insights into both professional and managerial positions, applying their college knowledge to a variety of roles and projects, influencing their career trajectory through 'real world' experience. Can be taken multiple times for credit, with credit varying from 1-4 hours based on time spent on the internship. For the 16 credit concentration, up to 4 BUS 690 credits can be applied. Credits beyond will be applied to general credits. Does not substitute for the internship required as part of the Business Capstone Course BUS 750 - Business Internship Senior Seminar. Offered, Fall, Spring and Summer. Cr/f.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Credit/Fail Grading**BUS #691 - VITA Internship****Credits:** 1-4

Internship for the application/completion of the basics of federal income tax rules for individuals. Must have previously completed Federal Taxation course (BUS 535, 710, BUS 675).

**Grade Mode:** Credit/Fail Grading**BUS 695 - Independent Study in Business****Credits:** 1-4

Independent study exploring a special topic emphasizing the managerial, organizational, strategic, political or economic context(s) within which business decisions are made. Prereq: BUS 400 and permission of instructor.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ADM 695**Grade Mode:** Letter Grading**BUS 705 - Business Ethics****Credits:** 4

Because Business Ethics is a capstone course, it is imperative that students understand the business psychology concepts relative to power, politics, communication, and decision making to name a few. Organizational Behavior provides knowledge in those areas and this will give students greater depth and cognitive analysis when addressing and applying principles in the ethics course. Prereq: BUS 620 and BUS 610.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**BUS 712 - Accounting Information Systems****Credits:** 4

Course centers on how organizations collect, record, process, and store accounting information and data. Topics include information systems concepts, transaction cycles and processing, flowcharting, XBRL, e-business and ERP systems, computer fraud and IT security, internal controls, auditing with AIS, Quickbooks processing, and ethics. Topics include introduction to data analytics and blockchain technology. Prereq: BUS 615.

**Grade Mode:** Letter Grading**BUS #715 - Forensic Accounting/Fraud Examination****Credits:** 4

This course will develop the students' understanding of what forensic accounting is and how it pertains to both civil and criminal matters. The participant in this course will gain a basic understanding of the characteristics of forensic accounting, the tools used in this area and the applications in the business world today, including financial statement and tax fraud, bankruptcy, divorce, identity theft, organized crime and litigation services. Pre- or Coreq: BUS 720.

**Grade Mode:** Letter Grading**BUS 720 - Auditing****Credits:** 4

Introduction to the basics of auditing and other assurance services theory and practice. It provides an overview and understanding of the public accounting profession and the professional auditing standards. The class also integrates auditing material with previous financial and managerial accounting course. No credit if credit received for BUS 675 Auditing. Prereq: BUS 532 and BUS 533 and BUS 603 and BUS 615.

**Grade Mode:** Letter Grading**BUS 725 - Financial Statement Analysis****Credits:** 4

This course will examine: financial reporting, the quality of accounting information, and US GAPP and IFRS. The flexibility which is built into GAAP will be examined, noting how firms may take advantage of this flexibility to manipulate financial information while staying within the bounds of the rules for proper reporting. Also examined will be the relationships found within the reported numbers by comparing various elements of the financial statements. Prereq: BUS 720.

**Grade Mode:** Letter Grading

**BUS 750 - Business Capstone Senior Seminar - Internship****Credits:** 4

The capstone seminar course in which students complete their degree with an internship, while also conducting case analyses, class exercises, and a variety of reflective writings via selected readings. Written and oral student reports. Prereq: Last full senior semester standing; BUS 400 with a minimum grade of C-, BUS 405 with a minimum grade of C-, BUS 430 with a minimum grade of C-, BUS 532 with a minimum grade of C-, BUS 533 with a minimum grade of C-, BUS 610 with a minimum grade of C-, BUS 620 with a minimum grade of C-, BUS 690 with a minimum grade of C-, BUS 705 with a minimum grade of C-, ECN 411 with a minimum grade of C-, ECN 412 with a minimum grade of C-, COMP 405 with a minimum grade of C- or COMP 415 with a minimum grade of C-, MATH 420 with a minimum grade of C- or MATH 425 with a minimum grade of C-, PTC 500 with a minimum grade of C-, or pre-set equivalents.

**Mutual Exclusion:** No credit for students who have taken BUS 760.**Grade Mode:** Letter Grading**BUS 760 - BUS SR SEM - Research Project****Credits:** 4

The capstone seminar course is for students with extensive professional experience. Extensive independent research and writing required. Also conducting case analyses, class exercises, and a variety of reflective writings via selected readings, written and oral student reports. Prereq: Last full senior semester standing; BUS 400 with a minimum grade of C-, BUS 405 with a minimum grade of C-, BUS 430 with a minimum grade of C-, BUS 532 with a minimum grade of C-, BUS 533 with a minimum grade of C-, BUS 610 with a minimum grade of C-, BUS 620 with a minimum grade of C-, BUS 690 with a minimum grade of C-, BUS 705 with a minimum grade of C-, ECN 411 with a minimum grade of C-, ECN 412 with a minimum grade of C-, COMP 405 with a minimum grade of C- or COMP 415 with a minimum grade of C-, MATH 420 with a minimum grade of C- or MATH 425 with a minimum grade of C-, PTC 500 with a minimum grade of C-, or pre-set equivalents.

**Mutual Exclusion:** No credit for students who have taken BUS 750.**Grade Mode:** Letter Grading

## Chemical Engineering (CHE)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**CHE 400 - Chemical Engineering Lectures****Credits:** 1

Introduces the profession, the process engineer as designer and problem solver; and the goals of the chemical engineering/bioengineering curriculum. Lectures by faculty and practitioners. Introduction to computer skills, engineering ethics, safety, and careers in chemical engineering and bioengineering. Cr/F.

**Grade Mode:** Credit/Fail Grading**CHE 410 - Energy and Environment****Credits:** 4

Energy supply in this country and the world; conventional fuel reserves: coal, oil, natural gas; alternative sources: nuclear, solar, geothermal, et. Forecasts and strategies to meet needs. Environmental pollution, sources, and economic and environmental impacts. Methods for pollution control. Regulatory standards for environmental protection.

**Attributes:** Physical Science(Discovery)**Equivalent(s):** CHE 410H**Grade Mode:** Letter Grading**CHE 501 - Introduction to Chemical Engineering I****Credits:** 3

Systems of units; material balances and chemical reactions; gas laws; phase phenomena.

**Grade Mode:** Letter Grading**CHE 502 - Introduction to Chemical Engineering II****Credits:** 3

Energy and material balances for systems with and without chemical reactions; design case studies.

**Attributes:** Inquiry (Discovery)**Grade Mode:** Letter Grading**CHE 601 - Fluid Mechanics and Unit Operations****Credits:** 3

Continuity, momentum, and energy equations; laminar and turbulent flow in pipes; rheology. Applications to flow in porous media, filtration, and fluidization.

**Grade Mode:** Letter Grading**CHE 602 - Heat Transfer and Unit Operations****Credits:** 3

Thermal properties of materials, steady-state and transient conduction and convection; radiation; applications to heat exchangers and process equipment.

**Grade Mode:** Letter Grading**CHE 603 - Applied Mathematics for Chemical Engineers****Credits:** 0 or 4

Mathematical modeling and analysis of chemical engineering problems. Analytical methods for first- and second-order differential equations; numerical solutions; series solutions; Bessel functions; Laplace transforms; matrix algebra. Interpretation and solution of partial differential equations. Lab.

**Grade Mode:** Letter Grading**CHE 604 - Chemical Engineering Thermodynamics****Credits:** 3

Volumetric and phase behavior of ideal and real gases and liquids; cycles; steady-flow processes; chemical equilibrium.

**Grade Mode:** Letter Grading**CHE 612 - Chemical Engineering Laboratory I****Credits:** 3

Selected experiments in fluid mechanics, heat transfer, and unit operations. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CHE 614 - Separation Processes****Credits:** 3

Adsorption, Chromatography, Membrane Separations, Liquid-liquid, Extraction and Crystallization, requires junior level studies in chemical engineering or permission.

**Grade Mode:** Letter Grading

**CHE 651 - Biotech Experience/Biomanufacturing****Credits:** 4

Course begins by introducing students to the proteins and companies of biotechnology and to current good manufacturing practices. For remainder of the course, students use cell culture of bacteria, mammalian and yeast cells to produce human proteins using the tools and manufacturing standards, operating procedures of biotechnology, including upstream and downstream processing of proteins, and quality control of protein production. Permission required. Also listed as ANSC 651 and MICR 651.

**Equivalent(s):** ANSC 651, MICR 651**Mutual Exclusion:** No credit for students who have taken BIOT 775.**Grade Mode:** Letter Grading**CHE 695 - Chemical Engineering Project****Credits:** 1-4

Independent research problems carried out under faculty supervision.

**Grade Mode:** Letter Grading**CHE 696 - Independent Study****Credits:** 1-4

Prereq: permission of the adviser and department chairperson; granted only to students having superior scholastic achievement.

**Grade Mode:** Letter Grading**CHE 703 - Mass Transfer and Stagewise Operations****Credits:** 3

Diffusion in gases, liquids, and solids; design and analysis of distillation, absorption, and other stagewise equipment and operations.

**Grade Mode:** Letter Grading**CHE 705 - Fossil Fuels and Renewable Energy Sources****Credits:** 4

Processing and refining of coal, crude oil, natural gas, tar sands and shale oil. Biomass co-combustion, biofuel extraction, impediments to widespread utilization. Exploration of environmental issues with energy generation and consumption. Lab.

**Grade Mode:** Letter Grading**CHE 706 - Electrochemical Methods for Energy Applications****Credits:** 4

Fundamentals and applications of thermodynamics of electrochemical processes; kinetics of electrochemical reactions; electrocatalysis basics and current technologies for batteries, supercapacitors and fuel cells.

Prereq: CHEM 683, CHEM 684.

**Grade Mode:** Letter Grading**CHE 707 - Chemical Engineering Kinetics****Credits:** 3

Use of laboratory data to design commercial reactors. Continuous, batch, plug-flow, and stirred-tank reactors for homogeneous and catalytic multiphase reactions.

**Grade Mode:** Letter Grading**CHE 708 - Chemical Engineering Design****Credits:** 4

Introduction to cost engineering. Application of acquired skills to design of chemical processes. Individual major design project required. Safety for industrial processes. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** CHE 608, CHE 608E, ENE 608, ENE 708**Grade Mode:** Letter Grading**CHE 709 - Fundamentals of Air Pollution and Its Control****Credits:** 4

The origin and fate of air pollutants. Fundamentals of atmospheric meteorology, chemistry, and dispersion phenomena. Control of air pollutants and the related equipment. Current issues. Lab.

**Equivalent(s):** ENE 709**Grade Mode:** Letter Grading**CHE 712 - Introduction to Nuclear Engineering****Credits:** 4

Development of nuclear reactors; binding-energy; radioactivity; elements of nuclear reactor theory; engineering problems of heat transfer, fluid flow, materials selection, and shielding; environmental impacts.

**Grade Mode:** Letter Grading**CHE 713 - Chemical Engineering Laboratory II****Credits:** 3

Selected experiments in mass transfer, stagewise operations, thermodynamics, and kinetics. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CHE 714 - Chemical Sensors****Credits:** 4

Interdisciplinary approach using thermodynamic, physical and surface chemistry, kinetic, electrochemical, and optical principles to analyze and design chemical sensors. Topics will include selectivity and sensitivity of sensors, biosensors, electrochemical sensors, mass sensors, optical sensors, and multivariate sensors. Lab. Prereq: Math 527; CHEM 405 (or equivalent); or permission.

**Grade Mode:** Letter Grading**CHE #722 - Introduction to Microfluidics****Credits:** 4

Fundamentals and applications of microfluidics; scaling laws; microfabrication technology; hydrodynamics and electrostatics; interfacial phenomena; capillary effects and diffusion; microvalves; micropumps; lab-on-a-chip systems; biochips. Prereq: fluids mechanics course or permission of instructor.

**Grade Mode:** Letter Grading**CHE 744 - Corrosion****Credits:** 4

Fundamentals of corrosion processes in industrial and environmental settings; thermodynamics, kinetics, and mass transport in local corrosion cells; protection by electrochemical, chemical, surface modification or barrier methods; instrumental methods in corrosion science. Lab.

**Grade Mode:** Letter Grading**CHE 752 - Process Dynamics and Control****Credits:** 4

Dynamic behavior of chemical engineering processes described by differential equations; feedback control concepts and techniques; stability analysis. Lab.

**Grade Mode:** Letter Grading**CHE 761 - Biochemical Engineering****Credits:** 4

Immobilized enzyme technology, microbial biomass production, transport phenomena in microbial systems, biological reactor design, process instrumentation and control, applications in separation and purification processes. Lab.

**Grade Mode:** Letter Grading

**CHE 762 - Biomedical Engineering****Credits:** 4

Overview of the biomedical engineering through topical studies such as drug delivery and sensors. Discussion of modern engineering methods through primary research sources. Prereq: differential equations and statistics. Writing intensive. Also listed as BENG 762.

**Attributes:** Writing Intensive Course**Equivalent(s):** BENG 762**Grade Mode:** Letter Grading**CHE 766 - Biomaterials****Credits:** 4

Fundamental principles of biology and material science, along with latest topics in biomaterials research. Topics include cell biology, wound healing, host response to foreign materials, polymers, hydrogels, diffusion and methods of material characterization. Specific medical applications of biomaterials such as orthopedic and dental implants, heart valves, artificial blood vessels, cochlear and ophthalmic implants and tissue engineering. Laboratory. Students are expected to have some background in chemistry, mathematics, and high school biology. Also listed as BENG 766.

**Equivalent(s):** BENG 766**Grade Mode:** Letter Grading

## Chemistry (CHEM)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**CHEM 400 - Freshman Seminar****Credits:** 1

An introduction to the chemistry profession. Talks and workshops on the career of a chemist in academia, industry, medicine, law, teaching and government. Required for chemistry majors. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 2 credits.**Grade Mode:** Credit/Fail Grading**CHEM 403 - General Chemistry I****Credits:** 0 or 4

Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Special fee. Lab. Cannot be taken for credit if credit received for CHEM 405. Required for chemistry majors.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Equivalent(s):** CHEM 405**Grade Mode:** Letter Grading**CHEM 404 - General Chemistry II****Credits:** 0 or 4

Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Required for chemistry majors. Special fee. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Prerequisite(s):** CHEM 403 with a minimum grade of D-.**Equivalent(s):** CHEM 404H, CHEM 405, CHEM 415, CHEM #416**Grade Mode:** Letter Grading**CHEM 404H - Honors/General Chemistry II****Credits:** 0 or 4

Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Required for chemistry majors. Special fee. Lab. Honors course is designed for students who have enrolled in the honors degree program. Special fee. Lab. Cannot be taken for credit if credit received for CHEM 402.

**Attributes:** Discovery Lab Course; Honors course; Physical Science(Discovery)**Prerequisite(s):** CHEM 403 with a minimum grade of D-.**Equivalent(s):** CHEM 404, CHEM 405, CHEM 415, CHEM #416**Grade Mode:** Letter Grading**CHEM 405 - Chemical Principles for Engineers****Credits:** 0 or 4

Basic principles; atomic structure, bonding, equilibria, and thermodynamics. One year of high school chemistry, algebra, and knowledge of logarithms. Cannot be taken for credit if credit received for CHEM 403 and CHEM 404. Required for chemical engineering, mechanical engineering, electrical and computer engineering, environmental engineering; industrial majors. Not applicable for credit for majors in chemistry or biochemistry.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Equivalent(s):** CHEM 403, CHEM 404, CHEM 404H, CHEM 413, CHEM 414**Grade Mode:** Letter Grading**CHEM 408 - Green Goggles: Introduction to Green Chemistry****Credits:** 4

In this course, we investigate the principles and practice of Green Chemistry as they connect to real world examples. Green Chemistry is the field of science that uses a principle-based approach to design chemical reactions and processes to make them more sustainable. In exploring green chemistry, many of the fundamental concepts of a general chemistry course are investigated. Some topics include use of renewable feedstocks, atom economy, catalysis, waste prevention, and design for degradation.

**Attributes:** Physical Science(Discovery)**Equivalent(s):** CHEM 444G**Grade Mode:** Letter Grading**CHEM 409 - Chemistry and Society****Credits:** 4

Elementary survey of chemistry; integrates principles and applications. For students who do not intend to take any other chemistry courses and those interested in satisfying a general education science requirement. Not a prerequisite for any other chemistry courses. (Not offered every year.) Chemistry majors are excluded from taking this course.

**Attributes:** Physical Science(Discovery); Inquiry (Discovery)**Grade Mode:** Letter Grading**CHEM 411 - Introductory Chemistry for Life Sciences****Credits:** 0 or 4

Fundamental and pragmatic aspects of chemistry, particularly as foundation for nutritional biochemistry. Includes basics of bonding, acid/base behavior, reaction energy, intermolecular forces, stoichiometry, and equilibrium. High school chemistry not required. This course is not a replacement to CHEM 403 and is not an acceptable pre-requisite for CHEM 404. Special fee.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Grade Mode:** Letter Grading



**CHEM 413 - General Chemistry Lecture I****Credits:** 3

Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Special permission required. Not offered every summer. Cannot be taken for credit if credit received for CHEM 401, CHEM 403, CHEM 405, or CHEM 409.

**Equivalent(s):** CHEM 401, CHEM 403, CHEM 405, CHEM 409**Grade Mode:** Letter Grading**CHEM 415 - General Chemistry Lecture II****Credits:** 3

Fundamental laws and concepts applied to nonmetals, metals, and their compounds. For students who plan to take further chemistry courses. Previous chemistry recommended. Knowledge of algebra, exponentials, and logarithms required. Cannot be taken for credit if credit received for CHEM 402 or CHEM 404.

**Prerequisite(s):** (CHEM 403 with a minimum grade of D- or CHEM 413 with a minimum grade of D-).**Equivalent(s):** CHEM 402, CHEM 404, CHEM 404H**Grade Mode:** Letter Grading**CHEM #416 - General Chemistry Lab II****Credits:** 1

Lab application of fundamental laws and concepts applied to nonmetals, metals and their compounds. Previous general chemistry lecture required. Special permission. Special fee. Not offered every summer. Cannot be taken for credit if credit received for CHEM 402 or CHEM 404. Not open to Chemistry majors.

**Prerequisite(s):** (CHEM 403 with a minimum grade of D- or CHEM 414 with a minimum grade of D-).**Equivalent(s):** CHEM 402, CHEM 404, CHEM 404H**Grade Mode:** Letter Grading**CHEM 501 - Peer-led Team Learning in Chemistry****Credits:** 2

Initial experience as peer instructional leader. Practical application of theories of cognition, group dynamics, learning, and motivation to helping other students learn chemistry in general chemistry. Requires one weekly meeting with students.

**Prerequisite(s):** (CHEM 403 with a minimum grade of D- or CHEM 404 with a minimum grade of D- or CHEM 404H with a minimum grade of D-).**Grade Mode:** Letter Grading**CHEM 502 - Advanced Peer-led Team Leadership in Chemistry****Credits:** 1

Development and assessment of leadership skills. Practical application of theories of cognition, group dynamics, learning, and motivation to helping other students learn chemistry in general chemistry. Requires one weekly meeting with students. Permission required.

**Prerequisite(s):** CHEM 501 with a minimum grade of D-.**Grade Mode:** Letter Grading**CHEM 503 - Mentoring for Peer Team Learning****Credits:** 1

Experienced leaders mentor a new leader in implementation of PLTL model, including initial co-leading and observational formative assessment. Mentors report on mentee development, visit other experienced leaders, and provide a final evaluation. Mentors lead their own weekly group and assist part-time in the PLTL leader meetings.

**Prerequisite(s):** CHEM 501 with a minimum grade of D-.**Grade Mode:** Letter Grading**CHEM 517 - Quantitative Analysis****Credits:** 4

Combines lecture, laboratory, and in-class problem solving to study solubility, acid-base, redox, and complexation reactions and their application for quantitative chemical measurements. Lab.

**Co-requisite:** CHEM 518**Prerequisite(s):** (CHEM 403 with a minimum grade of D- or CHEM 405 with a minimum grade of D-).**Equivalent(s):** CHEM 406**Grade Mode:** Letter Grading**CHEM 518 - Quantitative Analysis Laboratory****Credits:** 1

Volumetric methods with an emphasis on technique; separations; and selected instrumental methods such as potentiometry, spectrophotometry, atomic absorption, and gas chromatography. Special fee.

**Co-requisite:** CHEM 517**Prerequisite(s):** (CHEM 404 with a minimum grade of D- or CHEM 404H with a minimum grade of D- or CHEM 405 with a minimum grade of D-).**Equivalent(s):** CHEM 407**Grade Mode:** Letter Grading**CHEM 545 - Organic Chemistry****Credits:** 3

Introductory study of carbon compounds for those who desire a brief terminal course. This course is a one semester course only. CHEM 545 and 546 are not applicable for pre-med, pre-vet, pharmacological majors or minors requiring a year long course of organic. CHEM 545 and CHEM 546 cannot be used to meet semester 1 of the year long-organic course (CHEM 547 or CHEM 651). CHEM 545 and CHEM 546L are co-requisites and must be taken together.

**Co-requisite:** CHEM 546**Prerequisite(s):** (CHEM 404 with a minimum grade of D- or CHEM 404H with a minimum grade of D- or CHEM 405 with a minimum grade of D-).**Equivalent(s):** CHEM 547, CHEM 548, CHEM 651, CHEM 652**Grade Mode:** Letter Grading**CHEM 546 - Organic Chemistry Laboratory****Credits:** 2

Introductory study of carbon compounds for those who desire a brief terminal course. Lab.

**Co-requisite:** CHEM 545**Prerequisite(s):** (CHEM 404 with a minimum grade of D- or CHEM 404H with a minimum grade of D- or CHEM 405 with a minimum grade of D-).**Grade Mode:** Letter Grading**CHEM 547 - Organic Chemistry I****Credits:** 3

Principal classes of organic compounds, aliphatic and aromatic; class reactions and structural theory. Intended primarily for chemistry and biochemistry majors. Students receiving credit for CHEM 547-548 may not receive credit for either CHEM 545 or CHEM 651 and CHEM 652.

**Co-requisite:** CHEM 549**Prerequisite(s):** (CHEM 404 with a minimum grade of D- or CHEM 404H with a minimum grade of D- or CHEM 405 with a minimum grade of D-).**Equivalent(s):** CHEM 545, CHEM 651, CHEM 652**Grade Mode:** Letter Grading



**CHEM 548 - Organic Chemistry II****Credits:** 3

Principal classes of organic compounds, aliphatic and aromatic; class reactions and structural theory. Intended primarily for chemistry and biochemistry majors. Students receiving credit for CHEM 547 and CHEM 548 may not receive credit for either CHEM 545 or CHEM 651 and CHEM 652. Only listed majors allowed: Chemistry (BS), Chemistry (BA), Bchmmolcebio, and Biochemistry.

**Co-requisite:** CHEM 550**Prerequisite(s):** (CHEM 404 with a minimum grade of D- or CHEM 404H with a minimum grade of D- or CHEM 405 with a minimum grade of D-) and CHEM 547 with a minimum grade of D-.**Equivalent(s):** CHEM 545, CHEM 651, CHEM 652**Grade Mode:** Letter Grading**CHEM 549 - Organic Chemistry Laboratory****Credits:** 2

Special fee. Lab.

**Co-requisite:** CHEM 547**Equivalent(s):** CHEM 653**Grade Mode:** Letter Grading**CHEM 550 - Organic Chemistry Laboratory****Credits:** 2

Special fee. Lab.

**Co-requisite:** CHEM 548**Equivalent(s):** CHEM 654**Grade Mode:** Letter Grading**CHEM 574 - Chemistry Across the Periodic Table****Credits:** 4

Ninety-eight elements form the building blocks of every substance on Earth—they are elegantly organized into what we now call The Periodic Table. This course will discuss the structure/property/reactivity patterns inherent in The Periodic Table, their origins according to the quantum mechanical model of the atom, and how they are manifest in current research advancements and modern applications of main group element chemistry, transition metal chemistry, and the chemistry of solids and materials.

**Attributes:** Inquiry (Discovery)**Prerequisite(s):** (CHEM 404 with a minimum grade of D- or CHEM 404H with a minimum grade of D- or CHEM 405 with a minimum grade of D-).**Grade Mode:** Letter Grading**CHEM 576 - Experimental Inorganic Chemistry****Credits:** 2

This laboratory course is an introduction to synthetic methods in inorganic chemistry and the study of the elements across the periodic table. This course will emphasize the use of spectroscopic and analytical techniques specifically aimed at characterizing and identifying inorganic compounds, such as multi-nuclear NMR, UV\Vis, IR spectroscopy, X-ray diffraction and mass spectrometry. An introduction to scientific writing will be included. Special fee.

**Prerequisite(s):** CHEM 574 (may be taken concurrently) with a minimum grade of D-.**Grade Mode:** Letter Grading**CHEM 651 - Organic Chemistry I****Credits:** 3

Principal classes of organic compounds, aliphatic and aromatic, class reactions and structural theory. Intended primarily for pre-healing arts, biological science, and health science students. Students receiving credit for CHEM 651 and CHEM 652 may not receive credit for either CHEM 545 or CHEM 547 and CHEM 548.

**Co-requisite:** CHEM 653**Prerequisite(s):** (CHEM 404 with a minimum grade of D- or CHEM 404H with a minimum grade of D- or CHEM 405 with a minimum grade of D-).**Equivalent(s):** CHEM 545, CHEM 547, CHEM 548**Grade Mode:** Letter Grading**CHEM 652 - Organic Chemistry II****Credits:** 3

Principal classes of organic compounds, aliphatic and aromatic, class reactions and structural theory. Intended primarily for pre-healing arts, biological science, and health science students.

**Co-requisite:** CHEM 654**Prerequisite(s):** CHEM 651 with a minimum grade of D- and CHEM 653 with a minimum grade of D-.**Equivalent(s):** CHEM 545, CHEM 547, CHEM 548**Grade Mode:** Letter Grading**CHEM 652A - Organic Chemistry II****Credits:** 3

Principal classes of organic compounds, aliphatic and aromatic, class reactions, and structural theory. Intended primarily for pre-healing arts, biological science, and health science students. Students receiving credit for CHEM 651 and CHEM 652 may not receive credit for either CHEM 545 or CHEM 547 and CHEM 548. This course is for Chemical Engineers only.

**Prerequisite(s):** CHEM 651 with a minimum grade of D- and CHEM 653 with a minimum grade of D-.**Grade Mode:** Letter Grading**CHEM 653 - Organic Chemistry Laboratory****Credits:** 2

Special fee. Lab.

**Co-requisite:** CHEM 651**Equivalent(s):** CHEM 549**Grade Mode:** Letter Grading**CHEM 654 - Organic Chemistry Laboratory****Credits:** 2

Special fee. Lab.

**Co-requisite:** CHEM 652**Equivalent(s):** CHEM 550**Grade Mode:** Letter Grading**CHEM 683 - Physical Chemistry I****Credits:** 3

Topics may be chosen from: properties of gases, liquids, and solids; thermochemistry, and thermodynamics; chemical equilibria; reaction rates; quantum chemistry and spectroscopy.

**Co-requisite:** CHEM 685**Prerequisite(s):** (CHEM 404 with a minimum grade of D- or CHEM 404H with a minimum grade of D- or CHEM 405 with a minimum grade of D-) and (MATH 426 with a minimum grade of D- or MATH 426H with a minimum grade of D-) and (PHYS 402 (may be taken concurrently) with a minimum grade of D- or PHYS 407 (may be taken concurrently) with a minimum grade of D- or PHYS 407H (may be taken concurrently) with a minimum grade of D- or PHYS 407S (may be taken concurrently) with a minimum grade of D-).**Equivalent(s):** CHEM 681, CHEM 682**Grade Mode:** Letter Grading

**CHEM 684 - Physical Chemistry II****Credits:** 3

Topics may be chosen from: properties of gases, liquids, and solids; thermochemistry, and thermodynamics; chemical equilibria; reaction rates; quantum chemistry and spectroscopy.

**Co-requisite:** CHEM 686**Prerequisite(s):** CHEM 683 with a minimum grade of D- and (MATH 426 with a minimum grade of D- or MATH 426H with a minimum grade of D-).**Grade Mode:** Letter Grading**CHEM 685 - Physical Chemistry Laboratory****Credits:** 2

Measurement of thermodynamic properties, chemical kinetics, and methods of determining the structure of matter. Special fee.

**Co-requisite:** CHEM 683

**Prerequisite(s):** (CHEM 404 with a minimum grade of D- or CHEM 404H with a minimum grade of D- or CHEM 405 with a minimum grade of D-) and (MATH 426 with a minimum grade of D- or MATH 426H with a minimum grade of D-) and (PHYS 407 (may be taken concurrently) with a minimum grade of D- or PHYS 407H (may be taken concurrently) with a minimum grade of D- or PHYS 402 (may be taken concurrently) with a minimum grade of D- or PHYS 407S (may be taken concurrently) with a minimum grade of D-).

**Grade Mode:** Letter Grading**CHEM 686 - Physical Chemistry Laboratory****Credits:** 2

Measurement of thermodynamic properties, chemical kinetics, and methods of determining the structure of matter. Special fee.

**Co-requisite:** CHEM 684

**Prerequisite(s):** CHEM 683 with a minimum grade of D- and CHEM 685 with a minimum grade of D- and (PHYS 407 (may be taken concurrently) with a minimum grade of D- or PHYS 407H with a minimum grade of D- or PHYS 402 (may be taken concurrently) with a minimum grade of D- or PHYS 407S (may be taken concurrently) with a minimum grade of D-).

**Equivalent(s):** CHEM 686W**Grade Mode:** Letter Grading**CHEM 696 - Independent Study****Credits:** 1-4

For exceptional students. Individual reading, writing, or laboratory work carried out under the tutelage of a faculty member. May be used to replace specific required courses in chemistry.

**Prerequisite(s):** (CHEM 404 with a minimum grade of D- or CHEM 404H with a minimum grade of D- or CHEM 405 with a minimum grade of D-).**Grade Mode:** Letter Grading**CHEM 708 - Spectroscopic Investigations of Organic Molecules****Credits:** 3

Identification and structural analysis of chemical compounds by selected instrumental methods. Typical topics include proton and carbon-13 NMR spectroscopy, IR and UV spectroscopy, and mass spectrometry.

**Grade Mode:** Letter Grading**CHEM 740 - Chemical Biology****Credits:** 3

How does the COVID vaccine work? What is an antibody conjugate?

What is bioconjugation? How do we see mRNA in living cells? How do we evolve enzymes? Chemical Biology is the interdisciplinary study of the chemicals and chemical reactions involved to probe, manipulate, and control biological systems in vitro and in vivo. This course is designed for biologists, chemists, and engineers who want to understand cutting edge and relevant research techniques used in modern medicine.

**Prerequisite(s):** (CHEM 547 with a minimum grade of D- and CHEM 548 with a minimum grade of D-) or (CHEM 651 with a minimum grade of D- and CHEM 652 with a minimum grade of D-).

**Grade Mode:** Letter Grading**CHEM 755 - Advanced Organic Chemistry****Credits:** 3

Methods of synthesis and determination of structure, including stereochemistry of complex organic compounds.

**Prerequisite(s):** (CHEM 548 with a minimum grade of D- or CHEM 652 with a minimum grade of D-).**Grade Mode:** Letter Grading**CHEM 762 - Instrumental Methods of Chemical Analysis****Credits:** 3

Theory, instrumentation, and application of methods such as atomic absorption, coulometry, emission spectrography, gas and liquid chromatography, polarography, potentiometry, IR and UV-VIS absorption spectrophotometry, and mass spectrometry to chemical analysis.

**Co-requisite:** CHEM 763

**Prerequisite(s):** CHEM 517 with a minimum grade of D- and CHEM 518 with a minimum grade of D- and CHEM 684 (may be taken concurrently) with a minimum grade of D-.

**Grade Mode:** Letter Grading**CHEM 763 - Instrumental Methods of Chemical Analysis Laboratory****Credits:** 2 or 3

Experimental parameters, error analysis, and applications of the methods covered in CHEM 762. Special fee.

**Co-requisite:** CHEM 762**Equivalent(s):** CHEM 763W**Grade Mode:** Letter Grading**CHEM 774 - Inorganic Chemistry****Credits:** 3

Basic theoretical concepts and their applications to inorganic reactions and compounds.

**Prerequisite(s):** (CHEM 548 with a minimum grade of D- or CHEM 652 with a minimum grade of D-).**Grade Mode:** Letter Grading**CHEM 776 - Physical Chemistry III****Credits:** 3

Application of quantum theory to atomic electron structure, molecular structure, and spectroscopy. Advanced topics in physical chemistry. Special fee.

**Prerequisite(s):** CHEM 684 with a minimum grade of D-.**Grade Mode:** Letter Grading

**CHEM 777 - Advanced Synthesis and Characterization****Credits:** 0 or 3

This is an advanced laboratory course involving the synthesis and characterization of organic and inorganic compounds. Students will leave this course with sufficient proficiency to reproduce synthetic procedures and prepare compounds from the chemical literature. Special fee.

**Prerequisite(s):** CHEM 550 with a minimum grade of D- and CHEM 576 with a minimum grade of D-.

**Grade Mode:** Letter Grading**CHEM 795 - Special Topics****Credits:** 2-4

New or specialized topics not covered in regular course offerings.

**Repeat Rule:** May be repeated for a maximum of 4 credits.

**Grade Mode:** Letter Grading**CHEM 798 - Senior Seminar****Credits:** 1

Student reports on topics of interest. Writing intensive. Cr/F.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** (CHEM 548 with a minimum grade of D- or CHEM 652 with a minimum grade of D-) and CHEM 684 with a minimum grade of D-.

**Equivalent(s):** CHEM 698**Grade Mode:** Credit/Fail Grading**CHEM 799 - Senior Thesis****Credits:** 4

Yearlong investigation in a selected topic, with background and experimental investigation. For chemistry majors who have completed CHEM 548, CHEM 694, and CHEM 762. Required for B.S. majors. Strongly recommended for B.A. chemistry majors. 2.50 average and approval of department chairperson. Lab. Two semesters of 4 credits each are required.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** CHEM 548 with a minimum grade of D- and CHEM 684 with a minimum grade of D-.

**Repeat Rule:** May be repeated up to 1 time.

**Equivalent(s):** CHEM 699**Grade Mode:** Letter Grading

## Chinese (CHIN)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**CHIN #400 - Conversational Chinese****Credits:** 4

This course, for students with no previous training in Chinese, is designed to promote conversational skills in the target language. Communicative strategies are developed within the context of cultural components.

Topics include those which enable students to function in China in everyday situations (e.g., food, leisure activities, transportation, business exchanges, tourism, and daily life). This course does not satisfy the foreign language requirement.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading**CHIN 401 - Elementary Chinese I****Credits:** 4

Designed for students without previous knowledge of Chinese. Focuses on developing communicative proficiency in listening, speaking, reading, and writing. Students will learn basic vocabulary and sentence structures for use in essential everyday situations, as well as aspects of Chinese culture and society related to the course materials.

**Grade Mode:** Letter Grading**CHIN 402 - Elementary Chinese II****Credits:** 4

Focuses on developing communicative proficiency in listening, speaking, reading, and writing. Students will learn basic vocabulary and sentence structures for use in essential everyday situations, as well as aspects of Chinese culture and society related to the course materials. CHIN 401 and CHIN 402 taken together satisfies the foreign language requirement. Prereq: CHIN 401 or equivalent. Cannot be taken separately without permission of the instructor.

**Attributes:** Foreign Language Requirement**Grade Mode:** Letter Grading**CHIN #410 - Communicative Chinese for the Professions****Credits:** 4

A skill-based course for students who wish to focus on the Chinese language in relation to the health fields, business, law, tourism, and social service. Helps students develop a practical understanding of China through communicative activities in specific fields. Does not satisfy the foreign language requirement.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading**CHIN #420 - Summer Experience in China****Credits:** 4

This course is designed to let students experience the Chinese language and culture first hand. It is conducted in China each summer. Students first travel to Beijing, Xian, Chengdu and Shanghai for about a week with a faculty. They then need to learn the basic Chinese conversation for two and a half weeks at Chengdu University. Students can choose to take either elementary or intermediate Chinese in Chengdu.

**Co-requisite:** INCO 589

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading**CHIN 425 - Introduction to Chinese Culture****Credits:** 4

Conducted in English. This course offers a critical introduction to Chinese culture, including its three philosophical foundations (Confucianism, Daoism, Buddhism), various branches of cultural production (e.g. language, food, painting, military strategy), and modern transformation. Explores the intellectual, literary, artistic, and socio-political issues that have shaped Chinese culture for the past two and a half millennia. Students can expect to gain in-depth knowledge of some major elements that define the Chinese tradition.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**CHIN 503 - Intermediate Chinese I****Credits:** 4

Focuses on developing communicative proficiency in listening, speaking, reading, and writing. Students will strengthen the language skills learned at previous levels, and acquire more advanced vocabulary and sentence patterns, as well as related cultural knowledge, to deal with more complicated everyday situations.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading

**CHIN 504 - Intermediate Chinese II****Credits:** 4

Focuses on developing communicative proficiency in listening, speaking, reading, and writing. Students will strengthen the language skills learned at previous levels, and acquire more advanced vocabulary and sentence patterns, as well as related cultural knowledge, to deal with more complicated everyday situations. Prereq: CHIN 503 or equivalent. Cannot be taken separately without permission of the instructor.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**CHIN 521 - What does it Mean to be Modern? Lenses of Modern Chinese Literature and Film****Credits:** 4

Conducted in English. This course explores various facets of the modern experience through the lenses of 20th and 21st century Chinese literature and film. We will discuss both the general intellectual, ethical, socio-political, historical and aesthetic issues that shape the global modernity, and the particular situations China faces as a non-Western culture with its own unique history. Major works from mainland China, Hong Kong, and Taiwan.

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**CHIN 631 - Advanced Chinese Conversation and Composition I****Credits:** 4

Focuses on developing communicative proficiency in listening, speaking, reading, and writing at an advanced level. While students continue to consolidate their speaking and listening skills, more emphasis will be placed on reading and writing skills.

**Grade Mode:** Letter Grading**CHIN 632 - Advanced Chinese Conversation and Composition II****Credits:** 4

Focuses on developing communicative proficiency in listening, speaking, reading, and writing at an advanced level. While students continue to consolidate their speaking and listening skills, more emphasis will be placed on reading and writing skills. Prereq: CHIN 631 or equivalent. Cannot be taken separately without permission of the instructor.

**Grade Mode:** Letter Grading**CHIN #686 - Spring Semester in Chengdu China****Credits:** 0-16

\*Discovery World Cultures fulfilled by length of time in county\*. The program provides a unique opportunity to study abroad in Chengdu, China during the spring semester. It enables upper-level students in the Chinese language program as well as students in other colleges to spend a full semester immersed in another language and culture. Special fee.

**Co-requisite:** INCO 588**Attributes:** World Cultures(Discovery)**Grade Mode:** Credit/Fail Grading**CHIN 795 - Independent Study****Credits:** 1-4

Open to highly qualified juniors and seniors. To be taken only with the permission of department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit. Prereq: instructor permission.

**Repeat Rule:** May be repeated up to 4 times.**Grade Mode:** Letter Grading

## Civil & Environmental Engineering (CEE)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**CEE 400 - Introduction to Civil Engineering****Credits:** 0 or 4

Introduction to the civil engineering profession: structural, geotechnical, water resources, materials, and environmental. Overviews the civil project process including the creative design process, teamwork, bidding and construction. The relationship between civil engineering works and society including ethics, earthquakes, failures, successful signature structures, current events, and professional licensure. The production of professional engineering documents including writing tasks and calculations sets. Campus resources, the University system, and relationship between required curriculum, student objectives, and the civil engineering profession. Introduction to spreadsheet software, data analysis, and probability and statistics.

**Attributes:** Environment,TechSociety(Disc); Inquiry (Discovery)**Equivalent(s):** CIE 402**Grade Mode:** Letter Grading**CEE 402 - 2D Computer Aided Design****Credits:** 3

This course will serve as an introduction to some of the fundamental principles of building design and land planning. You will prepare plans representative of building construction and land development commonly used in the architectural, engineering, surveying and construction fields. The emphasis will be on the end result: Preparing complete and professional plans. Through this, you will acquire basic skills in designing and plan layout required by these industries. We will approach this material by designing and drafting using computer software (AutoCAD). Another end outcome is that you will gain a certain level of competency with this AutoCAD software, a program used by the majority of the firms in these professions.

**Equivalent(s):** TECH 564**Grade Mode:** Letter Grading**CEE 403 - GIS for Civil and Environmental Engineering****Credits:** 3

This course will serve as an introduction to some of the fundamental principles of Geographic Information Systems integral to Civil and Environmental Engineering. Students will develop an understanding of imagery and data acquisition; develop skills in identification, interpretation, and mapping of civil and land features, terrain analysis, and achieve an understanding of map projections; gain experience in GIS software to perform fundamental geoprocessing and mapping techniques.

**Grade Mode:** Letter Grading

**CEE 404 - Surveying and Mapping****Credits:** 0 or 4

Principles of land measurements by ground, photogrammetric and satellite methods to model the environment. Application of theory of measurements to perform and adjust engineering survey. Conformal mapping and its application to state plane coordinates. Digital mapping and Geographic Information Systems. Construction and cadastral surveying. Pre- or Coreq: MATH 425 or permission. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** CIE 505**Grade Mode:** Letter Grading**CEE 420 - Environmental Engineering Lectures I****Credits:** 3

Introduces the profession, the environmental engineer as planner, designer, problem solver, and interdisciplinary team player; and the goals of the environmental engineering curriculum. Lectures by faculty and practitioners. Introduction to computer skills required for environmental engineering. Engineering ethics.

**Equivalent(s):** ENCV 400, ENE 400**Grade Mode:** Letter Grading**CEE #444 - Housing - Everyone Needs a Place to Live****Credits:** 4

A discussion of residential housing, whether from the larger societal view or from the viewpoint of an individual, involves more than just the concepts associated with engineering. In order for the discussion to be complete, one needs to include legislative issues, economic issues, land issue, energy issues and environmental issues along with a variety of engineering issues (construction, transportation, water, materials, environmental controls, etc.). Thus a major focus of the course will be to provide a student with an appreciation of breadth and complexity of the issues associated with providing housing.

**Attributes:** Environment,TechSociety(Disc); Inquiry (Discovery)**Equivalent(s):** CIE 444**Grade Mode:** Letter Grading**CEE 500 - Statics for Civil Engineers****Credits:** 3

Introduction to statics with emphasis on civil engineering topics; two and three dimensional force systems; static equilibrium; friction; analysis of trusses and beams; centroids; and moment and shear diagrams for flexural members. Prereq: PHYS 407. Pre- or Coreq: MATH 426.

**Equivalent(s):** CIE 525, CIE 528, ME 525**Grade Mode:** Letter Grading**CEE 501 - Strength of Materials****Credits:** 3

Strength of materials with emphasis on civil engineering applications. Virtual work; work and energy relationships; analysis of members subjected to flexure, torsion, and axial loads; stresses and strains; and stability of columns. Prereq: CEE 500 or ME 525.

**Equivalent(s):** CIE 526, CIE 529, ME 526**Grade Mode:** Letter Grading**CEE 502 - Project Engineering****Credits:** 3

Techniques for financial analysis, and operation and management of engineering systems, engineering economics, material take-offs, estimating, scheduling, modeling physical systems, and decision-making. CEE major or permission.

**Equivalent(s):** CIE 533, CIE 633, CIE 733**Grade Mode:** Letter Grading**CEE 520 - Environmental Pollution and Protection: A Global Context****Credits:** 0 or 4

Introduces environmental science and engineering and the anthropogenic causes of environmental change. Emphasizes the causes, effects, and controls of air, water, and land pollution. The political, ecological, economic, ethical, and engineering aspects of environmental pollution and control are discussed. Field trips. Writing intensive.

**Attributes:** Environment,TechSociety(Disc); Writing Intensive Course**Equivalent(s):** BIOL 520, ENCV 520, ENE 520**Grade Mode:** Letter Grading**CEE 620 - Fundamental Aspects of Environmental Engineering****Credits:** 4

Application of fundamental concepts of mass balance in treatment processes. Physical, chemical, and biological aspects of pollution control, and design concepts for operations and processes used in environmental engineering are discussed. Concepts of engineering ethics are presented. Students participate in a design project that involves an oral presentation and written report. Prereq: CHEM 404, CEE 650, CEE 520; or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENCV 645, ENE 645**Grade Mode:** Letter Grading**CEE #626 - Field Experience****Credits:** 1

Based on appropriate career-oriented work experience in environmental engineering. Student can get one credit for field experience. A written final report is required as well as permission of student's adviser.

**Equivalent(s):** ENCV 696, ENE 696**Grade Mode:** Letter Grading**CEE #627 - Internship****Credits:** 2

Off-campus work in the environmental engineering field for on-the-job skill development. Needs to be supervised by an environmental engineering faculty member; and a proposal for the internship must be submitted and have permission of the ENE faculty prior to the start of the internship. Prereq: permission. IA (continuous grading).

**Equivalent(s):** ENCV 697, ENE 697**Grade Mode:** Letter Grading**CEE 635 - Engineering Materials****Credits:** 0 or 4

Structural properties and applications of the various materials used in civil engineering projects, including steel, cement, mineral aggregates, concrete, timber, and bituminous materials. Microstructure and properties of common metals, plastics, and ceramics. Prereq: CEE major or permission, CEE 501 or ME 526. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** CIE 622**Grade Mode:** Letter Grading**CEE 650 - Fluid Mechanics****Credits:** 0 or 4

Properties of fluids, fluid statics, continuity, momentum and energy equations, resistance to flow, boundary layer theory, flow in open channels and piping systems, dimensional analysis, similitude, drag, and lift. Laboratory exercises on measurement of fluid properties, energy principles, flow resistance, discharge measurements, momentum, hydropower, groundwater flow, and settling of spheres. Prereq: PHYS 407, CEE Hydrology major; or permission. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** CIE 642**Grade Mode:** Letter Grading



**CEE 665 - Soil Mechanics****Credits:** 0 or 4

Soil classification and physical properties. Permeability, compressibility, consolidation, and shearing resistance are related to the behavior of soils subjected to various loading conditions. Prereq: CEE 635, CEE 650, CEE major; or permission. Lab.

**Equivalent(s):** CIE 665**Grade Mode:** Letter Grading**CEE 680 - Classical Structural Analysis****Credits:** 3

Analytical stress and deflection analysis of determinate and indeterminate structures under static and moving loads by classical methods. Prereq: CEE 501, CEE major; or permission.

**Equivalent(s):** CIE 681**Grade Mode:** Letter Grading**CEE 700 - Building Information Modeling****Credits:** 3

Building Information Modeling (BIM) is the process of generating and managing project data during its life cycle by integrating 3D multidisciplinary drawings with dynamic scheduling and visualization. BIM provides a digital representation of project data to facilitate the exchange of information beyond the standard two dimensional plan set. This course introduces students to the fundamentals of model creation, scheduling, material take-offs, visualizations, and animations that improve the communication of information to potential clients. Pre- or Coreq: TECH 564. Open to CEE and EnvEngr:MunicipalProc majors only.

**Equivalent(s):** CIE 780**Grade Mode:** Letter Grading**CEE #702 - Issues in Engineering Practice and Management****Credits:** 3

Non-technical professional engineering topics including: participation in multidisciplinary teams, interpersonal and human resources skills, verbal and written communication skills, project management, marketing, ethics, professional licensure, professional liability, and contract administration. Prereq: seniors only; juniors with permission.

**Equivalent(s):** CIE 778**Grade Mode:** Letter Grading**CEE 703 - Site Design and Project Development****Credits:** 3

Provides an in-depth introduction to the various design activities undertaken for Land Development (Site Design) projects. Investigates aspects of site design: parking, grading, drainage, traffic, due diligence, permitting, cost estimating, and financing. Introduces concepts of Project Development process including project management, financing, delivery methods, design development, client relations, and construction administration. Course format will include lectures, guest presenters, and site visits. Grading based upon writing examination, assignments, group project, and professional development activities. Prereq: CEE 502/equiv, or permission required.

**Equivalent(s):** CIE 753**Grade Mode:** Letter Grading**CEE 704 - Transportation Eng & Planning****Credits:** 3

Fundamental relationships of traffic speed, density, and flow applied to public and private modes of transport. Principles of demand forecasting and urban systems planning. Prereq: permission.

**Equivalent(s):** CIE 751, CIE 754**Grade Mode:** Letter Grading**CEE 705 - Introduction to Sustainable Engineering****Credits:** 3

This course begins with exploration of the precept that we live in, and must design engineering works for, a world with a finite supply of natural resources and with limited life support capacity. Tools for sustainability engineering are the focus of the course, which includes life cycle analysis and life cycle impact analysis, the metrics and mass and energy flow analyses used in the field of industrial ecology, and environmental management systems.

**Grade Mode:** Letter Grading**CEE 706 - Environmental Life Cycle Assessment****Credits:** 3

This course teaches knowledge and hands-on-skills in conducting environmental life cycle assessment (LCA), which is a widely used technique by industries, academics, and governments. Students will learn to use popular LCA software (e.g. SimaPro), apply proper LCA techniques, critically analyze LCA results, and provide client-oriented suggestions during this course. Class time is primarily devoted to a combination of lectures and computer labs.

**Grade Mode:** Letter Grading**CEE 719 - Green Building Design****Credits:** 3

This course gives an overview of green designs and sustainable practices in building construction. We will cover technical topics and requirements of a nationally recognized rating system (LEED), with a specific focus on Green Building Design and Construction. Students are introduced to basic building designs and systems related to sustainability. Additionally, they learn about green design topics such as site plans, water and energy efficiency, material and resources usage, environmental quality and renewable energy source. As an outcome of the course, students are able to assess and incorporate green technologies and designs into building projects.

**Equivalent(s):** CIE 781**Grade Mode:** Letter Grading**CEE 720 - Solid and Hazardous Waste Engineering****Credits:** 3

A thorough examination of the problems that exist in hazardous and solid waste management are presented in terms of the current regulations and engineering approaches used to develop solutions. Topics include risk-based decision making, transport and fate of contaminants, and the fundamental physical, chemical, and biological concepts, which make up the basis for technological solutions to these waste management problems. Case studies are used throughout the course to highlight key concepts and provide real-world examples.

**Equivalent(s):** ENCV 742, ENE 742**Grade Mode:** Letter Grading**CEE 721 - Environmental Sampling and Analysis****Credits:** 4

Theory of analytical and sampling techniques used in environmental engineering. Topics include potentiometry, spectroscopy, chromatography, automated analysis, quality control, sampling design, and collection methods. Methods discussed in lecture are demonstrated in labs. Prereq: CHEM 404 and CEE 620 or permission. Lab.

**Equivalent(s):** CEE 721W, ENCV 643, ENE 643, ENE 743, ENE 743W**Grade Mode:** Letter Grading

**CEE 722 - Introduction to Marine Pollution and Control****Credits:** 4

Introduces the sources, effects, and control of pollutants in the marine environment. Dynamic and kinetic modeling; ocean disposal of on-shore wastes, shipboard wastes, solid wastes, dredge spoils, and radioactive wastes; and oil spills. Prereq: CEE 620 or permission.

**Equivalent(s):** ENCV 747, ENE 747**Grade Mode:** Letter Grading**CEE 723 - Environmental Water Chemistry****Credits:** 4

Emphasizes the use of chemical equilibrium principles and theory, calculations, and applications of ionic equilibrium stresses. Topics include thermodynamics, kinetics, acid/base, complexation, precipitation/dissolution, and redox equilibria. Computer equilibrium modeling is presented. Prereq: CHEM 404 or CHEM 405.

**Equivalent(s):** ENCV 749, ENE 749**Grade Mode:** Letter Grading**CEE 724 - Environmental Engineering Microbiology****Credits:** 4

Concepts of environmental engineering microbiology. Topics include taxonomy of species important in environmental engineering processes; microbial metabolism, interaction, and growth kinetics in environmental treatment processes; biogeochemical cycling in water; and effects of environmental parameters on environmental engineering microbial processes. Laboratories focus on microbiological methods and laboratory-scale biological treatment experiments. Prereq: CEE 520 and CEE 650 or permission. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENCV 656, ENE 656, ENE 756**Grade Mode:** Letter Grading**CEE 730 - Public Health Engineering for Rural and Developing Communities****Credits:** 3

The application of environmental health engineering and sanitation principles in disease prevention and control are discussed. Special emphasis is given to areas of the world where communicable and related diseases have not yet been brought under control and to what can happen in more advanced countries when basic sanitary safeguards are relaxed. The following topics are covered: water-related diseases to include their transmission and control; safe water development, treatment, distribution and storage; and on-site wastewater treatment and disposal system.

**Equivalent(s):** ENCV 740, ENE 740**Grade Mode:** Letter Grading**CEE 731 - Advanced Water Treatment Processes****Credits:** 4

The primary objective of this course is to provide the environmental engineer with an overview of physical-chemical and biological unit water treatment processes. Major emphasis is placed on the analysis and design of both conventional and advanced water treatment unit processes/operations.

**Equivalent(s):** ENCV 744, ENE 744**Grade Mode:** Letter Grading**CEE 732 - Solid and Hazardous Waste Design****Credits:** 4

Selection, design, and evaluation of unit processes employed in the treatment of solid wastes and hazardous wastes will be studied. Topics include design of materials recovery facilities, landfills, waste-to-energy facilities and hazardous waste site remedial technologies. A group term project taken from a real-world project will be required. An oral presentation by the group and preparation of a final written engineering report including alternative evaluation, permits, scheduling and economic analysis will be required from each group. Prereq: CEE 720 or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENCV 748, ENE 748**Grade Mode:** Letter Grading**CEE 733 - Public Infrastructure Asset Management****Credits:** 4

The course provides a thorough examination of the growing engineering field of Public Infrastructure Assess Management (IAM). The course enables the student to design an IAM system. It touches upon all types of public infrastructure with a particular focus on water infrastructure for the semester design project. Students build upon their engineering economics and project engineering skills and use simple IAM software along with GIS applications. Practice leaders from the industry provide guest lectures throughout the semester. A focus on triple bottom line or the Societal, Environmental and Economic aspects of IAM are included. The format is a modified team base design learning experience providing practice in processing of technical lecture material, personal performance evaluation (frequent quizzes) and team based performance evaluation. Student groups will present their design to the class and provide a written engineering report. Pre- or Coreq: CEE 502 and CEE 620.

**Equivalent(s):** ENE 739**Grade Mode:** Letter Grading**CEE #734 - Bioenvironmental Engineering Design****Credits:** 4

Selection, design, and evaluation of unit processes employed in biological treatment of waters, wastewaters, and hazardous wastes. Preparation of engineering reports, including developing design alternatives and economic analysis, is required. Prereq: CEE 620 and CEE 724 or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENCV 746, ENE 746**Grade Mode:** Letter Grading**CEE 735 - Properties and Production of Concrete****Credits:** 3

Basic properties of hydraulic cements and mineral aggregates, and their interactions in the properties of plastic and hardened concrete; modifications through admixtures; production handling and placement problems; specifications; quality control and acceptance testing; lightweight, heavyweight, and other special concretes. Prereq: CEE 635 or permission.

**Equivalent(s):** CIE 722**Grade Mode:** Letter Grading

**CEE 736 - Asphalt Mixtures and Construction****Credits:** 3

Specification of asphalt cements, aggregates and proportioning of mixture constituents for paving applications. Asphalt mixture design methods, production, construction, and quality control are discussed. Current new material production and construction technologies are introduced. Prereq: CEE 635.

**Equivalent(s):** CIE 723**Grade Mode:** Letter Grading**CEE 737 - Pavement Rehabilitation, Maintenance, and Management****Credits:** 3

This course covers the technical and financial strategies to extend the life of highway and airfield pavements. The course topics will include: Assessment of pavement functional and structural condition, suitability of pavement maintenance and repair techniques, use of pavement preservation processes, and application of asset management to extend the life of pavement infrastructure. Prereq: CEE 635.

**Grade Mode:** Letter Grading**CEE 748 - Pavement Design Project****Credits:** 1

Semester long design project accompanying CEE 749 Pavement Design Analysis. The design project will require weekly meetings (either online or in person) for the duration of the semester. Meeting times will be arranged based on student schedules. This course, in combination with the 3-credit CEE 749 Pavement Design Analysis, will satisfy a senior level materials principal design elective in the CEE department.

**Co-requisite:** CEE 749**Grade Mode:** Letter Grading**CEE 749 - Pavement Design and Analysis****Credits:** 3

Introduction to flexible and rigid pavement design and analysis for highways and airports. Examines design inputs, materials, analysis methods, design tools, and maintenance treatments. This course satisfies a senior level materials design elective in the CEE department. This course, in combination with the 1-credit CEE 748 Pavement Design Project, will satisfy a senior level materials principal design elective in the CEE department. Prereq: CEE 635 and CEE 665.

**Equivalent(s):** CIE 721**Grade Mode:** Letter Grading**CEE #750 - Ecohydrology****Credits:** 3

Introduction to ecohydrological concepts in terrestrial and riverine systems. Topics include the historical practices, resource management impacts, hydrologic variability, and the relationships among water and ecology, vegetation, biology, geomorphology, and water quality. Prereq: CEE 754 or ESCI 705 or permission.

**Equivalent(s):** CIE 750**Grade Mode:** Letter Grading**CEE 751 - Open Channel Flow****Credits:** 3

Energy and momentum principles in open channel flow; flow resistance; channel controls and transitions; unsteady flow concepts and dam failure studies. Modeling with HEC programs. Prereq: CEE 650 or permission.

**Equivalent(s):** CIE 741**Grade Mode:** Letter Grading**CEE 754 - Engineering Hydrology****Credits:** 3

Hydrologic cycle, probability theory related to hydrology and the design of water resources structures, water law, flood discharge prediction, hydrograph development, hydraulic and hydrologic river routing, reservoir routing, theory of storage, reservoir operations, hydropower development, modeling of watershed hydrology with program HEC-1, HEC-HMS, multipurpose projects.

**Equivalent(s):** CIE 745**Grade Mode:** Letter Grading**CEE 755 - Design of Pressurized Water Transmission Systems****Credits:** 4

Theory developed for individual components to large complex systems. Analysis and designs of components and systems. Topics include: steady and unsteady closed conduit flow, valves and meters, pump requirements, pump selection, system planning and layout, water hammer, and system operation and maintenance. Pressure system modeling with program EPANET. Prereq: CEE 650 or permission.

**Equivalent(s):** CIE 755**Grade Mode:** Letter Grading**CEE #757 - Coastal Engineering and Processes****Credits:** 3

Introduction to small amplitude and finite amplitude wave theories. Wave forecasting by significant wave and wave spectrum method. Coastal processes and shoreline protection. Wave forces and wave-structure interaction. Design of coastal structures. Introduction to mathematical and physical modeling. Prereq: CEE 650 or permission.

**Equivalent(s):** CIE 757, ME #757, OE 757**Grade Mode:** Letter Grading**CEE 758 - Stormwater Management Designs****Credits:** 3

Historic review of stormwater management leading up to the current regulatory framework. Overview of stormwater management strategies, strategy selection, and the targeting of specific contaminants, contaminant removal efficiencies, construction and site selection, and system maintenance. Hydrologic concepts including watershed and storm characteristics, design hydrology (peak flows, storm and treatment volumes), hydrograph routing, and critical review of hydrology and drainage reports. Design and sizing of treatment systems including: conventional, BMPs, low impact development, and manufactured devices. Rainfall runoff calculations with US SCS TR55 model. Prereq: CEE 650 or permission.

**Equivalent(s):** CIE 758**Grade Mode:** Letter Grading**CEE 759 - Stream Restoration****Credits:** 4

The assessment, planning, design, engineering, and monitoring of stream and watershed practices intended to protect and restore the quality and quantity of flowing surface waters and stream corridors. Lecture material covers hydrology, geomorphology, and ecosystems, with the intent of understanding the variables associated with stream systems and their interplay. Students measure field variables and then are challenged with actual designs. Examples of stream restoration issues include: in-stream flow, dam removal, induced recharge, improvements to fish habitat, and channel stabilization. Prereq: CEE 650.

**Equivalent(s):** CIE 759**Grade Mode:** Letter Grading

**CEE 765 - Engineering Behavior of Soils****Credits:** 4

Review of stress and strain in soil. Introduction to continuum mechanics. Development of engineering soil properties. Application of soil mechanics to shear strength and stress-strain behaviors of soils. Failure states and residual strength. Application of stress paths in engineering problems. Unstaturated soil mechanics. Laboratory exercises using direct shear test, triaxial test, and soil-water retention measurements.

**Equivalent(s):** CIE 767**Grade Mode:** Letter Grading**CEE 766 - Introduction to Geotechnical Earthquake Engineering****Credits:** 3

Overviews earthquake source mechanisms; magnitude and intensity; seismicity of the United States. Dynamics of simple structures; response spectra. Selection of design parameters; source, magnitude, input records. Measurement of dynamic characteristics of soils; site response, liquefaction, and ground deformation. Prereq: CEE 778 or permission.

**Equivalent(s):** CIE 762**Grade Mode:** Letter Grading**CEE 767 - Geological Engineering****Credits:** 3

Functional classification of rocks and rock masses, stereographic projection, engineering properties of rocks, and rock mechanics. The influence of geology in the design of underground excavations, tunneling, foundations, and rock slope engineering. Prereq: ESCI 401 or permission.

**Equivalent(s):** CIE 763**Grade Mode:** Letter Grading**CEE 768 - Geo-Environmental Engineering****Credits:** 3

Soil composition and structure; hydrogeology; attenuation and contaminant transport; containment design including landfills, geo-synthetics for liners and covers, leachate collection systems, vertical cutoff walls and stability analyses; geo-environmental site characterization and investigation using geotechnical and geophysical methods; ground water, soil and gas monitoring and sampling; remediation including in situ and ex situ techniques and treatment methods. Prereq: CEE 665 or permission.

**Equivalent(s):** CIE 766**Grade Mode:** Letter Grading**CEE 778 - Foundation Design I****Credits:** 4

Foundation design based on subsurface investigation and characterization using current methods of laboratory and in situ testing. Use of consolidation theory and bearing capacity theory for the design of shallow foundations including footings and rafts. Basic design of pile foundations. Earth pressure theory applied to design of retaining walls. Slope stability theory and applications. Prereq: CEE 665 or permission.

**Equivalent(s):** CIE 760**Grade Mode:** Letter Grading**CEE 779 - Foundation Design II****Credits:** 3

Advanced pile and pier design under vertical and lateral loads. Slope stability by circular and noncircular arc methods. Design of flexible bulkhead walls and mechanically stabilized walls. Excavation and dewatering. Soil and site improvement. Prereq: CEE 778 or permission.

**Equivalent(s):** CIE 761**Grade Mode:** Letter Grading**CEE 780 - Matrix Structural Analysis and Modeling****Credits:** 3

Modeling and analysis of determinate and indeterminate structures by matrix computer methods. Creation of matrix elements using compatibility, equilibrium, and constitutive relationships. Plane trusses, beams, frames, and space trusses. Prereq: CEE 680 or permission.

**Equivalent(s):** CIE 685, CIE 783**Grade Mode:** Letter Grading**CEE 781 - Dynamics of Structures****Credits:** 3

Dynamics of single- and multi-story buildings. Response due to earthquakes, blasting, traffic, and mechanical equipment. Analysis in the time domain and through the Fourier Transform. Fundamentals of structural vibration measurement. Prereq: CEE 780, permission.

**Equivalent(s):** CIE 787**Grade Mode:** Letter Grading**CEE 789 - Timber Design****Credits:** 3

Introduces the design of timber structures. Structural properties of wood, determination of horizontal and vertical loads, horizontal and vertical load-resisting systems, and design of horizontal diaphragms, shear walls, beams, and columns. Bolted, screwed, and nailed connections. Prereq: CEE 680 or permission.

**Equivalent(s):** CIE 782**Grade Mode:** Letter Grading**CEE 790 - Structural Design in Masonry****Credits:** 3

Introduces the design of reinforced masonry structural members by the stress and strength method and considering deflection and other serviceability performance criteria. Includes development of wind and seismic load, curtain wall, shear wall, lintels and columns. Prereq: CEE 635, CEE 680; or permission.

**Equivalent(s):** CIE 776**Grade Mode:** Letter Grading**CEE 791 - Reinforced Concrete Design****Credits:** 0 or 4

Introduces the design of reinforced concrete structural members by the strength method and considering deflection performance. Includes loads, approximate analyses, slabs, beams, and columns. Prereq: CEE 635, CEE 680; or permission.

**Equivalent(s):** CIE 774**Grade Mode:** Letter Grading**CEE 792 - Pre-stressed Concrete****Credits:** 3

Analysis and design of prestressed and post-tensioned concrete sections in flexure and shear. Strength, deflection, and losses in flexural members. Optimization of section and prestressing force selection. Prereq: CEE 791 or permission.

**Equivalent(s):** CIE 791**Grade Mode:** Letter Grading**CEE 793 - Structural Design in Steel****Credits:** 4

Introduction to steel member design, including horizontal and vertical members for design and analysis of buildings. Examines design inputs, material choice, analysis methods and design and construction methodologies. Prereq: CEE 635 and CEE 680.

**Equivalent(s):** CIE 793**Grade Mode:** Letter Grading



**CEE 794 - Bridge Design****Credits:** 3

Analysis of two-span, continuous, slab and beam bridges using the AASHTO LRFD Bridge Design Specifications. Use of influence lines, load distribution, load factoring, deck design, analysis and design of composite beams and plate girders. Bridge aesthetics. Prereq: CEE 791. Pre- or Coreq: CEE 793.

**Equivalent(s):** CIE 792**Grade Mode:** Letter Grading**CEE 795 - Independent Study****Credits:** 1-4

Seniors in good standing may pursue independent studies under faculty guidance. A written culminating report is required. Prereq: permission.

**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** CIE 795**Grade Mode:** Letter Grading**CEE 796 - Special Topics****Credits:** 1-4

Advanced or specialized topics not normally covered in regular course offerings. May be repeated, but not in duplicate areas. Prereq: permission.

**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** CIE 795**Grade Mode:** Letter Grading**CEE 797 - Introduction to Project Planning and Design****Credits:** 2

Part one of a two-part sequence. Student groups develop a project statement to address a large-scale civil engineering system design. Each team prepares a project plan to be executed in CEE 798, part two of this sequence.

**Equivalent(s):** CIE 784**Grade Mode:** Letter Grading**CEE 798 - Project Planning and Design****Credits:** 2

Student groups are formed into design teams to prepare a design plan for a large-scale civil engineering system including consideration of budgetary constraints, building code criteria, and environmental impacts. Each team prepares a final written report and gives a formal presentation. Prereq: CEE 797; Civil Engineering and EnvEngr: Civil Engr majors only.

**Attributes:** Writing Intensive Course**Equivalent(s):** CIE 682, CIE 788**Grade Mode:** Letter Grading**CEE 799H - Senior Honors Thesis****Credits:** 4

Students in the honors program in civil engineering complete a project under the direction of a faculty sponsor resulting in a written thesis which must be accepted by the sponsor by the end of the second semester, senior year. Four credits total during senior year; 3 of which may be used to fulfill a CEE non-design elective.

**Attributes:** Honors course**Equivalent(s):** CIE 799H**Grade Mode:** Letter Grading

## Civil Technology (CT)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

No courses are currently active in the course inventory for this subject prefix.

## Classics (CLAS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**CLAS 400 - Exploring and Experiencing the Ancient World and its Legacy**  
**Credits:** 2

Covers aspects of the ancient world and its subsequent importance not found in the rest of the Classics curriculum or dealt with only briefly. Topics are chosen to be timely by connecting antiquity to current events, including pop culture, or to be enduring but under-appreciated. Emphasis on active and engaged learning and, where possible, experiential activities. May be repeated on different topics. Does not satisfy major requirements.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Grade Mode:** Letter Grading**CLAS 401 - Classical Mythology****Credits:** 4

Survey of myths and sagas of ancient Greece and Rome. No classical preparation necessary. Background course for majors in English, the arts, music, history, modern languages, classics.

**Attributes:** Humanities(Disc)**Equivalent(s):** CLAS 401H**Grade Mode:** Letter Grading**CLAS 403 - Introduction to Greek Civilization****Credits:** 4

A broad historical exploration of Greek civilization. Topics include: architecture, art, law, literature, philosophy, poetry, politics, religion, society, warfare, and the Greeks' legacy to the modern world. Open to all students. No prior knowledge of the ancient world assumed; all readings are in English. Ideal background for students of English, philosophy, history, Latin, Greek, the arts, music, modern languages.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** CLAS 405, HIST 403**Grade Mode:** Letter Grading**CLAS 404 - Introduction to Roman Civilization****Credits:** 4

A broad historical exploration of Roman civilization. Topics include: architecture, art, law, literature, philosophy, poetry, politics, religion, society, warfare, and the Romans' legacy to the modern world. Open to all students. No prior knowledge of the ancient world assumed; all readings are in English. Ideal background for students of English, philosophy, history, Latin, Greek, the arts, music, modern languages.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** CLAS 406, HIST 404**Grade Mode:** Letter Grading**CLAS #411 - Elementary Hittite I****Credits:** 4

Elements of grammar, reading of simple prose.

**Grade Mode:** Letter Grading**CLAS #412 - Elementary Hittite II****Credits:** 4

Elements of grammar, reading of simple prose.

**Grade Mode:** Letter Grading



**CLAS #444 - Individual and Society in the Ancient World****Credits:** 4

This class examines one of the major issues faced by people throughout history, whether and under what circumstances an individual should act against the wishes of society. The great philosophical and historical works of the ancient world shed light not only on how the Greeks and Romans approached the idea of personal responsibility but also on the assumptions we today make about human nature and the relationships on which society depends. No prior knowledge of the ancient world required. All readings are in English. Writing intensive.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**CLAS 444D - Athens, Rome, and the Birth of the United States****Credits:** 4

What did Washington, Jefferson, Adams (John and Abigail), Madison and Paine have in common? They were all instrumental in shaping the US political system, but they were also educated in the classics. When building the framework of our democratic republic, they continually looked to Athens and Rome as models, inspirations and warnings. The course examines ancient political systems and how they helped fashion our founder's notion of the ideal government and continue to do so.

**Attributes:** Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**CLAS 501 - Introduction to Mediterranean Archaeology****Credits:** 4

Survey of representative archaeological sites, architecture, and objects produced by the cultures surrounding the Ancient Mediterranean.

The course will focus on the structure, form, and symbolic content, or sanctuaries, cities, tombs, housing, as well as material culture such as pottery and sculpture. In addition to the overarching narrative of the history of classical archaeology, further topics include cross-cultural influences, materials and building technologies, archaeological theory and practice, and aesthetic principles.

**Attributes:** World Cultures(Discovery)

**Equivalent(s):** ARTH 501

**Grade Mode:** Letter Grading

**CLAS 510 - Building Rome****Credits:** 4

An introduction to the buildings and structures for which the Romans remain famous, such as the Pantheon, the Colosseum, and the aqueducts that allowed Rome to become a metropolis. A major focus is the connection between the changes in Roman society and the development of Roman architecture. Looks at both Rome and other important cities in the Roman Empire. All readings are in English. No prior knowledge of the ancient world required. Special fee.

**Co-requisite:** INCO 589

**Attributes:** FinePerformingArts(Discovery)

**Grade Mode:** Letter Grading

**CLAS 511 - Special Studies in Greek History****Credits:** 4

The course uses historical and literary sources in conjunction with the city of Athens itself and its archaeological remains to explore the history of a particular theme, cultural practice or institution in ancient Greek civilization. The topics changes with different instructors but always takes a fundamentally historical orientation to the material and the city, even if interdisciplinary approaches are incorporated into the coursework. CLAS 511 is offered only as part of a study abroad program.

**Attributes:** Historical Perspectives(Disc); Inquiry (Discovery)

**Grade Mode:** Letter Grading

**CLAS 520A - Classical Society, Politics and Ethics: Democracies and Republics****Credits:** 4

We frequently use the terms "democracy" and "republic" to describe our own political system, but where did these words and ideas originally come from? This course examines the historical development of the original democracies in Greece (primarily Athens) and the Roman Republic, as well as the particular institutions and practices that were associated with each. Course will also cover the development of democratic and republican institutions in the modern world. No prerequisite. Open to all students.

**Attributes:** Historical Perspectives(Disc)

**Grade Mode:** Letter Grading

**CLAS 520B - Classical Society, Politics and Ethics: Happiness and Ancient Views of the Good Life****Credits:** 4

How did the Greeks and Romans define happiness and was happiness considered an essential component of the "good life"? How do ancient concepts of the "good life" influence later views of human flourishing and how do specific historical circumstances alter utopian visions of a life well lived? This course traces the concept of the "good life" from ancient Greece to today and challenges students to create their own vision of a "good life".

**Attributes:** Historical Perspectives(Disc)

**Grade Mode:** Letter Grading

**CLAS 520C - Classical Society, Politics and Ethics: Sports, Spectacle and Competition****Credits:** 4

This course treats the details of athletic training and competition, but its primary focus is on investigating the importance of athletics to society and how athletics reflected the broader cultural values of the Greeks and Romans. Open to all students. All readings in English.

**Attributes:** Historical Perspectives(Disc)

**Grade Mode:** Letter Grading

**CLAS 520D - Classical Society, Politics and Ethics: Greek and Roman Religion****Credits:** 4

This course traces the historical development of ancient Greek and Roman religion from its antecedents in Near Eastern, Minoan, and Mycenaean culture to the rise of Christianity in Rome's early imperial period. This course also introduces students to the methods and materials of historians of religion. Topics covered in this course include: changing conceptions of divinity, animal sacrifice, sanctuaries, festivals, death and the afterlife, divination, magic, and mystery cults.

**Attributes:** Historical Perspectives(Disc)

**Equivalent(s):** CLAS 520

**Grade Mode:** Letter Grading

**CLAS 525 - Greek and Latin Origins of Medical Terms****Credits:** 4

Study of medical terminology. Exercises in etymology and the development of vocabulary in a context at once scientific, historical, and cultural. No knowledge of Greek or Latin is required. Useful to premedical, pre-dental, pre-veterinary, nursing, medical technology, and other students in the biological and physical sciences. Open to all students.

**Grade Mode:** Letter Grading**CLAS 530A - Classical Literary Performance Genres: War and Adventure in Ancient Epic****Credits:** 4

Storytelling has long been one of the primary means to preserve and transmit cultural ideas and traditions. In this course students read and analyze the earliest epic tales from the Greek and Roman period with a view toward understanding the roots and nature of epic, the myths it told, and the influence it has had on subsequent literature. No credit earned if credit received for CLAS 444B.

**Attributes:** Humanities(Disc); Writing Intensive Course**Equivalent(s):** CLAS 444B**Grade Mode:** Letter Grading**CLAS 530B - Classical Literary and Performance Genres: Tragedy and Comedy on the Ancient Stage****Credits:** 4

Investigations into the dramatic works of the Greek and Romans, the power of performance, and the cultural importance of stage productions. Readings include the tragedies of Aeschylus, Sophocles, and Euripides, and the comedies of Aristophanes, Menander, and Plautus. Ideal background for students of all theatrical and performance traditions. Open to all students. All readings in English.

**Attributes:** Humanities(Disc)**Equivalent(s):** CLAS 530**Grade Mode:** Letter Grading**CLAS 540A - Environment, Technology and Ancient Society: Sustaining Ancient Rome Ecology and Empire****Credits:** 4

This course examines the interplay between the ancient Roman environment, Roman technological innovations, and the values of Roman imperial society. Examining Roman innovations in water supply, building technology, mining, and more, this course explores the ethical questions that arise through the use of ancient Roman technology, evaluates the effects of these technologies on the environment and Roman society, and determines whether Roman values encouraged or discouraged a responsible approach to technology and the environment.

**Attributes:** Environment,TechSociety(Disc)**Equivalent(s):** CLAS 515**Grade Mode:** Letter Grading**CLAS 540B - Environment, Technology and Ancient Society: Roman Houses, Domestic Space and Public Life****Credits:** 4

The Romans used the house as a communication technology for defining and expressing their identities in society and in the natural world. In this course, we examine literary and visual sources for Roman houses, apartments, villas, and palaces, and we compare and contrast the role of the house in the ancient world and in American society. We pay special attention to how domestic space shapes and is shaped by environment, politics, and culture.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**CLAS 540C - Environment, Technology and Ancient Society: Tech, Tools and Engineering in the Ancient World****Credits:** 4

This course examines positive and negative impacts of ancient technological advances: engineering (fire, metallurgy), writing technology (scripts, including the alphabet, the emergence of papyrus and vellum), military technology (shipbuilding, defensive and offensive technologies, and navigation), artistic (invention of dyes, lost-wax methods of bronze casting), infrastructure (roads, bridges, and aqueducts), and monumentality (Stonehenge, Greek temples, and the Roman Colosseum). Focus on the ways in which societal and environmental factors influenced technological development and vice versa.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**CLAS 550A - Identities and Difference in the Ancient World: Greek and Roman Women****Credits:** 4

The impact of women on society in Greece and Rome throughout Antiquity. The role of women in public, religious, and private life as well as their legal status through law codes. Men's views of women in different literary texts. Especially concentrating on the few existing texts written by women. All readings are in English. No prerequisite.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course**Equivalent(s):** CLAS 550**Grade Mode:** Letter Grading**CLAS 550B - Identities and Difference in the Ancient World: Slaves and Masters****Credits:** 4

Students explore the different ways slavery developed in the Greek and Roman worlds with an emphasis on the connections to other historical developments such as the practice of warfare, changes in political systems, and ancient views about human rights. To better understand the development of Greek and Roman slavery, we look at how the ancient systems compare to slavery in the American South and modern human trafficking.

**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading**CLAS 550C - Identities and Difference in the Ancient World: Sex and Desire in Greece and Rome****Credits:** 4

This course provides an introduction to ancient Greek and Roman conceptions of desire and sexuality, to how these conceptions developed and changed over time, and how they differ from modern ways of understanding sex, desire, and sexuality. Topics discussed include "romantic" love, attitudes towards homosexual practices, man-boy love, lesbianism, ancient views of "cross-dressing," and attitudes towards prostitution, among others.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**CLAS 551 - Race, Ethnicity, Class & Classics****Credits:** 4

Examines race, ethnicity, and class, and the ways in which they intersect with the study of the ancient world. The approach will use critical lenses alert to the impact of power imbalances both on how we view these subjects in the ancient world and how the ancients have been used to create and reinforce hierarchies in the modern world. The exact focus will vary by semester (students may repeat once if on a different topic).

**Attributes:** World Cultures(Discovery)**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

**CLAS 575 - Ancient Near East****Credits:** 4

From the Neolithic revolution to the time of Alexander the Great. Rise of civilization; nature of human artistic and intellectual development in the earliest civilizations of Mesopotamia and Egypt; Judaism in its historical setting. Course meets the History major requirements for Group III.

**Equivalent(s):** HIST 575**Grade Mode:** Letter Grading**CLAS 601 - Classical Myth II: The Power and Persistence of Myth****Credits:** 4

An in-depth look at the myths of the Greeks and Romans, at the power of myth as a cultural force, and at the importance of myth both in the ancient period as well as the modern era. The focal point is on the myths of the Greeks and Romans, but the myths of other cultures are addressed. All readings are in English.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CLAS 675 - History of Ancient Greece****Credits:** 4

Discover the exciting, turbulent, and innovative world of the Greeks through their history, from the emergence of small cities in the archaic period to the empire of Alexander the Great. Special focus will be on the political, economic and social developments in the rise of the polis (city), the Persian and Peloponnesian Wars, the rise of Macedon and Alexander the Great's conquests. CLAS 403/HIST 403 is encouraged but not necessary.

**Equivalent(s):** HIST 675**Grade Mode:** Letter Grading**CLAS 676 - Topics in Ancient Greek History****Credits:** 4

Advanced historical study of a particular period or theme in ancient Greek history. May be repeated barring duplication of subject.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** HIST 676**Grade Mode:** Letter Grading**CLAS 677 - History of Ancient Rome****Credits:** 4

Discover the fascinating and tumultuous history of the ancient Roman world, from its small beginnings in the early Republic to the high Empire, when Rome controlled the whole Mediterranean basin. Special focus will be on the political and economic conflicts between social classes, the Punic Wars, the fall of the Republic, its transformation into a monarchy, and the golden age of imperial rule. CLAS 404/HIST 404 is encouraged but not necessary.

**Equivalent(s):** HIST 677**Grade Mode:** Letter Grading**CLAS 678 - Topics in Ancient Roman History****Credits:** 4

Advanced historical study of a particular period or theme in ancient Roman history. May be repeated barring duplication of subject.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** HIST 678**Grade Mode:** Letter Grading**CLAS 686 - UNH in Greece Study Abroad****Credits:** 0-6

Study abroad in Greece. Interested students should consult a Classics advisor. Prereq: must satisfy university requirements for studying abroad. Special fee. Cr/F. (IA grade will be assigned until official transcript is received from the foreign institution.) Contact james.parsons@unh.edu at the COLA Center for Study Abroad or visit [www.cola.unh.edu/greece](http://www.cola.unh.edu/greece) for more information.

**Co-requisite:** CLAS 511, INCO 589**Grade Mode:** Credit/Fail Grading**CLAS 694 - Supervised Practicum****Credits:** 2 or 4

Participants earn credit for suitable pre-professional activities, including high school outreach, assisting in undergraduate courses and work with professional organizations, museum work. Enrollment limited to juniors and seniors who are Classics, Latin, or Greek majors or minors and have above-average G.P.A.s. Writing assignments are required. Prereq: permission of instructor and program coordinator. Course does not count toward Classics, Latin, or Greek major or minor requirements. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**CLAS 695 - Special Studies****Credits:** 2 or 4

Advanced work in classics. Research paper. Not open to freshmen and sophomores.

**Grade Mode:** Letter Grading**CLAS 696 - Special Studies****Credits:** 2 or 4

Advanced work in classics. Research paper. Not open to freshmen and sophomores.

**Grade Mode:** Letter Grading

## College of Liberal Arts (COLA)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**COLA 400 - Hired: A Career Boot Camp for Liberal Arts Majors****Credits:** 2

This 7-week boot camp style course equips liberal arts students with the tools needed to land a job or internship. Specifically, students craft resumes, cover letters, and online profiles that effectively communicate their values, interests, and strengths. Students also execute organized job and internship searches, critique job offers and benefits packages, and hone interview skills that enable them to speak confidently about the transferable skills they have gained throughout their academic and co-curricular experience. Cr/F.

**Grade Mode:** Credit/Fail Grading**COLA 401 - Liberal Arts Advising Seminar****Credits:** 1

Extended Orientation course for COLA first year students.

**Grade Mode:** Credit/Fail Grading

**COLA 402 - Digging Deep: Cool COLA Research****Credits:** 1

This course, featuring research presentations and Q&A with select faculty, introduces students to what is entailed in doing research from within Liberal Arts. It will showcase the range of research projects and methods used by COLA faculty and taught to COLA students. Presentations will also illuminate how research in COLA disciplines enriches and complements other fields (e.g., natural resources, marine science, computer science, business, finance, health services) and teaches skills applicable to numerous careers tracks.

**Grade Mode:** Credit/Fail Grading**COLA 458 - Global Preparedness for Budapest****Credits:** 1

This course is delivered online in the weeks leading up to the start of the Budapest Spring Semester Program and while students are abroad. The course will prepare students to get more out of their study abroad experience in Hungary by developing knowledge of the destination city, the procedures and features of the program, and basic intellectual training. All students participating in the program must enroll in this course.

**Grade Mode:** Credit/Fail Grading**COLA 500 - Pathfinder - Career Planning for Liberal Arts Majors****Credits:** 2

Explore existing and emerging employment opportunities for liberal arts majors in fields including technology, health & wellness, marketing, education & training, sales, financial services, and consulting. Weekly panel conversations with industry experts, self-reflection exercises, and career assessments will facilitate this exploration. Ultimately, you will develop a tailored Career Development Plan based on your skills, values, and interests.

**Grade Mode:** Credit/Fail Grading**COLA 505 - Hired: A Career Boot Camp for Liberal Arts Majors****Credits:** 2

This 7-week boot camp style course equips liberal arts students with the tools needed to land a job or internship. Specifically, students craft resumes, cover letters, and online profiles that effectively communicate their values, interests, and strengths. Students also execute organized job and internship searches, critique job offers and benefits packages, and hone interview skills that enable them to speak confidently about the transferable skills they have gained throughout their academic and co-curricular experience. Cr/F.

**Equivalent(s):** COLA 400**Grade Mode:** Credit/Fail Grading**COLA 510 - COLA Peer Navigator Mentor Training****Credits:** 0-1

The purpose of this course is to develop your leadership skills and prepare you to support first-year and transfer students through their first semester at UNH. Peer Navigators serve an important role in COLA and in the lives of first-year transfer students, serving as a bridge to the UNH campus and community. As part of this course, you will learn to facilitate activities and discussions in-class and online, give positive feedback, hold office hours, refer students to campus resources, and act as a learning coach and student advocate.

**Repeat Rule:** May be repeated for a maximum of 6 credits.**Grade Mode:** Credit/Fail Grading**COLA 653 - Introduction to British Culture****Credits:** 4

Why do the British say "Sorry" for everything? What is the role of the monarchy? Does the British class system still exist? What is it like being British-born of Indian parents? How many languages are spoken in London? What is a stiff upper lip anyway? These are only a tiny fraction of the questions that will surface during your stay in London. Through class discussions, readings, written ruminations, and excursions, you will in this course explore a range of cultural elements and challenges unique to the United Kingdom in general and London in particular, from the light (British etiquette) to the substantial (the impact of immigration).

**Co-requisite:** COLA 655, COLA 670, INCO 588**Grade Mode:** Letter Grading**COLA #654 - Intro to British Culture****Credits:** 1

Students participating in the UNH London Program are required to take this course, whose purpose is to familiarize them with British culture and the city of London. Variable topics.

**Co-requisite:** COLA #656, INCO 588**Grade Mode:** Letter Grading**COLA 655 - London Program****Credits:** 0-18

Enables students to pursue a semester or academic year of in UNH's programs in London, England. Students must be admitted before enrolling in the course. For information and application forms, consult program secretary, 53 Hamilton Smith Hall. Special fee. IA (continuous grading) grade will be assigned until official transcript is received. Program fee. Cr/F.

**Co-requisite:** COLA 653, INCO 588**Attributes:** World Cultures(Discovery)**Equivalent(s):** INCO 655**Grade Mode:** Credit/Fail Grading**COLA #656 - London Program****Credits:** 0-16

Enables students to pursue a semester or academic year of in UNH's programs in London, England. Students must be admitted before enrolling in the course. For information and application forms, consult program secretary, 53 Hamilton Smith Hall. Special fee. IA (continuous grading) grade will be assigned until official transcript is received. Program fee. Cr/F.

**Co-requisite:** COLA #654, INCO 588**Attributes:** World Cultures(Discovery)**Equivalent(s):** INCO 656**Grade Mode:** Credit/Fail Grading

**COLA #657 - Justice Studies Budapest Program****Credits:** 0-16

This program is designed to introduce students interested in the field to a broader appreciation of the cross-cultural perspective. Each fall, fifteen UNH students spend the semester in residence at the Budapest University of Economic Sciences in Budapest, Hungary, where they have an opportunity to witness first hand the evolution of a criminal justice system within a context of significant cultural, political, economic, and social change. Situated along the Danube in one of Europe's oldest cities, the program offers a unique educational experience to students interested in the study of criminology, law and society, and the administration of justice. Under the supervision of a UNH faculty member also in residence, students carry a four course load, two of which are taught by the UNH faculty member. All courses are taught in English. Eligible students must hold sophomore standing, have completed either SOC 515 or POLT 507 and one other course in the Justice Studies curriculum, and have a minimum cumulative grade point average of 2.50. Special fee. Cr/F.

**Co-requisite:** INCO 588**Attributes:** World Cultures(Discovery)**Equivalent(s):** INCO 657**Grade Mode:** Credit/Fail Grading**COLA 658 - Humanities Spring Budapest Program****Credits:** 0-16

Enables students to pursue a spring semester in UNH's program in Budapest, Hungary. The program is designed to provide undergraduates with an intensive study abroad experience focusing on modern Hungarian and Central European history and culture. Students study at Corvinus University and take courses taught by Hungarian and University of New Hampshire faculty. Under the supervision of a UNH faculty member in residence, students carry a four course load, two of which (HUMA 550 and HUMA 551) are taught by the UNH faculty member. All courses are taught in English. Students must be admitted before enrolling in this course. For information and application forms, consult the COLA Study Abroad Coordinator. IA (Continuous grading) grade is assigned until official transcript of courses taken at Corvinus University is received. Cr/F.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Credit/Fail Grading**COLA 670 - The London Project****Credits:** 4

The London Project will be one of the two UNH courses that UNH students participating in the UNH London Program will be required to take. This course will guide students through the research, writing/producing, and presentation of a project that explores one very narrow slice of London. The goal is to allow each student to gain insight and understanding of a subject that intrigues him/her and to present findings in a form that is appropriate for the subject and the talents of the author. Those forms could range from an academic research paper, a piece of creative writing, a multimedia slide show, a video, a podcast, or perhaps a Power Point presentation. By asking students to become fluent in one London issue, this course complements the other UNH course, Introduction to British Culture, which covers a range of British customs, challenges, and cultural elements.

**Co-requisite:** COLA 653**Grade Mode:** Letter Grading**COLA 702 - Research Interrupted: Qualitative Research During a Pandemic****Credits:** 2

The goal of this team-taught course is to provide an introduction to digital research and tools, and information about alternative resources and effective social science research techniques in the time of limited or no face-to-face interactions, and limited or no access to hands-on research sites.

**Grade Mode:** Credit/Fail Grading

## Communication (CMN)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**CMN 440A - Honors/Communication, Identity and Addiction****Credits:** 4

Exploration of how diverse ways of talking about addiction contribute to our understanding – and ultimate approach toward – addictive behaviors. Focus will be on a relational approach to understanding the complex lives of human in their social contexts; it is an approach that challenges the dominant individualistic and scientific models of a person. Examination of the ways in which the moral, disease, and psychosocial models of addiction invite us to ignore larger social, cultural, and global issues that contribute to addiction.

**Attributes:** Honors course; Social Science (Discovery)**Grade Mode:** Letter Grading**CMN 455 - Introduction to Media Studies****Credits:** 4

Nature, development, and the effects of mass media. Overview of mass communication history and theory.

**Attributes:** Social Science (Discovery)**Equivalent(s):** CMN 455H**Grade Mode:** Letter Grading**CMN 456 - Propaganda and Persuasion****Credits:** 4

Introduction to theories of propaganda and persuasion. Examination of symbolic strategies designed to secure or resist social and institutional change. Attention given to case studies of social, political, economic, and religious reformation. Special consideration of the ethical ramifications of such efforts.

**Attributes:** Humanities(Disc)**Equivalent(s):** CMN 456H**Grade Mode:** Letter Grading**CMN 457 - Introduction to Language and Social Interaction****Credits:** 4

An introduction to the study of the conversational basis of social reality. Presents an overview of interpersonal communication processes and the ways in which they influence the formation of identity, personal relationships, gender, interactional patterns, conflict, culture, and power. Readings and class material from a variety of authors in the communication discipline as well as related fields in the humanities and the social sciences.

**Attributes:** Social Science (Discovery)**Equivalent(s):** CMN 502**Grade Mode:** Letter Grading



**CMN 500 - Public Speaking****Credits:** 4

Performance course buttressed by practical theories of public discourse. Focus on analysis of speaking situations and audiences, message construction, presentation, and critical evaluation. Does not count towards the CMN major.

**Equivalent(s):** CA 450, CMN 403**Grade Mode:** Letter Grading**CMN 504 - Introduction to Argumentation****Credits:** 4

Persuasive discourse as inquiry and advocacy grounded in practical inductive and deductive reasoning. Discovery, analysis, and testing of practical arguments. The nature and function of proof. Some emphasis on applied presentation. Prereq: CMN 456 with C or better, or by permission. Writing intensive.

**Attributes:** Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** CMN 404**Grade Mode:** Letter Grading**CMN 505 - Analysis of Popular Culture****Credits:** 4

Locates the development of popular cultural artifacts and practices within the 20th-century social history of the U.S. Examines the political-economic forces that underpinned the commercialization of art, leisure, sports, and other elements of culture in industrial and postindustrial America. Prereq: CMN 456 with C or better, or by permission.

**Attributes:** Inquiry (Discovery)**Grade Mode:** Letter Grading**CMN 507 - Introduction to Rhetorical Theory and Analysis****Credits:** 4

Major precepts of rhetorical theory. Application of those precepts in analysis and understanding of a wide range of human communication. Consideration of how precepts and issues of rhetorical theory apply to contemporary issues and problems. Prereq: CMN 456 with C or better, or by permission.

**Attributes:** Inquiry (Discovery)**Grade Mode:** Letter Grading**CMN 514 - Analysis of Online Identity****Credits:** 4

This course will explore how digital media technologies inform strategies of self-presentation and practices of identity formation. We will situate contemporary practices of self-presentation within the historical development of the internet and sociological theories of identity. Students will be encouraged to examine how the internet and mobile technologies challenge existing understandings of concepts such as anonymity, authenticity, reputation, and privacy. Throughout the course, students will be asked to think critically about the ways in which traditional identity markers - such as race, gender, and class - are both challenged and reproduced in digital environments. Drawing on the current digital media landscape, we will explore several contemporary issues including privacy and reputation, self-branding and microcelebrity, online dating, and self-tracking. Throughout the semester, students will use academic literature to identify and address real-world problems.

**Grade Mode:** Letter Grading**CMN 515 - Analysis of News****Credits:** 4

Explores the psychological, social, economic, political, and cultural factors that influence the definition and reporting of news. Prereq: CMN 455 with C or better, or by permission.

**Grade Mode:** Letter Grading**CMN 519 - Advertising as Social Communication****Credits:** 4

Social role of advertising, public policy debates concerning advertising, influence of advertising on culture, and methods of analyzing advertising messages. Prereq: CMN 455 with C or better, or by permission.

**Grade Mode:** Letter Grading**CMN 525 - Persuasion & Public Relations****Credits:** 4

An exploration of the persuasion genres, techniques, roles, and stages in the practice of public relations across the full range of rhetorical situations and organizations.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 535 - Digital Democracies****Credits:** 4

This course explores how emerging digital technologies alternately enhance and obstruct the pursuit of democratic values, broadly conceived. We examine the history and meaning of terms like democracy and freedom in the context of both politics (campaigns, voting, legislation) and culture (music, entertainment, and the arts); the history of computers and the Internet; and the impact of digital media on international politics and professional journalism. Prereq: CMN 455 with a C or better, or by permission.

**Grade Mode:** Letter Grading**CMN 540 - Special Topics in Communication****Credits:** 4

Selected topics not covered by existing Communication courses. Topics may vary. Courses are available in the department office or online prior to each semester's registration period. May be repeated barring duplication of topic.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**CMN 545 - Media, Religion, and Culture****Credits:** 4

This course examines the impact of media on religious belief, practice, and institutions in an American context. We cover the rise of evangelicalism; the development of religious denominations and political parties; the birth of religious broadcasting including the rise of televangelism; and the decline of institutional religion with the emergence of a "spiritual marketplace." We examine religious representations in popular film, music, and news, and ask whether digital technologies have become imbued with religious meaning. Prereq: CMN 455 with a grade of C or better; or by permission.

**Grade Mode:** Letter Grading**CMN 562 - Collaborative Leadership in the 21st Century****Credits:** 4

This course grounds the study of interaction in groups via theories of inter-organizational collaboration. Students will leave this course with a very specific set of knowledge and skills related to dialogue, principled negotiation, constructive conflict, consensus decision making and appreciative inquiry. Lessons focus on the development of a responsible ethic regarding how to share power among diverse group members. This ethic prepares you to lead collaborative groups in organizations, communities, and as family members. Prereq: CMN 457 with a grade of C or better or permission.

**Grade Mode:** Letter Grading

**CMN 567 - Gender, Race, and Class in the Media****Credits:** 4

The purpose of this course is to introduce students to contemporary critical scholarship on the construction of gender, race, and class in the media - particularly popular media. Subjects such as the portrayal of ethnic groups, ideal body image, blue collar men, and gay, lesbian, bisexual, and transgender groups are case studies. This course is one that introduces students to performing communication analysis. Prereq: CMN 455; Communication, CMN: Media Practices, and CMN: Business Applications majors only.

**Grade Mode:** Letter Grading**CMN 572 - Analysis of Language and Social Interaction****Credits:** 4

In this mid-level course, students develop the observational and analytic skills necessary for the in-depth study of interaction in a variety of everyday and institutional social settings. Settings may include dialogue, multiparty interaction, non-verbal communication and embodiment, identity talk, and communication in organizations. Special attention to developing the reading and research skills used in upper level interpersonal communication courses. Prereq: CMN 457 with C or better, or by permission.

**Grade Mode:** Letter Grading**CMN 575 - Research Practicum****Credits:** 1-4

Student engagement through direct participation in faculty research projects. Elective credits which do not count towards the major. Instructor permission required. Prereq: CMN 455, CMN 456, CMN 457, and permission. Cr/F. Communications majors only.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**CMN 580 - Lying, Deception and the Truth****Credits:** 4

The ability to lie is a defining feature of the social life of higher order primates and humans. Deceiving, concealing, lying and evading are forms of communication which are a basic part of everyday human life. This course will explore the structure and function of lying, deception and evasion in the course of communication. As we do so we will also explore the nature of truth as it applies to human interaction in the world. Prereq: CMN 457.

**Equivalent(s):** THEA 580**Grade Mode:** Letter Grading**CMN 588 - Analyzing Institutional Interaction****Credits:** 4

Examinations of institutional interactions in emergency services, justice/law, medicine, family school encounters, journalism and politics. Shows how the work of society gets done through interaction. Students get hands-on experience analyzing persons' conduct in these interactions. This course is designed to develop students' analytic skills in studying social interaction in institutions, using recorded data in the form of naturally-occurring interactions in these settings. Prereq: CMN 457.

**Attributes:** Inquiry (Discovery)**Grade Mode:** Letter Grading**CMN 596 - Special Topics in Media Studies****Credits:** 4

Selected topics not covered by existing courses in media studies. Topics vary; course descriptions are available in department office during preregistration. May be repeated for credit if topics differ. Prereq: CMN 455 with C or better, or by permission.

**Equivalent(s):** CMN 595**Grade Mode:** Letter Grading**CMN 597 - Special Topics in Rhetorical Studies****Credits:** 4

Selected topics not covered by existing courses in rhetorical studies. Topics vary; course descriptions are available in department office during registration. May be repeated for credit if topics differ. Prereq: CMN 456 with C or better, or by permission.

**Grade Mode:** Letter Grading**CMN 598 - Special Topics in Interpersonal Studies****Credits:** 4

Selected topics not covered by existing courses in interpersonal communication. Topics vary; course descriptions are available in department office during registration. May be repeated for credit if topics differ. Prereq: CMN 457 with C or better, or by permission.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**CMN 599 - Internship****Credits:** 1-4

Internships are designed to integrate classroom study and supervised practical experience in a work setting. Each student is required to write a series of reports focusing on aspects of the work experience that are related to coursework in the Communications Department. These assignments are designed to enhance a student's ability to reflect critically on the internship experience and to merge theory and practice. Assignments are available, depending on the number of credits granted (1-4). Students are expected to hold the common exam time (TR, 1240-2) open for occasional meetings. Before starting the internship, students must submit a written proposal to both the work supervisor and the faculty sponsor. The proposal should include detailed information on the duties and responsibilities to be undertaken at the internship site and on the goals and learning objectives as relevant to the Communication Department curriculum. Prereq: CMN 455, CMN 456, CMN 457, or permission. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**CMN 600 - Public Speaking as a Civic Art****Credits:** 4

Performance course buttressed by the traditional civic art of rhetoric. Focuses on analysis of speaking situations and audiences, message of construction, presentation, and critical evaluation using major precepts of rhetorical theory. Theoretical and critical issues in the context of rhetorical practices. Prereq for CMN majors: CMN 455, CMN 456, CMN 457, and 500-level courses, or permission; prereq for non-majors: junior or senior standing. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 602 - Theories of Interpersonal Communication****Credits:** 4

Analysis and criticism of contemporary perspectives on interpersonal communication. Theories and concepts, issues, and research models are examined as they contribute to our understanding of social interaction. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**CMN 607 - Persuasion in American Politics****Credits:** 4

Study of the forms and strategies of persuasive discourse employed by contemporary American political leaders. Analysis of important political addresses of the 20th century, with attention to theoretical and critical issues in political communication and public address. Discussion of the status of rhetoric in modern politics, and the impact of persuasive discourse on campaigns, policy decisions, crisis management, political scandal, and the national identity. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 614 - Gender, Race and Technology****Credits:** 4

Why do digital assistants have women's voices? Are highways racist? This course explores the influence of gender and race on communication technologies. Drawing on communication, gender studies, critical race studies, and science and technology studies, this class engages in a social examination of everyday technologies. We examine the historical relationship between gender, race, and technology and understand how design decisions influence the meanings of communication tools. Prereq: CMN 455 with a minimum grade of C, CMN 456 with a minimum grade of C, CMN 457 with a minimum grade of C and two CMN 500 level courses with a minimum grade of C-.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 619 - Histories of New Media****Credits:** 4

New media are a defining feature of 21st-century society, from the internet to social networking sites. But what makes new media "new"? How do new media affect existing social norms, including notions of intimacy, privacy, community, and identity? This course considers the concept of new media from a historical and cultural perspective, examining the social construction of technology, the idea of technological progress, and comparative studies of both "old" and "new" media. Prereq: CMN 455, CMN 456, CMN 457; two 500-level CMN.

**Equivalent(s):** CMN 619W**Grade Mode:** Letter Grading**CMN 619W - Histories of New Media****Credits:** 4

New media are a defining feature of 21st-century society, from the internet to social networking sites. But what makes new media "new"? How do new media affect existing social norms, including notions of intimacy, privacy, community, and identity? This course considers the concept of new media from a historical and cultural perspective, examining the social construction of technology, the idea of technological progress, and comparative studies of both "old" and "new" media. Prereq: CMN 455, CMN 456, CMN 457; two 500-level CMN.

**Attributes:** Writing Intensive Course**Equivalent(s):** CMN 619**Grade Mode:** Letter Grading**CMN 622 - Digital Rhetoric****Credits:** 4

This course examines how traditional rhetorical theories and methods apply in contemporary digitized environments. It asks whether we can employ, as is, traditional theories and methods, many of which were developed centuries ago, or whether we need to develop new approaches in order to understand persuasion in online contests. As it explores these issues, this course tackles both rhetorical production and rhetorical analysis. That is, it asks students to both create and analyze digital rhetoric. Prereq: CMN 455, CMN 456, CMN 457; two 500-level CMN courses.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 627 - Great Speakers and Speeches****Credits:** 4

Historical and critical survey of masterpieces of oratory examining the rhetorical situation and artistic features of great works of spoken discourse. Demosthenes, Cicero, Edmund Burke, Daniel Webster, Frederick Douglass, Abraham Lincoln, and Elizabeth Cady Stanton may be among the orators studied. The course will engage students in critical assessment of eloquence by emphasizing study of historical circumstances, ethical choices, and artistic virtue of the most effective and admired public speakers in Western tradition. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level courses, or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** CMN 557**Grade Mode:** Letter Grading**CMN 630 - Psychology of Communication****Credits:** 4

Recasts human psychology as a communicative accomplishment, offering a critique of the individualist tradition. Emphasis on the ways in which identity, knowledge, values, and beliefs are constructed in daily social engagements and the pragmatic, political, and moral implications of this view. Implications for our major cultural institutions such as education, health, and politics. Prereq: CMN 455, CMN 456, and CMN 457 with C or better and two 500-level courses with a C- or better, or by permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 634 - Media and Politics****Credits:** 4

The goal of this course is to study the role of the media in American politics, and what media evolution means for future politics. Topics such as political campaigns, media effects, news reporting, framing terrorists, etc. are studied in depth. Timely topics such as "are the media liberal or conservative?" are debated in class. Research projects and papers study questions related to important social issues such as women in the media. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level CMN courses; Only open to Communication, CMN: Media Practices, and CMN: Business Applications majors.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**CMN 635 - Contemplative Media Studies****Credits:** 4

Contemplative Media Studies involves the application of contemplative practices and principles to the critical analysis of media content, technology, and institutions. It links Media Studies to Contemplative Studies, which integrates empirical social-science research (neuroscience, psychology) to first-person practices like meditation, yoga, and art therapy. Through academic essays and arts-based assignments, students strive to become more mindful digital citizens-creative yet critical, hopeful yet judicious with regard to the current and future course of technical development. Prereq: CMN 455, CMN 456, CMN 457; two 500-level CMN courses, or by permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 637 - Controversy and Reasoning in Law****Credits:** 4

Uses rhetorical analysis and criticism to evaluate communication practices in courtroom disputes. Compares conventional American litigation to alternative methods. Explains how stages of a trial shape communication options and norms. Illustrates common subjects and forms for judicial reasoning. Prereq: CMN 455, CMN 456, CMN 457, and two CMN 500-level courses. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 640 - Seminar in Communication****Credits:** 4

Variable topics in communication research, theory, and practice. May be repeated for different topics. Topic descriptions are available at the department office or online during registration. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level analysis courses.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**CMN 647 - Rhetorical Criticism of Media****Credits:** 4

Use of rhetorical approaches and methods in the analysis and criticism of contemporary forms of visual media culture. Students examine the social, political, and aesthetic implications of contemporary media forms from within a framework of rhetorical theory. Emphasis on practical analysis employing various rhetorical approaches with a goal of understanding persuasive elements in contemporary media (including television, film, print & broadcast advertising, internet, and social media). Prereq: CMN 455, CMN 456, CMN 457, and two 500-level communication courses.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 650W - Critical Perspectives on Film****Credits:** 4

Advanced, focused study of film theory as cultural practice. Topics vary from year to year and with instructor. May be repeated for different topics. Focus may range from general considerations of film theory, criticism, and history, to specific analyses of selected genres, directors, national cinemas, and periods. Course descriptions available in department office during preregistration. Prereq: CMN 455, CMN 456, CMN 457, CMN 550, ENGL 533, or permission. Special fee. Writing intensive. May be repeated for credit.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 12 credits.**Equivalent(s):** CMN 650**Grade Mode:** Letter Grading**CMN 656 - Environmental Communication and Rhetoric****Credits:** 4

Working from a rhetorical perspective toward communication as persuasive action, students learn to analyze environmental communication in public spheres. Communication about the environment is examined in visual and popular culture, print and digital news, advertising and marketing, science communication, corporate communication and advertising, and campaigns and movements. Special attention to issues of public engagement, citizen activism, and public advocacy. Students work on a semester long case study in which they analyze, evaluate, and respond to communication about an environmental problem in a local town. Prereq: two 500-level CMN courses or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 662 - Public Dialogue and Deliberation****Credits:** 4

This course explores the theory behind the practice of public dialogue and deliberation. It considers the distinctions and appropriateness of different types and aims of public participation, and how to best facilitate conversations important in the public sphere. The course anchors civil discourse as vital to democracy. Students will design, organize, and implement a public dialogue on campus, facilitating discussions on a relevant topic serving our community. Students marry practice with deep consideration of issues of equity, diversity, voice, representation, neutrality, and power. Prereq: CMN 455, CMN 456, CMN 457 and two 500-levels, one being CMN 562, or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 666 - Conversation Analysis****Credits:** 4

Exploration in how participants in interpersonal communication display their orientation to the fundamental orderliness of conversational sequences in everyday, institutional, and mass media settings. Basic concepts covered include the interactional co-construction of turn-taking, repair, overlap, openings, closings, silences, adjacency, pairs, disagreement, preference, and the role of various linguistic, paralinguistic, and nonlinguistic features in the conversation process. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission. Only open to Communication majors. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 667 - Popular Music Studies****Credits:** 4

This course provides an opportunity to critically examine and study popular music. Popular music represents one of the most significant global cultural industries, transcending borders and economies, especially as technology ushers in new ways to listen, share, produce, and perform music. This course will look at the role of contemporary popular music in providing a mediated form of communication and culture by examining its historical and cultural development. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading



**CMN 670 - From Silicon Valley to Foxconn: Global Digital Capitalism****Credits:** 4

From young Internet users in Ghana's Internet cafe to American teenagers to Chinese factory workers assembling iPhones, and Indian coders migrating to Australia, this course exposes you to the multifaceted lived experiences under global digital capitalism while grounding them in the history and theory of capitalism as an uneven world system. The design of this course encourages you to think critically about what's new and not so new about capitalism in its contemporary digital/neoliberal phase. It helps identify the on-going technology-driven social transformations on a global scale. Prereq: CMN 455, CMN 456, CMN 457 & two 500-level CMN courses.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 680 - Perspectives on Culture and Communication****Credits:** 4

Critical interpretation of culture focused on the communication practices and resources of diverse groups. Examination of the reciprocal relationship between communication practices, forms of culture, and cultural identity. Exploration of the conditions necessary for dialogue between differing cultural groups. Emphasis on the role of communication in constructing race, power, cultural domination, and globalization. Prereq: CMN 455, CMN 456, and CMN 457 with C or better and two 500-level courses with a C- or better, or by permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 685 - Gendered Rhetorics****Credits:** 4

This course focuses on exploration of the social, rhetorical, and communicative construction of gender through contemporary contexts. We will examine popular and political discourse and discuss how such discourse structures and disciplines our everyday experiences of sex (male/female) and gender (how society shapes understanding of those categories). Prereq: CMN 456; CMN 455; CMN 457; two 500-level CMN courses.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 696 - Seminar in Media Studies****Credits:** 4

Variable topics in media research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission.

**Repeat Rule:** May be repeated up to 1 time.**Equivalent(s):** CMN 696W**Grade Mode:** Letter Grading**CMN 696W - Seminar in Media Studies****Credits:** 4

Variable topics in media research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to 1 time.**Equivalent(s):** CMN 696**Grade Mode:** Letter Grading**CMN 697 - Seminar in Rhetorical Study****Credits:** 4

Variable topics in rhetorical research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to 1 time.**Equivalent(s):** CMN 697H**Grade Mode:** Letter Grading**CMN 698 - Seminar Interpersonal Studies****Credits:** 4

Variable topics in interpersonal research, theory, and practice. May be repeated for different topics. Topic descriptions available in department office during preregistration. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level courses, or permission.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to 2 times.**Equivalent(s):** CMN 695**Grade Mode:** Letter Grading**CMN 702 - Seminar in Interpersonal Communication Theory****Credits:** 4

In-depth concentration on a particular theoretical orientation in interpersonal communication. Original works are read. Theoretical orientation varies by semester. May be repeated for different topics. Prereq: CMN 455, CMN 456, and CMN 457 and two 500-level CMN courses.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**CMN 703 - Seminar in Rhetorical Theory****Credits:** 4

Focused study of problems in rhetorical theory construction through examination and criticism of selected theoretical frameworks used to explain or interpret rhetorical phenomena. May be repeated for different topics. Prereq: permission.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading



**CMN 714 - Youth and Media****Credits:** 4

This course will situate contemporary debates about youth and media in historical and theoretical context by examining the ways in which media texts and technologies construct and reflect ideas about youth culture. With a focus on western societies, we will examine the cultural, economic, and political factors that contributed to the social construction of adolescence as a distinct lifecycle stage in the twentieth century. In particular, we will look at how media industries have worked to define and commodify this life stage, thereby creating expectations about what it means to "grow up" in western cultures. We will explore the importance of media texts - including music and fashion - in the construction of youth subcultures. Our investigation of subcultures will consider the role of race, class, and gender in academic theories about young people. We will examine how "moral panics" about youth culture and counter cultural movements are reflected and reproduced in current fears about the effects of media technologies and texts on teenagers. We will conclude by investigating how these various interventions play out in discussions about adolescents' media production, particularly in a digital environment in which young people are simultaneously constructed as savvy "digital natives" and vulnerable victims of media messages.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 719 - Surveillance and Society****Credits:** 4

Surveillance is fundamentally concerned with social control. The course tracks the historical development of surveillance, from its origins in embodied experience and record keeping through the rise of computing, social media and big data. This history provides a backdrop against which critical theories of surveillance are introduced, drawing attention to how power is exercised through systems of identification, social classification, visibility, and statistical knowledge. Prereq: CMN 455, CMN 456, CMN 457; two 500-level CMN.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 730 - Family Communication****Credits:** 4

Exploration of the patterned communication in families and the ways in which our understanding of these patterns can be utilized to understand and transform unwanted family interactions. Varying cultural discourses of family communication are used to explore the dialogic construction of family and self. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level CMN courses, or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 735 - Media & Ethics****Credits:** 4

This course asks how human beings can flourish (i.e. lead meaningful and purposeful lives) in the context of increasingly complex systems of digital media and information systems. We do so through the lens of virtue ethics, meaning that we place special emphasis on concepts like authenticity, wisdom, courage, and integrity. The course's capstone project asks students to develop a clear and well-informed ethical framework for the mass-mediated aspects of their personal, professional, and civic lives. Prereq: CMN 455, CMN 456, CMN 457; three 500-level CMN courses, or by permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 740 - Seminar in Communication Research and Theory****Credits:** 4

In-depth concentration on particular theoretical and methodological orientations within communication research. Orientations vary by semester. May be repeated barring duplication of subject. Prereq: CMN 455, CMN 456, CMN 457 & two 500 level CMN analysis courses.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**CMN 742 - Dialogue and Teamwork****Credits:** 4

This course is about team building, alternative conflict resolution, and creative problem solving. We will explore the idea that, contrary to prevailing cultural assumptions, a significant factor in our achievements at work and play can be traced not to our individual attributes but rather to the relationships that we develop in our conversations with others. We will examine the dialogic basis of these relationships, drawing on a range of philosophic traditions and practical activities that highlight the social basis of thought. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level CMN courses, or permission. CMN majors only.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 756 - Rhetorics of Display****Credits:** 4

This course examines a selection of displays with the goal of acquiring perspective for understanding and evaluating how they engage with people who come into contact with them. Displays examined range among oratory, photographs, advertisements, films, architecture, monuments, and statuary, public demonstrations, and presentations of self. Attention is given to questions about identity and belonging, authenticity and simulation, and public memory. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level courses, or permission. CMN majors only.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN #757 - Public Address and the American Experience****Credits:** 4

Study of persuasive texts set firmly in their historical and social contexts. Discussion of the impact of popular discourse on historically significant political and social events. Analysis of how leading persuasive speakers and writers responded to the fundamental questions confronting their age and articulated ideas in a manner that provoked or motivated their community, state, or nation. Historical period studied will vary. May be repeated when topic varies. Prereq: CMN 455, CMN 456, CMN 457 and two 500-level CMN course or permission. CMN majors only. Special fee.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 12 credits.**Equivalent(s):** CMN 657**Grade Mode:** Letter Grading

**CMN 760 - Mediation****Credits:** 4

This course will explore different theories and models of mediation as they inform the broader topic of conflict resolution. Emphasis will be on models that examine relational processes as opposed to models that provide a list of skills or techniques for mediation. To that end, the course will focus on transformative dialogue as a mode of mediation and conflict resolution rather than on compromise or consensus models. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level CMN courses, or permission. CMN majors only. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 762 - Organizational Communication and Society****Credits:** 4

This course will demonstrate how communication is key to understanding how organizations work. Through such topics as culture, identity, structure, systems, globalization, and change, the course examines the ways individuals and society are shaped by interactions with the organizations. Through case studies, we examine the way people communicate in organizational contexts, and the social, ethical, and sometimes political implications. Prereq: CMN 455, CMN 456, CMN 457 and two 500-levels, or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN #770 - From Pokemon to K-Pop: East Asian Media and Popular Culture****Credits:** 4

From K-pop to Pokemon, from TV drama to video games, this course introduces you to the media and popular cultural scene in one of the most dynamic regions of the world economy today. It gives you the theoretical tool to understand and analyze these media and cultural phenomena. While acknowledging some common defining characteristics of East Asian societies, we will pay attention to the internal diversities, differences and transcultural flows within the region as well as East Asian nations. Prereq: CMN 455, CMN 456, CMN 457 & two 500-level CMN courses.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 772 - Seminar in Media Theory****Credits:** 4

Detailed analysis of major theories related to the interaction of communication technologies and society. Application to current examples in politics, advertising, and entertainment. May be repeated for a different topic. Prereq: CMN 455, 456, 457 and two 500 level courses, or permission.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**CMN 780 - Communication and Sports Coaching****Credits:** 4

There is a long-standing literature on what makes for good or bad coaching in sports, but less in what interactional practices are involved in the actual activities of coaching. Here we learn about the processes of Communication used by Coaches and Athletes when in sports settings. The course will explore the basic process of communication underpinning learning in settings of movement and learning. Students will develop a focal project on practices of Communication in Coaching.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 785 - Communication and Deliberation Across Differences****Credits:** 4

This course will focus on the art of rhetoric in a civic context, or how students may engage with the rhetorical tradition to focus on connections among communication, democracy, knowledge, power, and equity. Students will focus on learning the skill of deliberation, or bringing people together in conversation across difference to discover shared values, and to identify key tensions, in order to explore possible solutions to thorny public problems. Prereq: CMN 455, CMN 456, CMN 457, and two 500-level analysis courses or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 788 - Opening Everyday Interaction****Credits:** 4

Examination of how everyday human social interactions begin. Provides hands-on experience analyzing verbal and nonverbal social actions during naturally occurring interactions, including telephone conversations and especially face-to-face encounters between previously acquainted and unacquainted persons socializing and/or doing work. Explores how parties use the openings of interactions to (re)-create and maintain social relationships. Encourages students to develop intellectual curiosity about everyday social life. Prereq: CMN 455, CMN 456, CMN 457, (2)-CMN 500 levels or permission. Open to CMN majors only.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CMN 795 - Independent Study****Credits:** 1-4

Advanced individual study in rhetoric, media, or interpersonal communication. Project to be developed with supervising instructor. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** CMN #795W**Grade Mode:** Letter Grading**CMN #795W - Independent Study****Credits:** 1-4

Advanced individual study in rhetoric, media, or interpersonal communication. Project to be developed with supervising instructor. May be repeated up to a maximum of 8 credits. Prereq: permission.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** CMN 795**Grade Mode:** Letter Grading**CMN 796 - Comm-Entary Journal****Credits:** 1

Serve on the editorial board of student run communication journal. Elective credit which does not count toward the major. Prereq: CMN 455, CMN 456, CMN 457, or permission. CMN majors only. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 2 credits.**Grade Mode:** Credit/Fail Grading**CMN 799H - Honors Thesis****Credits:** 4

Written thesis based on substantial and original research under the direction of a full-time member of the communication faculty. Thesis must be in the form and style of a publishable, scholarly work. Restricted to seniors seeking honors in major.

**Attributes:** Honors course**Grade Mode:** Letter Grading

# Communication Arts (CA)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

## CA 450 - Introduction to Public Speaking

**Credits:** 4

Theories of rhetoric applied to the practice of speech composition, oral performance, and critical evaluation. Focus on student speeches for a variety of situations and audiences. Not for credit if credit earned for CMN 500.

**Equivalent(s):** CMN 403, CMN 500

**Grade Mode:** Letter Grading

## CA 500 - Media Writing

**Credits:** 4

An introduction to business, creative and freelance writing for a variety of media. Writing, editing and rewriting in areas such as video scripts, short magazine articles, audio scripts, ads, press releases, news, short one-act plays, blogs and more. Prereq: ENG 401. Writing intensive.

**Attributes:** Writing Intensive Course

**Grade Mode:** Letter Grading

## CA 501 - Internship/Communication in the Urban Community

**Credits:** 1-4

Field-based learning experiences. Connects students to the urban community and integrates their classroom education within a business or organizational setting. Students work under the direction of a faculty advisor and workplace supervisor to fulfill the obligations of the workplace internship plan and to complete individually-designed academic projects. Projects must be approved in advance by the faculty advisor. Open to matriculated students with a GPA of 2.50 or better and junior standing. Permission of instructor required. May be repeated, with 4 credits maximum accepted toward satisfaction of requirements for the CA major. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Credit/Fail Grading

## CA 502 - Image and Sound

**Credits:** 4

Image and Sound is a foundation course in the aesthetics of motion picture and sound production. This course explores the aesthetic principles that are used to communicate stories, emotions and messages in popular media. Students will study film, television and new media and survey production methods. This is not a production course per se, but is particularly helpful to students interested in video and film production. No credit for students who have completed CA 444.

**Attributes:** FinePerformingArts(Discovery)

**Equivalent(s):** CA 444

**Grade Mode:** Letter Grading

## CA #507 - Relational Violence

**Credits:** 4

This course explores relational violence and its impact on individuals, families, and communities. Topics include relational violence as a continuum, types of relational violence (domestic, gangs, hate crimes), causes of relational violence, PTSD, responding to relational violence, silencing, compassion fatigue, and restorative justice. Prereq: CMN 457 or permission of the instructor.

**Grade Mode:** Letter Grading

## CA 508 - Conflict in Relational Communication

**Credits:** 4

Introduces communication theories relevant to the study of conflict interaction in interpersonal relationships. Considers interpersonal concerns contributing to conflict such as power, face-saving, and goals. Examines behaviors that affect our ability to resolve conflict, and strategies, such as mediation, to resolve conflict. Develops the ability to diagnose productive and destructive conflict patterns in relationships. The course is both theoretical and practical in orientation. A combination of lecture, discussion, case studies, and in-class group assignments are employed. Prereq: CMN 457.

**Grade Mode:** Letter Grading

## CA 512 - Screenwriting

**Credits:** 4

Examines the preproduction phase of moving image media, focusing especially on the art and business of writing for the screen. Covers the process of developing student work from original story idea to completed, first draft screenplay. Topics include script formats, narrative structure, plot development, characterization, style, and marketing strategies. Prereq: ENGL 401, CMN 455 or CMN 456; or permission. Cannot receive credit if credit received for CA 512 Scriptwriting. Writing intensive.

**Attributes:** Writing Intensive Course

**Grade Mode:** Letter Grading

## CA 514 - Fundamentals of Video Production

**Credits:** 4

Beginning electronic field production using digital video and nonlinear editing formats. Covers basic aesthetic principles and practices of video communication. Introduces techniques for effective image and sound recording in the field, fundamentals of shot and sequence construction, and basic postproduction practices on nonlinear editing systems. Prereq: ENGL 401, CA 502 or CA 444, CMN 455, or permission. Preference given to CA majors. Special fee.

**Grade Mode:** Letter Grading

## CA 515 - Advanced Video Production

**Credits:** 4

Advanced electronic field production and post production using digital video and nonlinear editing formats. Emphasizes original student work of increasing conceptual, formal, and technical complexity that begins to incorporate a wider range of images, sounds, and editing techniques. Prereq: CA 514 or permission. Preference given to CA majors. May be repeated with permission. Special fee.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

## CA 517 - Fundamentals of Audio Prod

**Credits:** 4

This course provides students with an introduction to the history, principles, and techniques of audio production. Through hands-on experience, class projects, and homework assignments, student learn how to use voice, music, writing, sound effects, and audio hardware and software to design sound and tell a story. This class will also look at the radio industry and how sound design is being used by a variety of industries. Special fee.

**Grade Mode:** Letter Grading

## CA 518 - Advanced Topics in Digital Media Production

**Credits:** 1-4

Advanced topics in digital media production not covered in depth in other course offerings. Topics vary and change. May be repeated if topics differ. Prereq: CA 514 or CIS 515 or permission.

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Letter Grading

**CA 519 - Advanced Screenwriting****Credits:** 4

Advanced examination of the preproduction phase of moving image media, focusing on the art and business of screenwriting. Develops student works from original idea through the numerous steps to completed, second draft screenplay. Advanced topics and genres may vary. Prereq: CA 512. May be repeated with permission. Cannot receive credit if credit earned for CA #520 Special Topics in Communication: Advanced Screenwriting.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**CA #520 - Special Topics in Applied Communication****Credits:** 1-4

New or specialized topics in applied communication not covered in regular course offerings. Topics vary; descriptions listing course content and any prerequisites are available during preregistration. May be repeated for credit if topics differ. Prereq: contingent on topic. Writing intensive when topic is advanced feature scriptwriting.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**CA 522 - Graphic Design I****Credits:** 4

Presents fundamentals of Graphic Design while touching on foundation art theories and vocabulary. Through examination and analysis of professional graphic design, students become familiar with the relationship between graphic design process, creative solutions and critical thinking. Students work with a variety of traditional and digital media, with an emphasis on the process of design, composition and typography. Class includes a significant amount of computer lab and creative studio time.

**Grade Mode:** Letter Grading**CA 523 - Graphic Design II****Credits:** 4

Students explore the creative process that helps them communicate ideas and information to a target audience. Higher level, theoretical ideas related to communication, design and cognitive theories will be introduced. Students will engage in intermediate design projects through software and traditional media. Class includes a significant amount of computer lab and creative studio time. Prereq: CA 522, or permission of instructor.

**Grade Mode:** Letter Grading**CA 527 - History of Film****Credits:** 4

The history of film since 1948. Historical analysis of the development of cinema since the emergence of television, both in the United States and abroad. Selected topics include cinema and the cold war, international stylistic movements, film exhibition, the decline of the studio system, new technologies, third cinema, globalization and economic consolidation. Prereq: CMN 455 or permission. Special fee.

**Grade Mode:** Letter Grading**CA 531 - History and Organization of Advertising****Credits:** 4

Examines the development of advertising in historical context, focusing on the evolving structure and function of advertising agencies, market research practices, advertising design, anthropological approaches to advertising and consumer culture, and contemporary policy issues. Prereq: CMN 455 or permission.

**Grade Mode:** Letter Grading**CA 532 - Typography I****Credits:** 4

Typography is the formal study of letterforms. Students gain perspective into this important field by starting with a focus on early visual communication, symbols, handwritten letterforms, calligraphy and the development of movable type. Students explore ways to categorize type into families and identify and define similarities and subtle differences in classical typefaces. Class discussions, projects, critiques and lectures focus of typography terminology, as well as the aesthetic discipline of using type effectively as designer.

**Grade Mode:** Letter Grading**CA 536 - LGBT Images and Perspectives****Credits:** 4

This course explores the perspectives and images of lesbian, gay, bisexual, trans, and queer individuals, from antiquity through modern day. Topics include: history, aging, religion, the media, and the law. Prereq: CMN 457 or permission of the instructor; majors only.

**Grade Mode:** Letter Grading**CA 538 - Gender****Credits:** 4

How gender is created, maintained, repaired, and transformed through communication in particular historical, cultural, and relational contexts. Examines a variety of topics including the relationship between sex and gender, language, cultural mythologies, identity, health care, sexuality, and strategies for resisting conventional gender definitions. May not be taken for credit if student has already taken CA 506: Gender. Prereq: CMN 457 or permission.

**Equivalent(s):** CA 506**Grade Mode:** Letter Grading**CA 539 - Communicating in Families****Credits:** 4

Explores the role of communication in the creation, maintenance, and transformation of family systems. Focus on how meanings of "family" are constructed through familial and popular discourses, and the consequences these communication practices have for lived experience. Prereq: CMN 457 or permission.

**Grade Mode:** Letter Grading**CA 540 - Public Relations****Credits:** 4

This course provides students with an overview of the field of public relations, including its history, ethics, and current practices. Will include case studies of major public relations issues that have occurred both historically and in recent years; individual and class projects that enable students to determine how best to plan for and respond to public relations issues; and quest practitioners who work in various fields, including business, government, the non-profit sector, and education. Prereq: CMN 456 or CMN 455 or permission.

**Grade Mode:** Letter Grading**CA 542 - Social Media for Organizations and Business****Credits:** 4

Focuses on the history, development and practical use of social media for organizational and business communications. A primary focus is on the latest social media tools and their use in developing social media campaigns. Hands-on student work is an important part of the course. Prereq: ENGL 401, CMN 455 or CA 500 - or permission. Cannot receive credit if earned for CA #520 Social Media for Organizations and Business.

**Grade Mode:** Letter Grading



**CA 550 - Special Topics in Communication Organization, History, and Policy****Credits:** 1-4

New or specialized topics in the organization, history, and policy of communication practices not covered in regular course offerings. Topics vary; descriptions of course content and any prerequisites are available during preregistration. May be repeated if topics differ. Prereq: contingent on topic.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**CA 610 - Communication Technologies and Culture****Credits:** 4

The role of communication technologies in shaping cultural meanings and human consciousness. Covers the work of Innis, McLuhan, Ong, Postman, Carey and others to understand the historical development of shifting communication technologies and patterns of culture from orality to computer communication. Also explores the dynamic between mass culture and sub-cultural appropriations of media forms and content.

Prereq: any two CA courses (excluding CA 501), one of which must have CMN 455 as a prerequisite or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CA 612 - Narrative****Credits:** 4

Considers the ways humans make sense of experience through the stories we construct within particular relational, cultural, and historical contexts. Explores a variety of topics including narrative conventions, canonical stories, subjectivity and reflexivity, the relationship between story and audience, space and time, memory and imagination, and narrative truth. Each student will conduct an original narrative research project. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 457 as a prerequisite, or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CA 615 - Film History/Theory and Method****Credits:** 4

Intensive study of philosophical, rhetorical, and methodological issues in film history research. Examines a series of selected historical problems in the areas of social, aesthetic, industrial, and technological film history up to 1948 and reviews existing historiography on these problems. Focus is on original student research. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 455 as a prerequisite, or permission. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CA 618 - Documentary****Credits:** 4

Exploration of the historical development, ethics, funding, socio-cultural significance, and communication strategies of documentary film and video. May focus on a particular genre or genres. Prereq: any two 500 level CA courses (excluding CA 501), one of which must have CMN 455 as a prerequisite, or permission. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CA 720 - Seminar****Credits:** 4

Intensive readings and research course in a highly focused area of study. Topics vary. Descriptions of course content and any prerequisites are available during preregistration. May be repeated if topics differ. Prereq: contingent on topic.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**CA 795 - Independent Study****Credits:** 1-4

Advanced individual study under the direction of a faculty member. Content area and research project to be developed in consultation with faculty supervisor. Prereq: permission. May be repeated, with 4 credits maximum accepted toward satisfaction of requirements for the CA major.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Communication Sciences & Disorders (COMM)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**COMM 401 - American Sign Language I****Credits:** 4

This course provides an introduction to American Sign Language with emphasis on visual receptive and expressive use of language, as well as providing opportunities for other forms of visual communication such as facial expression, mime, and gesture. Participants develop their skills through videotapes, classroom participation, and readings that cover issues important to the Deaf community. An online language laboratory is required as part of this course.

**Equivalent(s):** ASL 435**Grade Mode:** Letter Grading**COMM 420 - Survey of Communication Disorders****Credits:** 4

This course provides an introduction of Communication Sciences and Disorders (CSD) as it relates to the CSD undergraduate major and the professions of Speech-Language Pathology and Audiology. Students will learn about foundational knowledge of the speech and hearing mechanism, language development, normal communication processes, diagnoses, and treatment across different communication disorders and lifespans. Given the importance of communication, the course information can be applied to various human service careers.

**Equivalent(s):** COMM 520**Grade Mode:** Letter Grading**COMM 502 - American Sign Language II****Credits:** 4

This course provides continued acquisition of American Sign Language with an emphasis on active language use to improve speed and accuracy. Advanced linguistic principles of ASL as well as the cultural considerations are presented. Comparison of ASL with signed languages from around the world will be explored. An online language laboratory is required as part of this course.

**Equivalent(s):** COMM 402**Grade Mode:** Letter Grading



**COMM 504 - Basic Audiology****Credits:** 4

This course provides an overview of the profession and practice of Audiology. Students will learn about the causes of hearing loss and the diagnostic process. The anatomy and physiology of the auditory system will be reviewed. The physical properties of sound will be studied, particularly as these relate to hearing loss.

**Prerequisite(s):** COMM 522 with a minimum grade of C and COMM 636 with a minimum grade of C.

**Equivalent(s):** COMM 704

**Grade Mode:** Letter Grading

**COMM 521 - Anatomy and Physiology of the Speech and Hearing Mechanisms****Credits:** 4

This course provides the fundamentals of anatomy, physiology, neurology, and function of the mechanisms associated with speech, language, swallowing, and hearing. Multi-media platforms, class and group discussions, and problem-based learning will be utilized. Students will gain the essential foundation and knowledge for assessment, treatment, and management related to communication and swallow disorders.

**Prerequisite(s):** BMS 507 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**COMM 522 - Language Acquisition****Credits:** 4

This course is an introduction to typical language acquisition. The progression of language development is examined within a linguistic framework, phonology, morphology, syntax, semantics, and pragmatics. Theories of language acquisition overviewed.

**Prerequisite(s):** COMM 524 with a minimum grade of C.

**Grade Mode:** Letter Grading

**COMM 524 - Clinical Phonetics****Credits:** 4

This course focuses on the application of the International Phonetic Alphabet to describe adult, child, and disordered speech production. Students will learn to use broad and narrow transcriptions of speech. Information on basic speech science, acoustic and articulatory phonetics, and acoustic analysis of speech production will be provided.

**Prerequisite(s):** LING 405 with a minimum grade of D- or ENGL 405 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**COMM 610 - Fact, Fiction, Fraud: Evaluating Motivations, Claims, and Evidence****Credits:** 4

This course provides students with an understanding of evidence-based practice in communication sciences and disorders. Students will learn critical thinking skills through the evaluation of products, interventions, and claims about them. The course also discusses issues involved in fraudulent claims and the role of the media in perpetuating false claims about different areas of study.

**Prerequisite(s):** PSYC 402 with a minimum grade of D-.

**Equivalent(s):** COMM 510

**Grade Mode:** Letter Grading

**COMM 636 - Speech and Hearing Science****Credits:** 4

This course provides the student with information on the understanding and application of waveform analysis (acoustic and aerodynamic), basic processing of auditory information, and physiological and cultural bases of hearing and speech production/perception.

**Prerequisite(s):** COMM 521 with a minimum grade of C.

**Grade Mode:** Letter Grading

**COMM 701 - Principles of Assessment****Credits:** 2

Principles and practice for diagnosis of speech and language disorders; examination procedures and measurement techniques. Accelerated Master's CSD majors only.

**Prerequisite(s):** COMM 723 with a minimum grade of D- and COMM 724 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**COMM 702 - Principles of Intervention****Credits:** 2

An introduction to the clinical process. Part I emphasizes the theory and practice of interventions. Part II addresses oral and written communication involved in the clinical process, the importance of clinical writing, and common reports/documents. Accelerated Master's CSD majors only.

**Prerequisite(s):** COMM 723 with a minimum grade of D- and COMM 724 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**COMM 703 - Ethical and Professional Issues in Communication Sciences and Disorders I****Credits:** 1

Introduction to ethical and professional issues that professionals will encounter in various work settings including regulatory, billing practices, service delivery models, and the role of advocacy for client services. Accelerated Master's CSD majors only.

**Prerequisite(s):** COMM 723 with a minimum grade of D- and COMM 724 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**COMM 705 - Introduction to Aural Rehabilitation****Credits:** 4

This course provides an overview of auditory perception and the re(h)abilitative process for individuals with hearing loss and auditory disorders. The principles of intervention, communication options, and vocational/educational resources will be studied. Students will learn about amplification systems and other technology used to improve audition, including hearing aids and cochlear implants.

**Prerequisite(s):** COMM 504 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**COMM 711 - Brain and Behavior****Credits:** 3

This course is an overview to Neuroscience/Neurology as it applies to Communication Sciences and Disorders (CSD). Neuroscience is a multidisciplinary field that combines biological, chemical and psychological perspectives to better understand neuron structure and function, thought, emotion, and behavior. It integrates research approaches of a variety of disciplines, ranging from cellular and molecular neurosciences to the psychology of cognition and perception. The focus will be limited to the brain and cognition and application to CSD. Accelerated Master's CSD majors only.

**Prerequisite(s):** COMM 723 with a minimum grade of D- and COMM 724 with a minimum grade of D- and COMM 742 with a minimum grade of D- and COMM 701 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**COMM 721 - Speech Sound Disorders****Credits:** 3

Course provides students with detailed knowledge of speech sound disorders in children and adults with communication disorders. Current practices are discussed in relation to the early identification, screening, differential diagnosis, and possible etiology of speech sound disorders. Evidence-based practices across the life-span are critically reviewed related to different speech sound disorders and how different remediation approaches are needed depending on the specific problem demonstrated by a client. Accelerated Master's CSD majors only.

**Prerequisite(s):** COMM 723 with a minimum grade of D- and COMM 724 with a minimum grade of D- and COMM 701 with a minimum grade of D- and COMM 702 with a minimum grade of D-.

**Grade Mode:** Letter Grading**COMM 723 - Observation Skills in Speech-Language Pathology****Credits:** 2

This course is designed to provide opportunities to observe clients with communication disorders. Observations will include both assessment and intervention techniques. Students successfully completing this course will accrue observation hours that can be applied to the requirement for graduate studies.

**Grade Mode:** Credit/Fail Grading**COMM 724 - Senior Capstone****Credits:** 4

This course allows students to synthesize and apply their knowledge and skills of communication sciences and disorders. It is designed to foster a reflection of their undergraduate learning experience and further explores areas of professional pathways.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** COMM 420 with a minimum grade of C and COMM 522 with a minimum grade of C and (COMM 504 with a minimum grade of C or COMM 604 with a minimum grade of C).

**Equivalent(s):** COMM 635**Grade Mode:** Letter Grading**COMM 740 - Treatment of Adults with Acquired Brain Injury****Credits:** 1-4

This course provides a "hands-on" interdisciplinary experience. Students will acquire clinical skills and professional competence in a community-based day program. This experience includes assisting adults with acquired brain injury to meet their physical, emotional, cognitive-linguistic, social, spiritual, recreational, and vocational needs. Permission required. CSD Majors only.

**Grade Mode:** Letter Grading**COMM 741 - Speech-Language Pathology I****Credits:** 4

This course provides foundational knowledge related to pediatric speech and language disorders, as well as exposure to principles of assessment and treatment in these populations. Students extend their knowledge of language development in the areas of morphology, syntax, semantics, and pragmatics as well as their knowledge of how the speech mechanism works, to learn about communication breakdowns that may occur during childhood.

**Prerequisite(s):** KIN 706 with a minimum grade of D- and COMM 636 with a minimum grade of C and KIN 707 with a minimum grade of D-.

**Equivalent(s):** COMM 631, COMM 731**Grade Mode:** Letter Grading**COMM 742 - Speech-Language Pathology II****Credits:** 4

This course provides the neurologic bases for understanding the communication disorders from birth to geriatrics, with an emphasis on motor, linguistic, and cognitive communication disorders. Introduction to common approaches to treatment for these disorders is also provided.

**Prerequisite(s):** COMM 504 with a minimum grade of C and COMM 741 with a minimum grade of C.

**Equivalent(s):** COMM 630**Grade Mode:** Letter Grading**COMM 795 - Independent Study****Credits:** 1-8

Individual or group projects involving directed study of an area of communication sciences and disorders that students wish to explore in greater depth than is covered in the required curriculum.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**COMM 798 - Special Topics****Credits:** 1-4

New or specialized topics not covered in regular course offerings. Special fee on some topics.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**COMM 799 - Honors Thesis****Credits:** 1-4

Supervised research leading to the completion of an honors thesis required for graduation from the university honors program in major. Permission required.

**Attributes:** Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Letter Grading

## Community & Environmental Planning (CEP)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**CEP 415 - Community Development Perspectives****Credits:** 4

Introduces students to a range of community development and environmental planning issues facing communities as they undergo social, economic, and environmental change. Through class discussion and examination of case studies, this course instills basic principles and processes of community development and environmental planning, formulation, and conflict resolution. Community and environmental planning topics covered in the course include land use conflict, urban/suburban sprawl, rural development, economic development, local food systems, community infrastructure, and environmental stewardship. Emphasis is placed on the roles and responsibilities of community development professionals, including land use planners, municipal administrators, and community leaders.

**Attributes:** Social Science (Discovery)**Equivalent(s):** CD 415**Grade Mode:** Letter Grading

**CEP 508 - Applied Community Development****Credits:** 4

Students work in an actual community, assisting individuals and groups to identify needs and problems, establish attainable and objective goals, assess requirements and resources, and formulate programs for development and methods of collection, analysis, and integration of pertinent primary and secondary economic, social, political, and physical data for community development. Prereq: CEP 415 or permission. Lab.

**Equivalent(s):** CD 508**Grade Mode:** Letter Grading**CEP 614 - Fundamentals of Planning****Credits:** 4

Community planning process in nonmetropolitan communities; practical application of planning techniques. Communities' components: housing, jobs, schools, recreation, transportation, community appearance, and the administrative structure for planning. Use of planning tools: data gathering and analysis, the master plan, zoning and subdivision regulations, community development programs. Prereq: EREC 411; CEP 415; or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CEP 672 - Fundamentals of Real Estate****Credits:** 4

This course covers timely subjects in National and regional real estate, such as types of property ownership, easements, financing, contracts, appraisal, brokerage, property listings, commissions, fair housing, and property management. The goal of this class is to prepare students to pass the New Hampshire Real Estate Sales Agent License Exam and/or be knowledgeable real estate investors. Prereq: MATH 420 or higher.

**Equivalent(s):** CD 672, NR 672**Grade Mode:** Letter Grading**CEP 673 - Green Real Estate****Credits:** 4

This class covers issues related to existing and new real estate development with respect to history, law (state statutes and federal legislation), economics, and technology. The course looks at impacts of green development from an individual building level, and out to regional and global levels. We look at common problems and solutions, review case studies, and discuss emerging trends in "green development."

**Grade Mode:** Letter Grading**CEP 777 - Topics in Community Planning****Credits:** 4

Advanced treatment of the concepts and tools required for effective local and regional planning to guide land use, capital investment in infrastructure, and organization for service delivery. Prereq: CEP 614 or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**CEP 794 - Community and Environmental Planning Internship****Credits:** 4-12

Fieldwork in a planning office for student's professional development. Student must be supervised by a qualified planner or faculty-approved supervisor throughout the internship and remain in consultation with a faculty advisor. A Memorandum of Understanding between the student, the internship supervisor, and the faculty advisor, as well as midterm and final written reports are required. May be taken for 4 credits with 150 hours of internship up to a maximum of 12 credits for 450 hours of internship. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Equivalent(s):** CD 794**Grade Mode:** Credit/Fail Grading**CEP 795 - Investigations****Credits:** 2-4

Special assignments in readings, investigations, or field problems, or teaching experience. May be repeated. Prereq: permission.

**Equivalent(s):** CD 795, CD 795W, CEP 795W**Grade Mode:** Letter Grading

## Community Leadership (CSL)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

No courses are currently active in the course inventory for this subject prefix.

## Computer Science (CS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**CS 400 - Introduction to Computing****Credits:** 2

Introduces students to the available computing-related majors and a variety of topics foundational to success in computing-related fields. Coverage includes ethics, skills, and knowledge applicable to a broad range of computing disciplines.

**Grade Mode:** Credit/Fail Grading**CS #401 - Computers and Their Applications****Credits:** 4

Use of computers to manage and analyze information across a variety of settings and disciplines. Introduces major categories of computer software, including word processing, spreadsheets and database systems. Covers basic computer concepts and the computer's role in today's society. Significant hands-on work required outside of the class. Not open to CS majors. CEPS students should check with their major department for approval.

**Attributes:** Environment, TechSociety(Disc)**Equivalent(s):** CIE 530, CS 401H, CS 495, DCE 491, DCE 492, INCO 495**Grade Mode:** Letter Grading

**CS #404 - Do-It-Yourself Internet****Credits:** 4

The objective of this course is to demystify the design process that leads to the evolution of the Internet. In doing so, we investigate the ways that technology changes to meet the needs of society, how society changes in response to these new technologies and how these societal changes create pressures that produce needs for new technologies.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**CS 405 - Introduction to Applications Programming****Credits:** 4

Introduces the concepts and techniques of computer programming. Particular emphasis on computer programming as a problem-solving technique for business applications. The basic software development process (modeling, algorithm design, programming, testing and debugging) is illustrated. CEPS students should check with their major department for approval. Not open to CS and IT majors.

**Grade Mode:** Letter Grading**CS 408 - Living in a Networked World: The Good, the Bad, and the Ugly**  
**Credits:** 4

The objective of this course is to explore the implications of living in a networked world. The course surveys the fundamental technologies and practices that make up the Internet and then ask the student to examine the ramifications of using the technologies. Users of the technologies should understand the technology in order to make educated decisions about how to use it safely and effectively. Students have the opportunity to self-publish by using various current technologies including blogs, discussion boards, email and creating web pages using xhtml.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**CS 410C - Introduction to Scientific Programming/C****Credits:** 0 or 4

Introduces the concepts and techniques of computer programming. Particular emphasis on computer programming as a problem-solving technique in science and engineering applications. Good programming style is stressed. Significant out-of-class programming required.

**Equivalent(s):** CS 410**Mutual Exclusion:** No credit for students who have taken CS 415.**Grade Mode:** Letter Grading**CS 410P - Introduction to Scientific Programming/Python****Credits:** 0 or 4

Introduces the concepts and techniques of computer programming. Particular emphasis on computer programming as a problem-solving technique in science and engineering applications. Good programming style is stressed. Significant out-of-class programming required. Not open to students who have completed CS 415 or the equivalent.

**Equivalent(s):** CS 410, CS 415**Grade Mode:** Letter Grading**CS 414 - From Problems to Algorithms to Programs****Credits:** 4

This course is an introduction to the design and implementation of computer programs. The basic software development process (modeling, algorithm design, programming, testing and debugging) is illustrated through problem examples. Programming techniques are introduced to allow students to implement and evaluate solutions as programs.

**Attributes:** Quantitative Reasoning(Disc)**Grade Mode:** Letter Grading**CS 415 - Introduction to Computer Science I****Credits:** 0 or 4

Theory and practice of computer science. Algorithm development and analysis; data abstraction techniques; elementary data structures; dynamic memory manipulation; debugging; and program design issues. Computer systems and applications. Intended for CS majors.

**Mutual Exclusion:** No credit for students who have taken CS 410C.**Grade Mode:** Letter Grading**CS 416 - Introduction to Computer Science II****Credits:** 0 or 4

Theory and practice of computer science. Algorithm development and analysis; data abstraction techniques; elementary data structures; dynamic memory manipulation; debugging; and program design issues. Computer systems and applications. Intended for CS majors. Prereq: CS 415.

**Grade Mode:** Letter Grading**CS 417 - From Programs to Computer Science****Credits:** 0 or 4

Accelerated coverage of programming techniques for students with experience equivalent to CS410 or CS 414. Covers basic algorithm analysis. Topics include basics of classes, inheritance, and data abstraction; linear data structures (vectors, lists, stacks and queues); trees and simple graphs; hash tables; sorting and searching; recursion; and basic graph traversal algorithms. Numerous labs and programming assignments build skills in planning, problem solving, and debugging: this is a hands on course. Prereq: CS 410 or CS 414 or equivalent.

**Grade Mode:** Letter Grading**CS 419 - Computer Science for Engineers and Scientists****Credits:** 4

This course provides an accelerated coverage of programming techniques for students with programming experience from an introductory programming course. Topics covered include: basics of classes, inheritance, and data abstraction; linear data structures (vectors, lists, stacks, and queues); trees and simple graphs; hash tables; sorting and searching; and recursion. Students will learn basic algorithm analysis. Numerous labs and programming assignments will build skills in planning, problem solving, and debugging: this is a hands-on course. Prereq: CS 410C.

**Equivalent(s):** CS 416, CS 417**Grade Mode:** Letter Grading**CS 420 - Foundations of Programming for Digital Systems****Credits:** 4

A systems-oriented introduction to C, with an emphasis on low-level operations, memory management, and debugging. Foundational digital systems concepts and methods will be introduced, including Boolean algebra, basic logic gates, number systems & conversions, integer representation, and theoretical aspects of combinational and sequential logic. Aspects of effective programming such as incremental development, appropriate structure and commenting, and basic testing will be stressed. Prereq: (CS 410C with a minimum grade of C- or CS 410P with a minimum grade of C- or CS 414 with a minimum grade of C- or CS 415 with a minimum grade of C-).

**Grade Mode:** Letter Grading

**CS 457 - Introduction to Data Science and Analytics****Credits:** 4

An introduction to data science and analytics. Overview of the use of analytics by industry, government, and nongovernmental organizations. Impact of analytics on society, ethical use of analytics. Methods of data generation, data management, data cleaning, and data preparation, with a focus on visual and exploratory analysis. Project-based, with an emphasis on collaborative, experiential learning. Design and implementation of programs, use of statistical software. Not open to CS and IT majors.

**Attributes:** Environment, TechSociety(Disc)**Equivalent(s):** DATA 557**Grade Mode:** Letter Grading**CS 501 - Professional Ethics and Communication in Technology-related Fields****Credits:** 4

A mixed lecture/seminar course intended to improve both reasoning and ability to communicate effectively in front of an audience. Students learn basic forms of ethical argument, they read about ethical situations in which technology and technology professions play a key role, and they participate in student-led discussions about the reading. Students also make oral presentations about both ethical and technical topics, and evaluate each other's presentations in order to improve their sense for what makes a good presentation. Prereq: ENGL 401.

**Attributes:** Environment, TechSociety(Disc); Inquiry (Discovery)**Grade Mode:** Letter Grading**CS 515 - Data Structures and Introduction to Algorithms****Credits:** 0 or 4

Reviews basic data structures. Covers the mechanics and relative efficiencies of advanced data structures. Students will implement several data structures such as AVL trees, heaps, hash tables, and adjacency lists. Discusses abstract data types such as maps, priority queues, and graphs. Introduction to algorithm analysis, sorting algorithms, and graph algorithms. Prereq: (CS 416 with minimum grade of C- or CS 417 with minimum grade of C-).

**Grade Mode:** Letter Grading**CS 518 - Introduction to Software Engineering****Credits:** 4

Study of software development practices and processes in the following areas: software life cycle; system validation and verification; development pipeline; cloud infrastructures; virtual machines, and containers; logging, instrumentation, and performance; fundamental security concepts. Experience working in groups. Restricted to students not in Senior Standing. Prereq: CS 416 or CS 417 or equivalent.

**Grade Mode:** Letter Grading**CS 520 - Computer Organization and System-Level Programming****Credits:** 0 or 4

Study software/hardware interaction, understand data and program representation. Topics include fundamentals of computer organization, CPU, memory, registers, addressing modes, instruction sets, assemblers, linkers, concurrency, memory hierarchy and memory management. Prereq: (CS 416 with minimum grade of C- or CS 417 with minimum grade of C-), CS 420 with minimum grade of C-.

**Grade Mode:** Letter Grading**CS 527 - Fundamentals of Cybersecurity****Credits:** 4

An entry-level introduction to a wide range of fundamental cybersecurity topics: authentication, authorization, auditing, cryptography, human element, network security, OS security, mobile & IoT security. The emphasis is to explain basic concepts with real world examples. Prereq: (CS 416 or CS 417).

**Grade Mode:** Letter Grading**CS #580 - Introduction to Topics in Computing****Credits:** 1-2

Introductory material not normally covered in regular course offerings, but of value to students prior to internships or senior-level courses.

**Repeat Rule:** May be repeated for a maximum of 6 credits.**Grade Mode:** Credit/Fail Grading**CS 619 - Introduction to Object-Oriented Design and Development****Credits:** 4

Principles of problem analysis and software design applied to the development cycle of a software system (i.e. from system requirements specification to design, implementation, and system test). Design and implementation using object-oriented principles, patterns, and tools. Experience in understanding and debugging software systems. Experience in working in groups. Prereq: CS 515 with minimum grade of C-, CS 518.

**Grade Mode:** Letter Grading**CS 620 - Operating System Fundamentals****Credits:** 4

Introduces operating system concepts and design. Process and memory management; scheduling; file systems; storage devices; inter-process communication. Prereq: CS 520.

**Equivalent(s):** CS 610**Grade Mode:** Letter Grading**CS 659 - Introduction to the Theory of Computation****Credits:** 4

Review of sets, relations, and languages. Induction and diagonalization. Finite automata, context-free languages, pushdown automata. Basic complexity theory. Prereq: MATH 531.

**Grade Mode:** Letter Grading**CS 696 - Independent Study****Credits:** 1-6

Individual projects developed and conducted under the supervision of a faculty member. Prereq: permission of faculty supervisor and department chairperson. May be repeated for credit.

**Equivalent(s):** CS 696W**Grade Mode:** Letter Grading**CS 696W - Independent Study****Credits:** 1-6

Individual projects developed and conducted under the supervision of a faculty member. Prereq: permission of faculty supervisor and department chairperson.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 1 time.**Equivalent(s):** CS 696**Grade Mode:** Letter Grading



**CS 699 - Internship****Credits:** 1

Provides the opportunity to apply academic experience in settings associated with future professional employment. A written proposal for the internship must be approved by the instructor. The proposal must specify what the student will learn from the internship, why the student is properly prepared for the internship and what supervision is available during the internship. A mid-semester report and final report are required. Prereq: permission. Only open to Computer Science majors. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits. May be repeated up to 3 times.

**Equivalent(s):** CS 600

**Grade Mode:** Credit/Fail Grading

**CS 712 - Compiler Design****Credits:** 4

Formal languages and formal techniques for syntax analysis and parsing; organization of the compiler and its data structures; code generation. LL and LR parsing; automatic generation of scanners and parsers from high level descriptions. Implementation of features from imperative and object-oriented languages. Students required to design and implement a compiler for a simple language. Prereq: CS 520.

**Grade Mode:** Letter Grading

**CS 720 - Systems Programming****Credits:** 4

Study and simulation of various types of systems that include assemblers, linkers, memory management, concurrency and other resource management techniques. Prereq: CS 520.

**Prerequisite(s):** CS 610.

**Grade Mode:** Letter Grading

**CS 722 - Cloud Computing Systems****Credits:** 4

The course covers a variety of topics in cloud computing systems, or more precisely, distributed systems that enable modern cloud computing. The topics include virtualization and its impact on configuration management. The course also covers the latest advancements in cloud computing/systems, IoT, edge, and fog computing. Prereq: CS 620.

**Grade Mode:** Letter Grading

**CS 723 - Performance Evaluation of Computer Systems****Credits:** 4

Introduces the main concepts, techniques, and tools needed to evaluate the performance of computer systems under various configurations and workloads. The techniques allow one to perform capacity planning based on quality of service requirements of users and workload characteristics. Course is mainly based on the use of analytic queuing network models of computers systems. The performance techniques are applied to study the performance of centralized, distributed, parallel, and client/server systems. The course also discusses performance measuring tools for operating systems such as Unix and Windows NT. Prereq: CS 620 and (MATH 539 or MATH 644).

**Grade Mode:** Letter Grading

**CS 725 - Computer Networks****Credits:** 4

Introduction to fundamental concepts of computer networks and exploration of widely-used networking technologies. Topics include principles of congestion and error control; network routing; local, wireless and access networks; application protocol design; and network programming. In-depth discussion of the Internet suite of protocols. Prereq: CS 520.

**Equivalent(s):** IT 725

**Grade Mode:** Letter Grading

**CS 727 - Software Security****Credits:** 4

Mechanisms and implementation of techniques in software security. Various fundamental security topics include cryptography, access control, protocols, software vulnerabilities, and reverse engineering. Prereq: CS 520 with a minimum grad of C-, CS 527.

**Grade Mode:** Letter Grading

**CS 730 - Introduction to Artificial Intelligence****Credits:** 4

In-depth introduction to artificial intelligence, concentrating on aspects of intelligent problem-solving. Topics include situated agents, advanced search techniques, knowledge representation, logical reasoning techniques, reasoning under uncertainty, advanced planning and control, and learning. Prereq: CS 515.

**Grade Mode:** Letter Grading

**CS 733 - Mobile Robotics****Credits:** 4

An introduction to the foundational theory and practices in mobile robotics. Topics include Kinematics of wheeled mobile robots, Sensors for mobile robots, Robot navigation and perception, Robot vision, Localization and mapping of mobile robots. Hands-on experience directed towards implementation with a real robot. Prereq: Programming course of Permission of instructor.

**Grade Mode:** Letter Grading

**CS 735 - Introduction to Parallel and Distributed Programming****Credits:** 4

Programming with multiple processes and threads on distributed and parallel computer systems. Introduces programming tools and techniques for building applications on such platforms. Course requirements consist primarily of programming assignments. Prereq: CS 520.

**Equivalent(s):** CS 735W

**Grade Mode:** Letter Grading

**CS 745 - Formal Specifications and Verification of Software Systems****Credits:** 4

Course focuses on the formal specification and verification of reactive systems, most notably concurrent and distributed systems. Topics relevant to these systems, such as non-determinism, safety and liveness properties, asynchronous communication or compositional reasoning, as discussed. We rely on a notation (TLA+, the Temporal Logic of Actions) and a support tool (TLC, the TLA+ Model Checker). Prereq: CS 520 and CS 659.

**Grade Mode:** Letter Grading

**CS 750 - Machine Learning****Credits:** 4

An introduction to fundamental concepts and common methods in machine learning. In addition to theoretical topics, the course involves hands-on experience in making predictions using synthetic and real-world datasets. Prereq: MATH 539 or MATH 644, and Programming course or Permission of instructor.

**Mutual Exclusion:** No credit for students who have taken .

**Grade Mode:** Letter Grading

**CS 752 - Foundations of Neural Networks****Credits:** 4

Neural networks are a class of machine learning models which have recently revolutionized many applied machine learning domains such as natural language understanding, image/video processing, bioinformatics, time series analysis. This course teaches students to develop new neural network architectures from scratch and customize them. The course covers all necessary foundations of neural networks including gradient descent optimization and vector calculus. Students will learn how to design models using idioms such as observed variables, latent variables, gate variables and different functions as well as a wide range of state-of-the-art architectures as design examples. Prereq: CS 515.

**Grade Mode:** Letter Grading**CS 753 - Information Retrieval****Credits:** 4

Fundamental algorithms and techniques for text processing and text-based information retrieval systems. Topics include how to build an end-to-end information retrieval system, such as a Web search engine. Prereq: CS 515.

**Grade Mode:** Letter Grading**CS 755 - Computer Vision****Credits:** 4

Studying techniques that make a machine 'see' and 'understand' the world in a human-like fashion. The course discusses the theory behind common computer vision techniques and trains students on designing their own algorithms for understanding image or video. Prereq: (MATH 539 or MATH 644) and Programming course of permission of instructor, Junior standing.

**Grade Mode:** Letter Grading**CS 757 - Mathematical Optimization for Applications****Credits:** 4

This course introduces the foundations of mathematical optimization and reinforces them via applications. The content includes convex optimization, first and second-order methods, constrained problems, duality, linear and quadratic programming, as well as discrete and non-convex optimization. Applications will focus on machine learning methods but also include problems from engineering and operations research. Prereq: MATH 426; Programming proficiency in MATLAB, R, Java, C, Python, or equivalent.

**Equivalent(s):** MATH 757**Grade Mode:** Letter Grading**CS 758 - Algorithms****Credits:** 4

An introduction to important concepts in the design and analysis of algorithms and data structures, including implementation, complexity analysis, and proofs of correctness. Prereq: CS 420 with minimum grade of C-, CS 515 with minimum grade of C-, CS 659.

**Grade Mode:** Letter Grading**CS 761 - Programming Language Concepts and Features****Credits:** 4

Explores the main features of modern, high-level, general-purpose programming languages from the user (programmer) standpoint. Students learn how specific features of programming languages can be used effectively in solving programming problems. The course is also an opportunity to use paradigms that expand on simple imperative programming, such as object-oriented, functional and concurrent programming. Prereq: CS 520 with a minimum grade of C-, some knowledge of Java.

**Equivalent(s):** CS 671**Grade Mode:** Letter Grading**CS 770 - Computer Graphics****Credits:** 4

Input-output and representation of pictures from hardware and software points of view; interactive techniques and their applications; three-dimensional image synthesis techniques and their applications. Prereq: CS 515 with a minimum grade of C-, CS 520 with a minimum grade of C-.

**Equivalent(s):** CS 770W**Grade Mode:** Letter Grading**CS 771 - Web Programming Paradigms****Credits:** 4

In this course you will learn languages to program the Web. Languages integrated into browsers, like JavaScript, and languages invoked on the server, like Ruby. You will also learn about frameworks, like Rails, and various techniques used to support the programming process. In addition, you will learn languages you will need to create, modify, and process Web documents. Although we will learn how to read and write in these languages, our primary goal will be an understanding of how the design of these multi-paradigm dynamic languages support the process of developing Web applications. Prereq: CS 671.

**Equivalent(s):** IT 771**Grade Mode:** Letter Grading**CS 775 - Database Systems****Credits:** 4

Introduction to database management systems — design, implementation, and usage — with focus on the relational model. Data description, manipulation, and query language in the context of MySQL. Schema design and normalization; indexes, transaction processing. Web access of databases (PHP); overview of XML and noSQL systems. Prereq: CS 515.

**Mutual Exclusion:** No credit for students who have taken IT 775.**Grade Mode:** Letter Grading**CS 780 - Topics****Credits:** 1-4

Material not normally covered in regular course offerings. May be repeated for credit.

**Grade Mode:** Letter Grading**CS 791 - Senior Project I****Credits:** 2

First semester of the capstone design experience. Modern software engineering practices and tools are surveyed and applied in team projects. Students begin development on software projects proposed by faculty or external sponsors, including initial stages of design, implementation, and documentation, with an interim presentation of progress expected toward the end of the semester. Principles of security, testability, and maintainability are stressed. Prereq: BS CS: CS 520 with a minimum grade of C-, CS 619, 1 additional 600 or 700 level course; BA CS Algorithms & Systems: CS 520 with a minimum grade of C-, CS 619, 1 additional 600 or 700 level course; BA CS Cybersecurity: CS 620 and (CS 727 or IT 666); BS ADS: DATA 674 or MATH 738 or CS 750.

**Grade Mode:** Letter Grading**CS 792 - Senior Project II****Credits:** 2

Continuation of CS 791: Senior Project I. Students complete the project by implementing their design. Students work in teams. Successful completion of this course fulfills the Capstone Experience requirement for Computer Science majors. Prereq: CS 791. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**CS 799 - Thesis****Credits:** 1-5

Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in a written thesis. Required for honors-in-major. Prereq: CS 520, CS 619, CS 600 level course, GPA >3.4, permission. A minimum of 4.0 credits is required for the completion of the course.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Computing Technology (COMP)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**COMP 405 - Introduction to Web Design and Development****Credits:** 4

Students learn the fundamentals of how the Internet works, gain practice with foundational technologies that power websites and learn how to solve problems like a programmer. A significant portion of the course covers web front-end design and development; students create a website using HTML/CSS, and are introduced to JavaScript language and responsive web design techniques. Topics include Internet history and structure, legal and ethical issues. No prior programming experience is required.

**Attributes:** Environment, TechSociety(Disc)**Equivalent(s):** IT 403**Grade Mode:** Letter Grading**COMP 415 - Mobile Computing First and For Most****Credits:** 4

This course examines how mobile computing is transforming our everyday lives and the society and environment in which we live. In this course the students will engage the mobile ecosystem by inventing apps and solving problems of personal, social, and environmental relevance. Students will learn computational thinking skills and create mobile apps using AppInventor, a free and open source visual blocks-based programming environment. Students will share their creative apps with peers and communities. They will also exercise inclusion, civic engagement, and peer learning in the context of innovating with free and open source software that empower individuals and communities.

**Attributes:** Environment, TechSociety(Disc)**Grade Mode:** Letter Grading**COMP 424 - Applied Computing 1: Foundations of Programming****Credits:** 4

Integrates three essential computing competencies: Problem solving, data analysis, and programming. Problems are chosen from data-driven real-world examples such as astronomy, cryptography, environmental simulation, image processing, and video games. Emphasis is on formulating problems, thinking creatively about how computations can solve problems, and expressing solutions clearly and accurately. Using Python, students learn design, implementation, testing, and analysis of algorithms and programs.

**Equivalent(s):** CS 410, CS 414, CS 415**Grade Mode:** Letter Grading**COMP #425 - Introduction to Programming****Credits:** 4

An introduction to problem solving and object-oriented programming. Emphasis is on programming concepts and techniques and their application to software development. Students learn to write, review, document, share, and demonstrate interactive applications and participate in pair programming, peer-led tutoring, and collaborative learning throughout the course.

**Equivalent(s):** CS 410, CS 414**Grade Mode:** Letter Grading**COMP 430 - Systems Fundamentals****Credits:** 4

The underlying hardware and software infrastructure upon which applications are constructed is collectively described by the term "computer systems." Computer systems broadly span the subdisciplines of operating systems, parallel and distributed systems, communications networks, and computer architecture. The class will present an integrative view of these fundamental concepts in a unified albeit simplified fashion, providing a common foundation for the different specialized mechanisms and policies appropriate to the particular domain area.

**Grade Mode:** Letter Grading**COMP 500 - Discrete Structures****Credits:** 4

This course prepares students for understanding computational complexity; i.e., what makes a given task/problem hard and how hardness is measured. It accomplishes this through the study of algorithms, permutations, combinations, probability, graph theory, and trees.

**Grade Mode:** Letter Grading**COMP 520 - Database Design and Development****Credits:** 4

An introduction to developing database applications with business users. Topics include fundamentals of the relational model, structured query language, data modeling and database design and implementation. Students use a variety of database management system tools to model, code, debug, document, and test database applications. Students complete real-world team projects.

**Equivalent(s):** CIS 520, IT 505**Grade Mode:** Letter Grading**COMP 525 - Data Structures Fundamentals****Credits:** 4

Data structures and algorithms are fundamental to developing solutions for computational problems. In this course students design and implement data and functional abstractions; analyze and select appropriate data structures to solve computational problems; practice programming and software development techniques to implement computational solutions. Prereq: COMP 424 or COMP #425.

**Equivalent(s):** CS 416, CS 417**Grade Mode:** Letter Grading**COMP 530 - Machine and Network Architecture****Credits:** 4

Examines the following topics. Machine organization: program and data representation; registers, instructions, and addressing modes; assemblers and linkers. Impact of hardware on software and software on hardware. Introduces the Internet protocol suite and network tools and programming and discusses various networking technologies. Prereq: COMP 430.

**Grade Mode:** Letter Grading

**COMP 550 - Networking Concepts****Credits:** 4

Explores the fundamentals of data communications and networking requirements for an organization, including the standard layers of network organization; network technologies; and protocols for LANs, WANs, wireless networks, and switched and routed networks. Includes issues of security, topology, management, and future developments.

**Grade Mode:** Letter Grading**COMP 560 - Ethics and the Law in the Digital Age****Credits:** 4

Examines classical and ethical and legal constructs as they pertain to current and topical issues. Students develop and articulate a personal point of view on a broad range of issues based on sound ethical principles and consider the impact of such views on co-workers, employers, and society in general. Topics also include: major social issues involving intellectual property, privacy, current U.S. and international relations relevant to ethical theories. The interplay between ethics and law is explored through current case studies and students formulate and support conclusions based on ethical constructs presented in class. Case study analysis is a major component in course delivery. Writing intensive.

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**COMP 570 - Statistics in Computing and Engineering****Credits:** 4

An introduction to tools from probability and statistics that are needed by computing and engineering professionals. Exploratory data analysis including graphic data analysis. discrete and continuous probability distributions, inference, linear regression, and analysis of variance, with applications from artificial intelligence, machine learning, data mining, and related topics. Project work and use of statistical software are an integral part of the course. Prereq: MATH 425.

**Grade Mode:** Letter Grading**COMP 574 - Applied Computing 2: Foundations of Machine Learning****Credits:** 4

Introduction to making informed, data-based decisions with machine learning, data representation and analysis tools, and programming. Emphasis is on the importance of gathering, cleaning, normalizing, visualizing and analyzing data to drive informed decision-making in any field of study. Students learn to use tools and techniques to work on real-world datasets using procedural and basic machine learning algorithms. Students also learn to ask good, exploratory questions and develop metrics to come up with a well-thought-out analysis. Prereq: COMP 424.

**Grade Mode:** Letter Grading**COMP 625 - Data Structures and Algorithms****Credits:** 4

An introduction to object-oriented design, analysis, and implementation of data structures and algorithms. Students apply concepts and techniques to develop information processing applications. Best programming practices of editing, debugging, documentation, testing, and code review are stressed. Familiarity with an object-oriented programming language and experience with application development are required. Prereq: COMP 525.

**Equivalent(s):** CS 515**Grade Mode:** Letter Grading**COMP 630 - Systems Software****Credits:** 4

Today's organizations need to deliver applications and services by automating processes that develop and deploy software and manage scalable computing infrastructures. Students will learn how to integrate development, operations, and cloud computing and gain experience with design approaches, version control, continuous integration, cloud-based APIs, and monitoring metrics. Key to systems software tools and automation processes are increased communication and collaboration practiced in the course team projects. Students who took COMP 698 Sp/Topic Systems Software cannot repeat for credit. Prereq: COMP 530.

**Grade Mode:** Letter Grading**COMP 650 - Network Administration and Maintenance****Credits:** 4

Advances the understanding of networks through practical application of administering and maintaining an intranet and its servers. Students use a modern server operating system and network management tools. Routine tasks include: install and configure servers, setup directory services and access privileges, tune network services, understand and implement network security, perform routine maintenance, and practice troubleshooting techniques. Prereq: COMP 550.

**Grade Mode:** Letter Grading**COMP 690 - Internship Experience****Credits:** 4

The internship provides field-based learning experience through placement in a computing field. Students gain practical computing experience in a business, non-profit, or government organization. Under the direction of a faculty advisor, the student is expected to contribute to the information technology products, processes, or services of the organization. Majors only. May be repeated but no more than 4 credits may fill major requirements. Prereq: UMST 582.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**COMP 698 - Special Topics****Credits:** 1-4

Course topics not offered in other courses. Topics covered vary depending on contemporary computing topics, programmatic need, and availability and expertise of faculty. Barring duplication of subject, may be repeated for credit.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**COMP 705 - Full Stack Development****Credits:** 4

Students work in teams and implement, test, document, demonstrate, and deploy web systems that solve organizational needs expressed by real clients. Emphasis is on advanced server-side and client-side programming and integration of web application with database and web server applications. Free and open source development and communication tools are used to carry out the course project. Prereq: Senior status.

**Grade Mode:** Letter Grading**COMP 715 - Information Security****Credits:** 4

Topics include general security principles and practices, network and system security, access control methodology, and cryptography. Students develop a simple cryptographic system based on sound mathematical principals, work to improve it, and find ways to attack it. Some programming required. Prereq: Senior status.

**Grade Mode:** Letter Grading



**COMP 720 - Database Systems and Technologies****Credits:** 4

This is a project course that provides practical experience with developing a storage subsystem of a computer information system. Topics include data modeling, database design, system implementation, and integration with a target application. Emphasis is on implementation activities, database application development artifacts, project communication, and supporting system development and project management tools. Prereq: Senior status.

**Grade Mode:** Letter Grading**COMP 721 - Big Data for Data Engineers****Credits:** 4

In this course students gain practical experience developing data-oriented applications in modern infrastructure frameworks, also known as the cloud data solutions. Guided by what a data scientist profile is, students become familiar with the use cases of data oriented applications. They will apply key data modeling and data design concepts to meet business requirements. Students will also apply modern software development to iteratively construct solutions using established reference architectures. Project work will be based in Google Cloud Platform and Amazon Web Services. Prereq: Senior Status. Special fee.

**Grade Mode:** Letter Grading**COMP 725 - Programming Languages****Credits:** 4

Explores the main features of modern, high-level, general purpose programming languages from the user point of view. Provides students with an opportunity to use non-imperative programming paradigms, such as object-oriented, functional, and visual, and to learn how specific features of such languages can be used efficiently in solving problems. The purpose is to gain knowledge regarding the languages studied as well as providing the basis to conduct analysis related to comparisons and divergence in capabilities. Prereq: Senior status.

**Equivalent(s):** CIS 698, COMP 698, ET 647**Grade Mode:** Letter Grading**COMP 730 - Software Development****Credits:** 4

Presents an iterative methodology for developing software systems. Development activities include requirements elicitation and analysis, system and object design, implementation and testing, project and configuration management, infrastructure maintenance, and system deployment to end user. Students work in teams, assume developer roles, build models of a real-world system, and deliver a proof-of-concept or prototype. Prereq: COMP 525.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**COMP 740 - Machine Learning Applications and Tools****Credits:** 4

Introduces students to practical approaches of machine learning. The course is an exploration of creative applications of artificial intelligence using modern machine learning components and tools. Different application domains are considered, such as computer vision, natural language processing, and cyber security. Students learn to evaluate machine learning systems as well as their potential prediction problems. Cannot receive credit if credit earned for COMP 780 AdvTop/ML Tools & Appl. Prereq: Senior status.

**Grade Mode:** Letter Grading**COMP 741 - Practical Artificial Intelligence****Credits:** 4

Balancing the science of AI with its engineering applications, the course focuses on AI foundations and principles for building intelligent computational systems. Reasoning, planning, learning, explaining, and acting with certainty and uncertainty are AI areas in which students will practice how to build AI systems that solve real-world problems. Particular attention is given to the impact of AI applications on our society and related ethical, privacy, security, and safety implications. Prereq: COMP 525.

**Grade Mode:** Letter Grading**COMP 750 - Neural Networks****Credits:** 4

Artificial neural networks power the recent advances in computer vision, speech recognition, and machine translation. This is a first course on neural networks with a focus on applications in computer vision and natural language processing. Topics will include generic feedforward neural networks, convolutional neural networks for computer vision tasks and recurrent neural networks with application to natural language processing, with other topics to be selected based on the interests of the instructor and the class. Prereq: Senior status.

**Equivalent(s):** DATA 750**Grade Mode:** Letter Grading**COMP 755 - Digital Forensics****Credits:** 4

This course studies cyber-attack prevention, planning, detection, response, and investigation with the goals of counteracting cybercrimes. The topics covered in this course include fundamentals of digital forensics, forensic duplication and analysis, network surveillance, intrusion detection and response, incident response, anti-forensics techniques, anonymity and pseudonymity, computer security policies and guidelines, and methods and standards for extraction and preservation of digital evidence. Prereq: COMP 525.

**Grade Mode:** Letter Grading**COMP 760 - Data Visualization & Communication****Credits:** 4

Through hands-on experience with a leading data visualization tool, the course introduces the concepts of data visualization to allow students to communicate and analyze data effectively using visual techniques.

**Grade Mode:** Letter Grading**COMP 780 - Advanced Topics in Computing****Credits:** 1-4

The course includes advanced topics and emerging areas in computing. Barring duplication of subject, the course may be repeated for credit. Prereq: Senior status or permission.

**Grade Mode:** Letter Grading**COMP 785 - Applied Cryptography****Credits:** 4

This course aims to give students an overview of cryptographic concepts and methods, a good knowledge of some commonly used cryptographic primitives and protocols, a sound understanding of theory and implementation, as well as limitations and vulnerabilities, and an appreciation of the engineering difficulties involved in employing cryptographic tools to build secure systems. Some programming required. Prereq: COMP 525.

**Grade Mode:** Letter Grading



**COMP 790 - Capstone Project****Credits:** 4

This course requires the development of a real world project that responds to an IT organizational need. The project is undertaken by a team of students. An iterative approach is used to incrementally address the project requirements while constructing a prototype of the IT solution to the original problem. Prereq: COMP 690 and CIS 610. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**COMP 791 - Senior Thesis****Credits:** 4

This course requires the development of a real world project representative of the computing discipline of their major. An iterative approach is used to incrementally address the project requirements while constructing a prototype of the solution to the original problem. A thesis, describing the work, will be the final product, submitted at the end of the course and presented to a committee of faculty. Prereq: COMP 690.

**Equivalent(s):** COMP 790**Grade Mode:** Letter Grading**COMP 795 - Independent Study****Credits:** 1-4

Advanced individual study under the direction of a faculty mentor.

Content area to be determined in consultation with faculty mentor.

Prereq: permission. May be repeated.

**Grade Mode:** Letter Grading

## Culinary Arts & Nutrition (CAN)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

No courses are currently active in the course inventory for this subject prefix.

## Cybersecurity Policy & Risk Management (CPRM)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**CPRM 710 - Foundations of Cybersecurity Policy****Credits:** 4

Examine the societal and organizational impacts of cybersecurity policy in our interconnected world that is increasingly dependent on advanced technologies and systems for communications and control. Explore the components of information systems and control systems and review the history and development of cybersecurity. Gain an appreciation of policy as one tool for managing risk and start to consider the challenges of cybersecurity policy-making.

**Grade Mode:** Letter Grading**CPRM 720 - Policy Development and Communications****Credits:** 4

Discover the fundamental concepts and practices for developing and drafting organizational policy, including related documents to support implementation. Explore how to communicate policies to internal and external audiences (in both written and oral communications). Learn how to incorporate organizational priorities and mandates into managerial policies. Case studies are primarily based in security studies, but other professional fields are welcomed.

**Grade Mode:** Letter Grading**CPRM 730 - Security Measures I****Credits:** 4

This course introduces common technological and organizational measures for cybersecurity, with a focus on protection concepts. Students assess the organizational impacts of security measures, and explore how best practices, standards, and organizational policy can help manage such measures. Topics include identity management, authentication, access control, data and system security and availability, encryption, integrity mechanisms, system maintenance, and continuity of operations. Note that we do not focus on how to technically implement these security measures.

**Grade Mode:** Letter Grading**CPRM 740 - Cybersecurity Standards, Regulations, and Laws****Credits:** 4

We survey laws, regulations, and standards for cybersecurity in the United States, including "soft law" and self-regulation. Topics include the pros and cons of regulatory solutions and market solutions; the different approach to data protection regulation in the European Union; and cybersecurity concerns and regulatory authorities in various U.S. industries and sectors. Students become familiar with key standards bodies involved in cybersecurity, and explore organizational processes for remaining current with industry best practices.

**Grade Mode:** Letter Grading**CPRM #750 - Security Measures II****Credits:** 4

This course continues surveying common technologies and organizational measures for cybersecurity, with a focus on detection and organizational relationships. Topics include auditing and log records; monitoring and testing for threat detection; vulnerability scans; and the security of external services (e.g., cloud providers) and supply chains. We do not focus on how to technically implement these measures. Students assess organizational impacts and explore how best practices and standards can help manage such measures.

**Grade Mode:** Letter Grading**CPRM 790 - Organizations, Change Management, and Leadership****Credits:** 4

This course examines both private and public institutions as systems whose effectiveness depends on how an organization adapts to opportunities, threats, and demands (external and internal). Students explore the design and leadership of ethical and socially responsible organizations. In course examples and exercises, students will apply this knowledge to their respective research interests (e.g., cybersecurity, analytics, criminal justice, public health, etc.).

**Grade Mode:** Letter Grading

# Decision Sciences (DS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

## DS 444 - Meaning of Entrepreneurship

**Credits:** 4

This course explores the idea and ideals of entrepreneurship, the creating of value through individual initiative, creativity and innovation. The idea of entrepreneurship is of significant relevance in the highly dynamic and competitive 21st century global economy. It is an idea that is important for students to understand and to critically consider and apply. Encourages the development of multiple views of entrepreneurship, and uses a broad, not just business, approach to the study as it engages students in the subject matter. Open to all majors.

**Attributes:** Environment, TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

## DS 520 - Topics in Decision Sciences

**Credits:** 4

Special topics, vary by semester.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

## DS 620 - Topics in Decision Sciences

**Credits:** 1-4

Special topics, vary by semester.

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Letter Grading

## DS 650 - The Mel Rines Student Angel Investment Fund

**Credits:** 2

The Mel Rines Student Angel Investment Fund is a cross-disciplinary, undergraduate, student-managed private equity fund. The Fund allows students to learn angel and venture capital investment strategies through the first-hand experience of investing in start-up companies. Students evaluate entrepreneur pitches, conduct due diligence on potential investments, work with angel partners, and present to an investment committee their recommendations to invest capital. Students interested in joining the Fund must submit an application and undergo an interview process. Students in good standing may retake the course.

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Letter Grading

## DS 662 - Programming for Business

**Credits:** 4

Introduces students to programming concepts. Covers fundamentals including functions, variable types, conditionals, and data structures. Students apply these concepts to a variety of business analytics problems including data collection, wrangling, reshaping, summarizing, and visualization. Prereq: ADMN 410.

**Equivalent(s):** DS 562

**Grade Mode:** Letter Grading

## DS 671 - Data Visualization and Prescriptive Analytics

**Credits:** 4

The course focuses on Descriptive and Prescriptive Analytics. Students gain modeling and data analysis and visualization skills necessary to address a wide variety of business problems. In Descriptive Analytics, students learn principles of data visualization, data cleanup and wrangling, advanced data analysis and visualization tools, and dashboard design. In Prescriptive Analytics, students learn advanced spreadsheet modeling/programming, formulating and solving a variety of optimization problems, and performing sensitivity analysis. Prereq: ADMN 410, ADMN 420.

**Equivalent(s):** DS 766

**Grade Mode:** Letter Grading

## DS 673 - Database Management

**Credits:** 4

Provides students with the skills necessary to understand the database environment of the firm. Topics include data models, normalization, SQL, data warehouses, and nosQL databases. Students learn to design and implement moderately complex relational databases in multi-user, client/server environments. Prereq: ADMN 410.

**Equivalent(s):** DS 773

**Grade Mode:** Letter Grading

## DS 720 - Topics in Decision Sciences II

**Credits:** 4

Introduces students to commonly used predictive analytics techniques and necessary programming with focus on regression analysis and model building. The course coverage is supported with real data applications and illustrations. The topics include linear and non-linear regression model building/selection, residual analysis, search algorithms, generalized linear models/classification, and clustering algorithms.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

## DS 741 - Private Equity/Venture Capital

**Credits:** 4

The focus is private equity in the context of financing innovation especially from the investor's perspective. This course covers screening entrepreneurial ideas and business plans through the spectrum of entrepreneurial financing stages from seed, start-up, later-stage financing, to acquisition/buyouts and IPOs. Students will research, discuss and present state-of-the-art analyses and practices and have exclusive access to PitchBook database that provides users intelligence on the private markets, angels, venture capital, mergers & acquisitions, and private companies. Prereq: ADMN 570 and senior standing.

**Grade Mode:** Letter Grading

## DS 742 - Internship in Entrepreneurial and Management Practice

**Credits:** 4

Involves working for leading companies and dynamic entrepreneurs, as well as classroom instruction. The priority experiential, real-world, and real-time learning in the high-growth environment of entrepreneurial ventures. Focus on several topic areas, including venture capital. Prereq: senior standing; permission.

**Grade Mode:** Letter Grading

**DS 768 - Forecasting Analytics****Credits:** 4

The course focuses on Predictive Analytics. Businesses and organizations need to be able to forecast effectively in order to make decisions. Students learn the background necessary to develop forecasts for real-world business situations. An applied, hands-on approach is used in the course. Students learn and use SAS to analyze data and fit models. Topics include regression analysis in forecasting, model building, residual checking, analysis of seasonal and cyclical trends, and times series models. Prereq: ADMN 420.

**Grade Mode:** Letter Grading**DS 774 - E-Business****Credits:** 4

Covers the concepts, tools, and strategies for understanding the challenges and exploiting the opportunities associated with e-commerce/e-business. Students gain a comprehensive understanding of online payment systems, cyber security, e-commerce marketing and advertising, web development, and web and social media analytics. Prereq: ADMN 410 and junior standing. DS 562 or CS 405 is strongly recommended.

**Grade Mode:** Letter Grading**DS 775 - Corporate Project Experience****Credits:** 4

Provides real-life experience in organizations. Work in groups on information systems and/or business analytics projects identified by sponsoring organizations. Integrate concepts and skills learned in prior business, analytics, and information systems courses. Learn project management concepts, work with project management tools, and use presentation techniques. Prereq: DS 673 and 2 ISBA Electives.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

## Digital Language Arts (DLA)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**DLA #501 - Digital Creative Writing****Credits:** 4

This writing-intensive workshop teaches the basic principles of transmedia and multimedia creative writing. the course's inductive, poetics-oriented approach to writing in virtual spaces allows for careful consideration of genre, hardware, software, accessibility, different compositional and dissemination models, emerging technology, post-internet cultural theory, and more. In addition to creative work, students will produce "white papers" outlining digital projects larger in size and scope than the workshop model can accommodate. No prior creative writing experience is required. May not be taken for credit if ENGL 595: Special Topics (Digital Creative Writing) has already been taken for credit.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

## Earth Sciences (ESCI)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ESCI 400 - Freshman Field Seminar****Credits:** 1

A field introduction for new or prospective majors to New Hampshire's mountains, rivers, estuaries, and beaches. Field excursions (approximately five) are scheduled on Friday afternoons. Special fee. Cr/F.

**Grade Mode:** Credit/Fail Grading**ESCI 401 - Dynamic Earth****Credits:** 4

In this course we study the minerals, rocks and fluids which make up the Earth; the landforms on the surface of the Earth such as mountains, flood plains and stratovolcanoes; and processes such volcanism, earthquakes, erosion and glaciation that create and alter them. The rock cycle and plate tectonics are used to integrate activity at the surface of the Earth with processes in the Earth's interior. Campus field exercises. Special fee. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Mutual Exclusion:** No credit for students who have taken ESCI 409.**Grade Mode:** Letter Grading**ESCI 402 - Earth History****Credits:** 4

Course provides knowledge and skills necessary to interpret, understand, and appreciate the Earth's 4.6 billion-year history. The first third of the course introduces basic principles, including geological materials, plate tectonics, geological time, fossil preservation, and biological evolution. The remainder of the course tells the story of Earth history through case studies that illustrate scientific methods used to reconstruct critical events in our planet's evolution through time. Topics include the origin of the Earth, the Cambrian explosion of life, building of the Appalachians, assembly of Pangaea, the rise and fall of dinosaurs, the formation of the Rocky Mountains, mammalian evolution, human origins, and Pleistocene glaciation. Students gain experience in making geological observations through laboratory exercises and during one afternoon field trip. Special fee. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Grade Mode:** Letter Grading**ESCI 405 - Global Environmental Change****Credits:** 4

Human activity rivals nature as an agent of change in the global environment. Explores evidence of environmental degradation in Earth's crust, hydrosphere, and atmosphere; considers prospects for future sustainable human health, diversity, and economic development. Problem solving through critical analysis of environmental variables. Special fee.

**Attributes:** Physical Science(Discovery)**Equivalent(s):** EOS 405**Grade Mode:** Letter Grading**ESCI 409 - Geology and the Environment****Credits:** 4

Environmental impact of geologic processes; natural hazards, landslides, earthquakes, volcanoes, flooding, erosion, and sedimentation; land exploitation and site investigations; environmental considerations of water-supply problems; the recovery of energy and mineral resources. Special fee. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Mutual Exclusion:** No credit for students who have taken ESCI 401.**Grade Mode:** Letter Grading

**ESCI 410 - Earth Hazards****Credits:** 4

Introductory-level physical science course concerning Earth processes that impact humanity, with natural disasters as the focus. Topics include the causes and effects of earthquakes, tsunamis, volcanic eruptions, floods, and landslides. The course covers basic concepts of physical geology using hands-on-activities, small-group discussions, and in-class demonstrations and is intended for students with little or no previous experience in Earth sciences. No prerequisites. Special fee.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Grade Mode:** Letter Grading**ESCI 420 - Our Solar System****Credits:** 4

Course focuses on the nature and formation of our solar system and the planets associated bodies it contains, with emphasis on the physical and chemical processes significant in the system's origin and evolutionary history. Our approach provides the basis for understanding key differences between the Earth-like terrestrial planets and those farther out in the solar system (the gas giants). We also explore recent discoveries on Mars and moons of the gas giant planets and their implications for the search for life elsewhere in our solar system. Special fee.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Grade Mode:** Letter Grading**ESCI 444A - Philosophy of Earth Science****Credits:** 4

Course provides an introduction to the discipline of Philosophy of Science, but from an Earth Science perspective. Considers various philosophical perspectives on the nature of science and scientific progress, drawing from works by thinkers such as Aristotle, Popper, Kuhn and Lakatos. Particular attention is given to the following questions: What is scientific knowledge? Is the acquisition of scientific knowledge a rational process? And, what makes some scientific discoveries "revolutionary"? These questions are considered using examples from the history of scientific progress in the Earth Sciences, focusing on groundbreaking discoveries such as the age of the earth, the evolution of organisms as observed in the fossil record, sea-floor spreading, and modern-day global warming.

**Attributes:** Environment,TechSociety(Disc); Inquiry (Discovery)**Grade Mode:** Letter Grading**ESCI 451 - Earth in Film****Credits:** 4

Introductory-level focusing on interactions between Earth system and its inhabitants, with special emphasis on understanding societal implications of Earth system processes. Topics include Earth's interior processes, volcanism, earthquakes, climate change, storms, tornadoes, and biological change. Students are expected to learn about Earth system processes and critique cinematic portrayal of such processes. Taken together this approach affords building a foundation in the natural sciences and provides insights into societal portrayal of scientific ideas.

**Attributes:** Physical Science(Discovery)**Grade Mode:** Letter Grading**ESCI 501 - Introduction to Oceanography****Credits:** 4

Introduces students to the four oceanographic disciplines: the geology of the ocean basins, including the creation of oceans and continents. The physics of the seas, including the origin of the ocean currents and their effect on the Earth's climate. The chemistry of the ocean waters, including how the distribution of elements reflects circulation and biology. The life in the ocean, including animals, plants and microbes, and humanity's influence on them. Special fee. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery); Inquiry (Discovery)**Grade Mode:** Letter Grading**ESCI 502 - Beaches and Coasts****Credits:** 4

Introductory-level physical science course on ocean, air, and landform dynamics affecting beaches and coasts, with considerations of natural processes associated with waves and currents, wind and rain, sediments and rocks, and ecology. Emphasis is placed on impacts on ecosystem and human health, the economics of coastal industry, and consequences of pollution and engineering practices. Topics are approached via real world examples, small-group discussions, and field trips to local sites. No prerequisites. Recitation. Special fee.

**Attributes:** Physical Science(Discovery)**Grade Mode:** Letter Grading**ESCI 512 - Principles of Mineralogy****Credits:** 4

Minerals record variations in chemistry, pressure, temperature, and time in the Earth. This course emphasizes minerals and mineral assemblages in rocks, sediments and soils; their identification, symmetry, chemistry, equilibria, and physical properties. Introduction to x-ray diffraction and optical techniques. Prereq: CHEM 403 or CHEM 405. Special fee for field trips. Lab.

**Grade Mode:** Letter Grading**ESCI 514 - Introduction to Climate****Credits:** 3

The climate as a system controlled by the fluid, chemical, geological, and biological dynamics of the earth. Investigation of natural and man-made climate change over the period of 100 to 100 million years, including the greenhouse effects, tectonic climate forcing, astronomic (Milankovitch) cycles, deep ocean circulation, and biological feedback. How past climate is measured. Prereq: one introductory course in Earth Sciences or permission.

**Equivalent(s):** ESCI 504**Grade Mode:** Letter Grading**ESCI 530 - Geological Field Methods****Credits:** 4

An introduction to basic geologic field mapping of bedrock and surficial materials using pace and compass, surveying and GPS techniques. Observational data plotted on topographic maps and/or aerial photographs, accompanied with stratigraphic measurements and sampling sites where appropriate, provide the basis for interpretative maps, cross sections and written reports and a field context for more advanced Earth sciences course work and independent research. One weekend field trip to western or northern New England. Prereq: ESCI 401 or ESCI 409, ESCI 402. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ESCI 534**Grade Mode:** Letter Grading

**ESCI 534 - Techniques in Environmental Sciences****Credits:** 3

Elementary mapping and monitoring methods. Map interpretation, preparation of maps; survey techniques including pace and compass, leveling, and global positioning systems; environmental monitoring. Field lab. Cannot receive credit if taken after receiving credit for ESCI 530 or NR 542. Special fee.

**Attributes:** Writing Intensive Course**Equivalent(s):** ESCI 530, NR 542**Grade Mode:** Letter Grading**ESCI 561 - Landscape Evolution****Credits:** 4

Course focuses on the processes that shape the Earth's surface. Lectures discuss the development of landscapes in a wide variety of climatic and geologic settings, with an emphasis on understanding the process mechanics that create landforms and surficial deposits. Labs involve topographic map interpretation, geomorphic data analysis, and short field exercises. Course incorporates one weekend field trip that explores the landscapes of Cape Cod. Students also gain practical experience in geomorphic research by teaming up and completing a required lab- or field-based project. Prereq: ESCI 401, ESCI 402, or permission. Lab. Special fee.

**Grade Mode:** Letter Grading**ESCI 614 - Introduction to Petrology****Credits:** 0 or 4

Description, classification and formation of igneous, sedimentary, and metamorphic rocks in the field, hand specimen, and thin section. Prereq: ESCI 401, ESCI 409, or ESCI 501; and ESCI 512. Special fee. Lab and field trips.

**Grade Mode:** Letter Grading**ESCI 631 - Structural Geology****Credits:** 4

Structural units of the Earth's crust and mechanics of their formation. Prereq: ESCI 530. Special fee. Lab and fieldwork.

**Grade Mode:** Letter Grading**ESCI 642 - Biogeosciences in the Earth System****Credits:** 3

This interdisciplinary course applies concepts from chemistry, physics, biology and geology to understand biogeochemical cycles in the Earth system. Course topics includes terrestrial, ocean and freshwater environments; water and energy cycles; carbon, nitrogen, phosphorous and sulfur cycles; biogeochemical cycles through Earth history and a synthesis of how humans have impacted the Earth system. Students will use quantitative methods to explore relationships between causes and effects, positive and negative feedbacks, and thresholds in the Earth systems. Prereq: calculus, two semesters of chemistry or permission.

**Grade Mode:** Letter Grading**ESCI #652 - Paleontology****Credits:** 4

Use of the fossil record to address current problems in Earth history, paleoecology, and evolutionary biology. Examples are drawn from both vertebrates and invertebrates. Lab combines analytical paleontological methods with a systematic survey of important fossil groups. Prereq: ESCI 402 or permission. Special fee. Lab.

**Grade Mode:** Letter Grading**ESCI 654 - Fate and Transport in the Environment****Credits:** 4

An introduction to the basic processes controlling the migration and transformation of chemicals in surface water, groundwater, and the atmosphere, including advection, diffusion, dispersion, retardation, and chemical reaction. Extensive practice with quantitative problem solving in the environmental sciences, including constructing and using box models. Prereq: CHEM 404 or CHEM 405 or NR 561, MATH 425 or MATH 424B.

**Grade Mode:** Letter Grading**ESCI 695 - Topics****Credits:** 1-4

Geologic, hydrologic, and oceanographic problems and independent studies by means of conferences, assigned readings, and field or laboratory work fitted by ESCI faculty to individual student needs; or new or specialized courses. Topics include geochemistry; geomorphology; geophysics; glaciology; groundwater; structural and regional geology; crystallography; mineralogy; petrology; thermodynamics; ore deposits; earth resource policy; paleontology; sedimentation; stratigraphy; water resources management; chemical, physical, and geological oceanography; Earth systems. May be repeated barring duplication of subject.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**ESCI 696 - Topics****Credits:** 1-4

Geologic, hydrologic, and oceanographic problems and independent studies by means of conferences, assigned readings, and field or laboratory work fitted by ESCI faculty to individual student needs; or new or specialized courses. Topics include geochemistry; geomorphology; geophysics; glaciology; groundwater; structural and regional geology; crystallography; mineralogy; petrology; thermodynamics; ore deposits; earth resource policy; paleontology; sedimentation; stratigraphy; water resources management; chemical, physical, and geological oceanography; Earth systems. May be repeated barring duplication of subject.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**ESCI 701 - Quantitative Methods in Earth Sciences****Credits:** 4

Introduces quantitative tools necessary for upper level Earth Science courses. Includes basic statistical descriptions of spatially and temporally varying data, curve fitting, and time-series analysis with emphasis on atmospheric, oceanic and terrestrial data sets. Students learn to construct simple numerical models of Earth Systems. Instruction in data and analysis and modeling in Matlab. Prereq: MATH 426, and ESCI 401, ESCI 402 or ESCI 501; or permission.

**Grade Mode:** Letter Grading**ESCI 705 - Principles of Hydrology****Credits:** 4

Basic physical principles important in the land phase of the hydrologic cycle, including precipitation, snowmelt, infiltration and soil physics, evapotranspiration, and surface and subsurface flow to streams. Problems of measurement and aspects of statistical treatment of hydrologic data. Field trips. Prereq: ESCI 654. Special fee. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading



**ESCI 710 - Groundwater Hydrology****Credits:** 4

Principles for fluid flow in porous media with emphasis on occurrence, location, and development of groundwater but with consideration of groundwater as a transporting medium. Major topics include well hydraulics, regional groundwater flow, exploration techniques, and groundwater modeling. Laboratory exercises involve use of fluid, electrical, and digital computer models to illustrate key concepts. Prereq: ESCI 654. Special fee. Lab.

**Grade Mode:** Letter Grading**ESCI 720 - Ocean Measurements Lab****Credits:** 4

Measurements of fundamental ocean processes and parameters. Emphasizes understanding typical coastal and estuarine measurements their applications, and the use of acquired data in terms of the effects on structures and processes in the ocean.

**Equivalent(s):** OE 710**Grade Mode:** Letter Grading**ESCI 726 - Igneous and Metamorphic Petrology****Credits:** 4

This course focuses on the origin and evolution of igneous and metamorphic rocks from field, petrographic mineral chemistry, experimental, and theoretical studies. Igneous systems include volcanic and plutonic suites, with emphasis on mineralogic records of magma chamber systematics. Metamorphic systems include pelitic, mafic, and calc sillate rocks, with special emphasis on closed- and open-system reactions, multi-systems, reaction space, and pressure-temperature-time paths. Prereq: ESCI 614; adequate calculus, chemistry, and physics. Field trips. Special fee. Lab.

**Attributes:** Writing Intensive Course**Equivalent(s):** ESCI 725**Grade Mode:** Letter Grading**ESCI #734 - Geophysics****Credits:** 0 or 4

The structure of the solid Earth, including the continental and oceanic lithosphere and the deep interior as revealed by investigations of seismic waves, the Earth's gravitational and magnetic fields, heat flow, and earthquakes. Prereq: ESCI 401; one year of calculus; one year of college physics; ESCI 658; or permission. Special fee. Lab.

**Grade Mode:** Letter Grading**ESCI 741 - Geochemistry****Credits:** 4

Course focuses on the application of chemical principles to solve problems in the Earth sciences. Students learn the chemical tools of thermodynamics and kinetics, element partitioning, conservation of mass, and isotope geochemistry. Explore geochemical properties/ processes in the deep Earth and the Earth surface, atmosphere and marine systems, and cosmo-chemistry and investigate the interactions between these components of the Earth system. Prereq: MATH 426; CHEM 404 or permission. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ESCI 745 - Isotope Geochemistry****Credits:** 4

Course focuses on the application of radiogenic, radioactive and stable isotopes to improve students' knowledge about the processes and timescales relevant to the formation of the planet and solar system, the evolution of the Earth system and interactions in the hydrosphere and biosphere. Topics include geochronology, tracer applications, Earth surface applications, as well as applications in the hydrosphere and biosphere. Systems discussed include the classic radiogenic systems (K-Ar, Rb-Sr, Sm-Nd, Lu-Hf and U-Th-Pb), traditional (H, C, N, O) as well as nontraditional (e.g., Mg, Ca, Fe) stable isotope systems, and radioactive isotopes (e.g., radiocarbon). Course consists of lecture, where students are exposed to these applications, and a lab section to work through any questions on the homework assignments, discuss relevant papers from the literature, and carry out a project. Prereq: MATH 426, CHEM 404. Special fee. Lab.

**Grade Mode:** Letter Grading**ESCI 747 - Aqueous Geochemistry****Credits:** 4

The chemical processes that determine the composition of aquatic systems such as rivers, lakes, groundwater and the ocean. The goal is to quantitatively understand the behavior of inorganic species such as carbon dioxide, nutrients, trace metals and inorganic pollutants in natural waters. Topics include, acid-based equilibria, carbonate chemistry, reduction-oxidation reactions, organic complexation and mineral precipitation and dissolution. Lab. Prereq: one year college chemistry or geochemistry or permission. Prereq: CHEM 404 and MATH 426.

**Grade Mode:** Letter Grading**ESCI 752 - Chemical Oceanography****Credits:** 3

This course investigates the physical and biogeochemical processes that determine the composition of seawater. Topics include biological effects on chemistry, ocean nutrient cycles, air-sea gas exchange, radiogenic and stable isotopes as tracers of ocean processes, sediment and trace-metal chemistry. Prereq: MATH 426 and CHEM 404.

**Grade Mode:** Letter Grading**ESCI 754 - Sedimentology****Credits:** 4

This course focuses on modern sedimentary processes and ancient sedimentary records through the examination, identification, and interpretation of sediments and sedimentary rocks. Topics such as sediment transport mechanisms, depositional environments, and time in sedimentary records will provide a strong framework for any student studying Earth processes and sedimentary systems. Prereq: ESCI 401 or ESCI 402 or ESCI 501, and ESCI 512; or permission. Special fee. Lab and field trips.

**Grade Mode:** Letter Grading**ESCI 756 - Geotectonics****Credits:** 3

The geological record of plate tectonics past and present. The first part of the course focuses on modern tectonic settings with an emphasis on plate geometries, geodynamical processes, and sedimentary products. The second part of the course focuses on reconstructing ancient tectonic settings with an emphasis on methodology (paleomagnetism, basin analysis, provenance) and case studies (e.g. India-Asia collision). Field trip. Prereq: ESCI 614 or ESCI 631 or permission. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**ESCI 758 - Introductory Physical Oceanography****Credits:** 3

Descriptive treatment of atmosphere-ocean interaction; general wind-driven and thermo-haline ocean circulation; waves and tides; continental shelf and near-shore processes; instrumentation and methods used in ocean research. Simplified conceptual models demonstrate the important principles. Prereq: PHYS 407; ESCI 501;/or permission.

**Grade Mode:** Letter Grading**ESCI 759 - Geological Oceanography****Credits:** 4

Major geological features and processes of the ocean floor; geological and geophysical methods; composition of the earth, sedimentary processes, plate tectonics and paleoceanography. Prereq: Senior standing in Earth Science major or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ESCI 760 - Paleoceanography****Credits:** 3

This course introduces the basic principles of paleoceanography, such as the preservation of ocean history in sediment archives and the analysis/interpretation of paleoceanographic data. The course focuses on the capabilities and limitations of paleoceanographic techniques, and empowers students to critically assess the strengths and weaknesses of results presented in scientific journals. Topics include Milankovitch cycles, faunal assemblages, temperature and circulation proxies, linear and non-linear responses to climate forcings, abrupt climate events, atmospheric teleconnections and monsoons. Prereq: Introductory Chemistry, Introductory Geology.

**Grade Mode:** Letter Grading**ESCI 762 - Glacial Geology****Credits:** 4

Course provides a survey of glacier dynamics and processes, with an emphasis on understanding the origin and significance of glacial deposits and landforms. The first half of the course examines the physics of glaciers, and the second half focuses on glacial geologic processes. Lectures discuss glaciers and ice sheets as key agents of large-scale geomorphic change, as well as their central role in the Earth's past and present climate system. Labs involve analysis of glaciological data, glacial-geologic map interpretation, and short field exercises. Course incorporates one mandatory weekend field trip that explores the glacial landscapes of New England. Prereq: ESCI 561 or permission. Special fee. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ESCI 764 - Spectral Analysis of Geophysical Time Series Data****Credits:** 4

This course considers basic exploratory techniques and in-depth spectral analysis for estimation with geophysical time series data, including calculations of confidence intervals and significance testing. This course prepares students for interpreting time series data with science and engineering applications. Topics include sampling theory, filtering, statistics, probability, spectral analysis, and empirical orthogonal functions. Students gain experience in code-writing for the analysis of time series data. Prereq: MATH 426.

**Equivalent(s):** OE 764**Grade Mode:** Letter Grading**ESCI 765 - Paleoclimatology****Credits:** 3

Course reviews the study of past changes in the Earth's climate system. Main discussion topics include astronomical theories of ice ages, Quaternary dating methods, Antarctic and Greenland ice core records, greenhouse gases, marine-based climate proxies, glacial mega-floods, and linkages between ocean circulation and abrupt climate change. Emphasis on climate variability during the Quaternary period (the last approximately 2.6 million years), a time interval dominated by cycles of global glaciation. Lectures include discussion of recent and emerging scientific papers in order to keep pace with the latest findings in paleoclimatic research. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** EOS 765**Grade Mode:** Letter Grading**ESCI 766 - Volcanology****Credits:** 4

Provides a comprehensive overview of volcanic processes and their influences on planetary evolution and modern-day Earth systems. Lectures discuss the generation and properties of magma, tectonic setting of volcanism, eruption styles, volcanic landforms and products, monitoring of active volcanoes, volcanic hazards, and volcanism on other planets. Laboratory topics include modeling volcanic processes, hand-sample observation, topographic map interpretation, volcanographical data analysis, and two afternoon field trips. As volcanology is a rapidly developing field of active research, the course incorporates discussions of recent and emerging scientific papers from the literature and student-led updates of ongoing volcanic activity. Prereq: one year of calculus and one ESCI course or permission. Special fee. Lab.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ESCI 771 - Geodesy and Positioning for Ocean Mapping****Credits:** 4

The science and technology of acquiring, managing, and displaying geographically-referenced information; the size and shape of the earth, datums and projections; determination of precise positioning of points on the earth and the sea, including classical terrestrial-based methods and satellite-based methods; shoreline mapping, nautical charting and electronic charts. Prereq: MATH 426, PHYS 408. (Also listed as OE 771.)

**Equivalent(s):** OE 771**Grade Mode:** Letter Grading**ESCI 777 - GIS for Earth & Environmental Sciences****Credits:** 4

Geospatial technologies provide insight into spatial and temporal aspects of environmental and earth systems. Students will master basic skills of a geographical information system. Weekly laboratory exercises will build upon a foundation of conceptual knowledge and data processing skills. Focus on applied research questions and projects will be addressed. The course will use the opensource program QGIS. Additional work will develop programming skills using the python language. Programming background is not a requirement but beneficial. Prereq: Undergraduate Science Course.

**Grade Mode:** Letter Grading

**ESCI 778 - Remote Sensing Earth & Environmental Sciences****Credits:** 4

Remote sensing provides insight into spatial and temporal aspects of environmental and Earth systems. Students will examine digital image processing techniques, different sensor and platform technologies, and new trends and frontiers in remote sensing science. Weekly laboratory exercises build upon conceptual knowledge, data processing skills, and development of programming skills. Applied research questions and projects will use Google Earth Engine. Hyperspectral, lidar, and unmanned aerial systems will be presented. Prereq: Undergraduate Science Course.

**Grade Mode:** Letter Grading**ESCI 795 - Topics****Credits:** 1-4

Geologic, hydrologic, and oceanographic problems and independent studies by means of conferences, assigned readings, and field or laboratory work fitted by ESCI faculty to individual student needs; or new or specialized courses. Topics include geochemistry; geomorphology; geophysics; glaciology; groundwater; structural and regional geology; crystallography; mineralogy; petrology; thermodynamics; ore deposits; earth resource policy; paleontology; sedimentation; stratigraphy; water resources management; chemical, physical, and geological oceanography; earth systems. Also, senior synthesis and earth science teaching methods.

**Repeat Rule:** May be repeated for a maximum of 4 credits. May be repeated up to 3 times.

**Equivalent(s):** EOS 795**Grade Mode:** Letter Grading**ESCI 796 - Topics****Credits:** 1-4

Geologic, hydrologic, and oceanographic problems and independent studies by means of conferences, assigned readings, and field or laboratory work fitted by ESCI faculty to individual student needs; or new or specialized courses. Topics include geochemistry; geomorphology; geophysics; glaciology; groundwater; structural and regional geology; crystallography; mineralogy; petrology; thermodynamics; ore deposits; earth resource policy; paleontology; sedimentation; stratigraphy; water resources management; chemical, physical, and geological oceanography; earth systems. Also, senior synthesis and earth science teaching methods. Special fee on some topics.

**Repeat Rule:** May be repeated for a maximum of 4 credits. May be repeated up to 3 times.

**Grade Mode:** Letter Grading**ESCI 799 - Senior Thesis****Credits:** 1-4

Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in an oral presentation and a written thesis. Research projects should include the development of a research question; collection analysis, and synthesis of data; and interpretation and presentation of results. A copy of the written thesis must be submitted to the Chair of the Department of Earth Sciences prior to graduation. A total of 4 credits is required and may be completed over multiple semesters. Writing intensive.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 4 credits.

**Grade Mode:** Letter Grading

## Ecogastronomy (ECOG)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ECOG 401 - Introduction to Ecogastronomy****Credits:** 0 or 4

This interdisciplinary course introduces students to the principles and practices of EcoGastronomy. It provides students with a foundation for understanding the connections among food production, ecology, ethics, cuisine, nutrition and health within the framework of sustainability. The course includes guest lectures, class discussion, film reviews, activities, and food tastings.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**ECOG 685 - EcoGastronomy Study Abroad****Credits:** 0-20

Open to students studying abroad in the discipline as approved by the EcoGastronomy program director and the student's college dean. Special fee.

**Co-requisite:** INCO 588**Attributes:** World Cultures(Discovery)**Grade Mode:** Credit/Fail Grading**ECOG 695 - Independent Analysis****Credits:** 1-4

Study and research project for students to advance knowledge in EcoGastronomy fields. Prereq: At least Junior standing and permission.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading**ECOG 696 - Supervised Student Teaching Experience****Credits:** 4

Participants are expected to perform such functions as attending classes, leading discussion groups, assisting faculty, presenting information in undergraduate courses that they have successfully completed, holding office hours, grading papers and exams. Enrollment is limited to juniors and seniors who have had above average GPAs. Prereq: permission of instructor, program director, director of advising and ECOG 401.

**Grade Mode:** Credit/Fail Grading**ECOG 701 - EcoGastronomy Capstone****Credits:** 2-4

This is a one to two-semester course in which students will synthesize their EcoGastronomy experience with their undergraduate education, including their primary major, and will explore an integrated outlook on their professional future. Field trips, guest lecturers, experimental activities, and related readings and research will provide the foundation for the completion of a portfolio. A research paper is presented at the Undergraduate Research Conference in the spring. Prereq: ECOG 401 & Study Abroad.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

## Economics (ECON)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ECON 401 - Principles of Economics (Macro)****Credits:** 0 or 4

Basic functions of the United States economy viewed as a whole; policies designed to affect its performance. Economic scarcity, supply and demand, the causes of unemployment and inflation, the nature of money and monetary policy, the impact of government taxation and spending, the federal debt, and international money matters. ECON 401A emphasizes applications to the international economy. ECON 401H is open to students in the Honors Program.

**Attributes:** Social Science (Discovery)**Mutual Exclusion:** No credit for students who have taken ECN 411, ECN 411W, ECON 401H.**Grade Mode:** Letter Grading**ECON 401H - Honors/Principles of Economics (Macro)****Credits:** 4

Basic functions of the United States economy viewed as a whole; policies designed to affect its performance. Economic scarcity, supply and demand, the causes of unemployment and inflation, the nature of money and monetary policy, the impact of government taxation and spending, the federal debt, and international money matters. ECON 401A emphasizes applications to the international economy. ECON 401H is open to students in the Honors Program.

**Attributes:** Honors course; Social Science (Discovery); Inquiry (Discovery)**Mutual Exclusion:** No credit for students who have taken ECN 411, ECN 411W, ECON 401.**Grade Mode:** Letter Grading**ECON 402 - Principles of Economics (Micro)****Credits:** 4

Functions of component units of the economy and their interrelations. Units of analysis are the individual consumer, the firm, and the industry. Theory of consumer demand and elasticity, supply and costs of production, theory of the firm under conditions of perfect and imperfect competition, demand for and allocation of economic resources, general equilibrium, and basic principles and institutions of international trade. ECON 402A emphasizes applications to the international economy. ECON 402H is open to students in the Honors Program.

**Attributes:** Social Science (Discovery)**Equivalent(s):** ECON 402A, ECON 402H**Mutual Exclusion:** No credit for students who have taken ECN 412, ECN 412W, EREC 411.**Grade Mode:** Letter Grading**ECON 402H - Honors/Principles of Economics (Micro)****Credits:** 4

Functions of component units of the economy and their interrelations. Units of analysis are the individual consumer, the firm, and the industry. Theory of consumer demand and elasticity, supply and costs of production, theory of the firm under conditions of perfect and imperfect competition, demand for and allocation of economic resources, general equilibrium, and basic principles and institutions of international trade. ECON 402A emphasizes applications to the international economy. ECON 402H is open to students in the Honors Program.

**Attributes:** Honors course; Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** ECON 402, ECON 402A**Mutual Exclusion:** No credit for students who have taken ECN 412, ECN 412W, EREC 411.**Grade Mode:** Letter Grading**ECON 501 - Business and Economic History****Credits:** 4

This course studies the historical influence of business enterprises on the development of capitalist economies, with an emphasis on the United States. Topics include the rise of manufacturing, development of financial institutions and markets, innovation and new markets, the role of the entrepreneur, and the impact of government policy on business development. Because this is an Inquiry course, each student will pursue a major research project. Does not satisfy Economics Major or Minor requirements. DISC: HP and INQ.

**Attributes:** Historical Perspectives(Disc); Inquiry (Discovery)**Grade Mode:** Letter Grading**ECON #551 - Careers in Economics - Seminar****Credits:** 2

This career seminar is designed to provide economics majors with an opportunity to learn more about potential careers in the field. Students take a number of self-assessments and are exposed to the full depth of career opportunities. Does not satisfy Economics Major requirements. Economics majors only. Cr/F.

**Prerequisite(s):** ECON 401 with a minimum grade of C- and ECON 402 with a minimum grade of C-.**Grade Mode:** Credit/Fail Grading**ECON #552 - Careers in Economics - Field Experience****Credits:** 2

This career seminar is the second course in the ECON #551/552 sequence. It is designed to give students an opportunity to observe real work environments and then share those experiences with other students enrolled in the course. Does not satisfy Economics Major requirements. Economics majors only.

**Prerequisite(s):** ECON 401 with a minimum grade of C- and ECON 402 with a minimum grade of C- and ECON #551 with a minimum grade of D-.**Grade Mode:** Letter Grading**ECON 565 - Predictive Modeling: Data Driven Economic Analysis****Credits:** 4

This course expands upon core topics in statistics through the study and practice of data management, data analysis, and statistical programming. Statistical programming and analytical skills are the key components of predictive modeling. Students will develop tools for collecting, organizing, interpreting, presenting, and analyzing business information. As an economics course an emphasis will be placed on how to use data to improve the information needed to make sound economic and business decisions based on marginal analysis.

**Prerequisite(s):** (ADMN 420 with a minimum grade of C- or ADMN 510 with a minimum grade of C-) and (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-).**Grade Mode:** Letter Grading**ECON 605 - Intermediate Microeconomic Analysis****Credits:** 4

Analysis of supply and demand. Determination of prices, production, and the distribution of income in noncompetitive situations and in the purely competitive model. General equilibrium.

**Prerequisite(s):** (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-).**Equivalent(s):** ECON 605W**Grade Mode:** Letter Grading



**ECON 606 - Intermediate Microeconomics with Calculus****Credits:** 4

Consumer theory. Determination of prices, production, and the distribution of income in perfectly and imperfectly competitive markets. Demand and supply analysis. Welfare analysis of public policies. General Equilibrium. Topics employ calculus.

**Prerequisite(s):** (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-) and (MATH 424A with a minimum grade of D- or MATH 424B with a minimum grade of D- or MATH 425 with a minimum grade of D-).

**Grade Mode:** Letter Grading**ECON 611 - Intermediate Macroeconomic Analysis****Credits:** 4

Macroeconomic measurement, theory, and public policy determination.

**Prerequisite(s):** (ECON 401 with a minimum grade of C- or ECON 401H with a minimum grade of C-) and (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-).

**Grade Mode:** Letter Grading**ECON 620 - Topics in Economics****Credits:** 4

Special topics cover a variety of areas in economics, often of special interest to the instructor.

**Prerequisite(s):** ECON 401 with a minimum grade of C- and ECON 402 with a minimum grade of C-.

**Repeat Rule:** May be repeated for a maximum of 16 credits.

**Grade Mode:** Letter Grading**ECON 620W - Topics in Economics****Credits:** 4

Special topics cover a variety of areas in economics, often of special interest to the instructor.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** (ECON 401 with a minimum grade of C- or ECON 401H with a minimum grade of C-) and (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-).

**Repeat Rule:** May be repeated for a maximum of 16 credits.

**Grade Mode:** Letter Grading**ECON 625 - Economic History of the United States****Credits:** 4

This course studies the development of the U.S. economy from colonial times to the 21st century. The role that institutions, innovations and government policy play in economic development is a central theme of the course. Western settlement, slavery and abolition, the rise of manufacturing and the corporate business, emergence of affluence and consumer society, and the Great Depression are some of the topics addressed. Prereq: ECON 401 or ECON 402;/or permission.

**Equivalent(s):** ECON 515, ECON 515W**Grade Mode:** Letter Grading**ECON 626 - Supervised Student Teaching****Credits:** 2-4

Participants are expected to perform such functions as leading discussion groups, assisting faculty in undergraduate courses that they have successfully completed. For juniors and seniors with 3.0 or better cumulative GPA. No more than four credits may be earned as a teaching assistant in any one course. Permission of instructor and undergraduate programs office required.

**Repeat Rule:** May be repeated for a maximum of 16 credits.

**Grade Mode:** Credit/Fail Grading**ECON 633 - Microfinance****Credits:** 4

Microfinance focuses on features of the informal economy in developing countries especially small-scale changes in finance, commerce, technology, and in social and environmental organization that have led to transformational economic breakthroughs. Besides financial services, the course examines innovative customer segments, market-based solutions, the role of government subsidies, a range of development issues, and how to measure success for projects, programs, and institutions.

**Grade Mode:** Letter Grading**ECON 635 - Money and Banking****Credits:** 4

Study of how the financial sectors of globally interconnected economies impact real economic activity. It includes interrelationships of interest rates, exchange rates, expectations, financial markets, financial institutions, central banks, systemic crises, the supply and demand for money and other financial instruments, and an introduction to monetary theory, policy and regulation.

**Prerequisite(s):** (ECON 401 with a minimum grade of C- or ECON 401H with a minimum grade of C-) and (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-).

**Grade Mode:** Letter Grading**ECON 645 - International Economics****Credits:** 4

Covers both international trade theory and open-economy macroeconomics. Some of the major issues include whether free trade is always preferred to restricted trade, the controversy over industrial policy and how best to structure the international financial system. Students gain an understanding of topics including currency exchange rate movements, and trade policy, among others.

**Prerequisite(s):** (ECON 401 with a minimum grade of C- or ECON 401H with a minimum grade of C-) and (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-).

**Equivalent(s):** ECON 645W**Grade Mode:** Letter Grading**ECON 653 - Law and Economics****Credits:** 4

Introduces the field of Law and Economics. Focuses on the legal system and the economic consequences of property, contract, tort, criminal law and mediation.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-).

**Grade Mode:** Letter Grading



**ECON 654 - Industrial Economics and Business Innovation****Credits:** 4

This course will provide students with a survey of economic models in industrial organization, applied to innovation-related issues. The course is divided into three sections. In the first one, we introduce the concept of innovation, its measurement and how it is related to knowledge. In the second part, we look at innovation at the firm level. In particular, we delve into the "knowledge-creating" company and its strategies. Finally, we analyze the structure and evolution of several hi-tech industries, in terms of survival of existing firms and creation of new firms.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** (ECON 401 with a minimum grade of C- or ECON 401H with a minimum grade of C-) and (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-).

**Grade Mode:** Letter Grading**ECON 655 - Innovation in the Global Economy****Credits:** 4

This course will provide students with a survey of economic models in international trade, applied to innovation-related issues. The course is divided into three sections. In the first one, we look at the role that industry, universities, and the government play in the national innovation system. In the second part, we look at innovation from an international perspective. In particular, we delve into the relationship between globalization and innovation. Finally, we analyze the role of externalities in the knowledge economy and particularly network effects in the diffusion of new technologies.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** (ECON 401 with a minimum grade of C- or ECON 401H with a minimum grade of C-) and (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-).

**Grade Mode:** Letter Grading**ECON 656 - Labor Economics****Credits:** 4

Functioning of labor markets from theoretical and policy perspectives. Labor demand and supply, wages and employment. Welfare programs, human capital, discrimination in the labor market, unions, wage differentials.

**Prerequisite(s):** (ECON 401 with a minimum grade of C- or ECON 401H with a minimum grade of C-) and (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-) and (ECON 605 with a minimum grade of C- or ECON 606 with a minimum grade of C-).

**Grade Mode:** Letter Grading**ECON 668 - Economic Development****Credits:** 4

An exploration of the theorizing (ways of seeing) and resulting policies (ways of doing) in Third World development. How the 'West' constructed the 'Rest'. Theories of development and underdevelopment. Development as industrialization with its urban bias. A planet of slums? The ambivalent effects of technological change in the Third World. An examination of agriculture (famines, green revolution, case study of opium cultivation in Afghanistan). International institutions' versus NGO's approaches to development. Grassroots development, participation and post-development.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** (ECON 401 with a minimum grade of C- or ECON 401H with a minimum grade of C-) and (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-).

**Grade Mode:** Letter Grading**ECON 676 - Economics of Sports****Credits:** 4

Focuses on the major economic aspects of North American professional and collegiate sports and special topics like the Olympics, discrimination, and tournament sports drawing from public finance, labor economics, and industrial organization.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** (ECON 402 with a minimum grade of C- or ECON 402H with a minimum grade of C- or EREC 411 with a minimum grade of C-).

**Grade Mode:** Letter Grading**ECON 706 - Economics of Climate Change****Credits:** 4

Explores the economics and public policy of global climate change and develops the economic theory including the concepts of externalities, stock pollutant models, the social discount rate, and complicating factors such as information, uncertainty, technological progress, and risk. Students use economic analysis to compare different policy instruments such as administrative regulation, marketable permits, tax incentives, and direct subsidies. Also covers the political economy of international environmental agreements, including an analysis of the Kyoto Protocol. Prereq: ECON 401, ECON 605. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ECON 720 - Economic Problems****Credits:** 4

Special topics cover a variety of areas in economics, often of special interest to the instructor.

**Prerequisite(s):** ECON 401 with a minimum grade of C- and ECON 402 with a minimum grade of C-.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Grade Mode:** Letter Grading**ECON 720W - Economic Problems****Credits:** 4

Special topics cover a variety of areas in economics, often of special interest to the instructor.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** ECON 401 with a minimum grade of C- and ECON 402 with a minimum grade of C-.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Grade Mode:** Letter Grading

**ECON 725 - Independent Study****Credits:** 1-4

Individual research projects that are student designed. Initial sponsorship of a Paul College faculty member must be obtained followed by approval of Paul advisor and Dean's Office. Special permission required to earn more than 4 credits in one semester. For Paul College Juniors and Seniors with 3.0 or better cumulative GPA.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**ECON 725W - Independent Study****Credits:** 1-4

Individual research projects that are student designed. Initial sponsorship of an economics faculty member must be obtained followed by approval of PAUL advisor and dean's office. Special permission required to earn more than 4 credits in one semester. For Paul College juniors and seniors in with 3.0 or better cumulative GPA.

**Attributes:** Writing Intensive Course**Equivalent(s):** ECON 695W**Grade Mode:** Letter Grading**ECON 726 - Introduction to Econometrics****Credits:** 4

Introduces regression techniques as used in economics and management; estimation and statistical inference in the context of the general linear model; discussion of problems encountered and their solutions; extensions of the general linear model.

**Prerequisite(s):** (ADMN 420 with a minimum grade of C- or ADMN 510 with a minimum grade of C- or MATH 539 with a minimum grade of C- or BIOL 528 with a minimum grade of C- or EREC 525 with a minimum grade of C- or MATH 644 with a minimum grade of C-).

**Grade Mode:** Letter Grading**ECON 727 - Advanced Econometrics****Credits:** 4

Method of least squares estimation with treatments for hereogeneity and endogeneity. Method of maximum likelihood estimation. Binary choice models. Panel data models. Survival analysis. Topics employ calculus.

**Prerequisite(s):** ECON 726 with a minimum grade of C- and (MATH 424A with a minimum grade of D- or MATH 424B with a minimum grade of D- or MATH 425 with a minimum grade of D-).

**Grade Mode:** Letter Grading**ECON #746 - International Finance****Credits:** 4

International monetary mechanism; balance of payments, international investment, exchange rates, adjustment systems, international liquidity, foreign aid, multinational corporations.

**Attributes:** Writing Intensive Course**Prerequisite(s):** ECON 645 with a minimum grade of C-.**Grade Mode:** Letter Grading**ECON 760 - Game Theory****Credits:** 4

Game theory is the study of strategic interactions. In order for a decision-maker to decide the best course of action, he must take into account the actions of others, including how his own behavior influences the thinking and payoffs of others. Game theory helps us develop an understanding of how people actually behave and how they should be advised to behave in strategic situations. Game theory models conflict and cooperation between rational decision-making agents and has applications in a wide variety of areas, including statistical decision theory, artificial intelligence, economics and business, biology, political science and philosophy.

**Prerequisite(s):** (ECON 605 with a minimum grade of C- or ECON 606 with a minimum grade of C- or ADMN 580 with a minimum grade of C-).

**Grade Mode:** Letter Grading**ECON 774 - Senior Economics Seminar****Credits:** 4

Capstone experience for students enrolled in the Economics B.A. program. Topics and format of the class depends on the interests and expertise of the faculty member and students of the course. The course is organized around a "big" idea and focuses on an important topic that has broad interest and social consequences.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** ECON 605 with a minimum grade of C- and ECON 611 with a minimum grade of C-.

**Grade Mode:** Letter Grading**ECON 775 - Applied Research Skills for Economists****Credits:** 4

Capstone course for students enrolled in B.S. in analytical economics. Students conduct economic research by bringing their understanding of economic theory and empirical/analytical skills to investigate contemporary economic problems, issues, and phenomena. Presentations are calculus-based. The topics and course design vary depending on the instructor.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** ECON 606 with a minimum grade of C- and ECON 611 with a minimum grade of C- and ECON 726 with a minimum grade of C-.

**Grade Mode:** Letter Grading**ECON 795 - Internship****Credits:** 1-16

On-the-job skill development through fieldwork in an organization (business, industry, health, public service, etc.). Normally, supervision is provided by a qualified individual in the organization, with frequent consultation by a faculty sponsor. Written report required. Internships may be part or full time, with course credits assigned accordingly. May not be used as a major elective. Cr/F.

**Grade Mode:** Credit/Fail Grading**ECON 799 - Honors Thesis****Credits:** 4-8

Supervised research leading to the completion of an honors thesis; required for graduation from the honors program in economics. Writing intensive.

**Attributes:** Honors course; Writing Intensive Course**Grade Mode:** Letter Grading

## Economics-UNHM (ECN)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ECN 410 - History of Literary Economics****Credits:** 4

An examination of the contributions of fiction writers to the history of economic thought. Novels and short stories are analyzed in conjunction with studying influential and heterodox schools of economic thought. Fiction writers will vary by semester (e.g., Mark Twain, Edith Wharton, Charlotte Perkins Gilman, Theodore Dreiser, Jack London, Ayn Rand, F. Scott Fitzgerald and Louisa May Alcott). Schools of economic thought examined include critics as well as advocates of free market capitalism. Writing intensive.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**ECN 411 - Introduction to Macroeconomic Principles****Credits:** 4

Studies how an economy functions. Develops measures and theories of economic performance to study such issues as unemployment, inflation, international trade and finance, and the level of national production. Examines government policies designed to correct for unemployment and inflation with close attention to the use of fiscal and monetary policies in the U.S.

**Attributes:** Social Science (Discovery)

**Mutual Exclusion:** No credit for students who have taken ECON 401, ECON 401H.

**Grade Mode:** Letter Grading

**ECN 411W - Introduction to Macroeconomic Principles****Credits:** 4

Studies how an economy functions. Develops measures and theories of economic performance to study such issues as unemployment, inflation, international trade and finance, and the level of national production. Examines government policies designed to correct for unemployment and inflation with close attention to the use of fiscal and monetary policies in the U.S.

**Attributes:** Social Science (Discovery); Writing Intensive Course

**Equivalent(s):** ECN 411

**Mutual Exclusion:** No credit for students who have taken ECON 401, ECON 401H.

**Grade Mode:** Letter Grading

**ECN 412 - Introduction to Microeconomic Principles****Credits:** 4

Studies the behavior and interaction of fundamental decision-making units in an economy, especially consumers and business firms. Applies such economic principles as scarcity, supply and demand, and elasticity to a variety of social issues. Topics include the resource allocation problems of households and business firms, economic theories of social problems (such as crime, divorce, and discrimination), and the economic implications of government policies affecting the environment, the workplace, and industrial organization.

**Attributes:** Social Science (Discovery)

**Equivalent(s):** ECN 412W

**Mutual Exclusion:** No credit for students who have taken ECON 402, ECON 402A, ECON 402H, EREC 411.

**Grade Mode:** Letter Grading

**ECN 412W - Introduction to Microeconomic Principles****Credits:** 4

Studies the behavior and interaction of fundamental decision-making units in an economy, especially consumers and business firms. Applies such economic principles as scarcity, supply and demand, and elasticity to a variety of social issues. Topics include the resource allocation problems of households and business firms, economic theories of social problems (such as crime, divorce, and discrimination), and the economic implications of government policies affecting the environment, the workplace, and industrial organization.

**Attributes:** Social Science (Discovery); Writing Intensive Course

**Equivalent(s):** ECN 412, ECN 412A

**Mutual Exclusion:** No credit for students who have taken ECON 402, ECON 402A, ECON 402H, EREC 411.

**Grade Mode:** Letter Grading

**ECN #505 - Contemporary Economic Issues****Credits:** 4

The course applies microeconomic and macroeconomic principles to analyze current economic problems and issues with attention to developing an evaluating different economic policies for addressing the economic problems that are identified. The course includes a service learning component in which students will work with a community partner (e.g., local business, nonprofit organization or government agency) to identify an economic problem and help design and evaluate policy options to enact a solution to the problem. Topics will vary each semester but will include a cross-section of local, state, national and international economic issues with related readings. Prereq: ECN 411 and ECN 412 or permission of the instructor.

**Grade Mode:** Letter Grading

**ECN 640 - Business Law and Economics****Credits:** 4

A study of the legal environment of business. Emphasis is on using economic analysis to examine laws of property, contract, and tort affecting business. Includes the ethical foundations of law and ethical issues involving business. Specific topics may include commercial free speech, white collar crime and managerial responsibility, product liability, cyberlaw, copyright, trademark and patent law. Prereq: ADM 400, ECN 412, and sophomore standing or permission of the instructor. Writing intensive.

**Attributes:** Writing Intensive Course

**Equivalent(s):** ECN 540

**Grade Mode:** Letter Grading

**ECN 650 - Economics for Managers****Credits:** 4

Examines how economic principles can be applied to resource allocation problems confronted by managers in a variety of industry settings. Emphasis on both theory and application. Topics include cost analysis, production decisions, and pricing policies of business managers within perfectly competitive, monopolistic, oligopolistic, and monopolistically competitive environments. Prereq: ADM 400, ECN 412 and sophomore standing or permission of instructor.

**Grade Mode:** Letter Grading

## Education (EDUC)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**EDUC 400 - Careers in Education: Exploring Professional Contexts****Credits:** 1

Designed for students interested in learning about careers in education, this survey course explores professional opportunities in both formal and informal education settings within P-12 teaching and beyond (i.e., research, museum director, counseling, social work, educational software developer, etc.). Faculty from multiple disciplines and local professionals will present seminars and lead discussions about their role in addressing contemporary issues in education. Students will consider pathways that can be taken to pursue professional goals. Cr/F.

**Grade Mode:** Credit/Fail Grading**EDUC #401 - Current Issues in Education****Credits:** 2

This survey course explores current issues in education through multiple professional lenses. Students will consider the relationship between their career pathways and key issues impacting educational settings including social media, poverty, curriculum, assessment and evaluation. Cr/F.

**Grade Mode:** Credit/Fail Grading**EDUC 402 - Introduction to Educational Studies: Social Change and Education in Local and Global Contexts****Credits:** 4

This course introduces students to Educational Studies: the ways that social, cultural, and political factors influence education outside of conventional school settings. We examine the relationship between education and social change in local and global contexts. Guiding questions include: How does schooling produce certain kinds of citizens? How do grassroots movements use education to resist colonial/colonizing agendas? What role does education play in promoting democracy, and social and economic equality?

**Grade Mode:** Letter Grading**EDUC 444B - Public Issues, Democratic Schooling & Active Citizenship in a Global Context****Credits:** 4

This is a first-year inquiry course intended primarily for students participating in the Common Purposes residential living program. The course offers multidisciplinary content focused on active citizenship in a pluralistic democracy. The primary organizing concept of the course is community; assignments focus on deliberative dialogue, public reasoning, collective action, and social justice. The course is taught as a seminar and includes on-campus and off-campus applied projects.

**Attributes:** Social Science (Discovery); Inquiry (Discovery)**Grade Mode:** Letter Grading**EDUC 500 - Exploring Teaching****Credits:** 4

For students considering a teaching career. In-school experiences to develop introductory skills in teaching. On-site seminars for analysis and evaluation. Assessment and advising related to teaching as a career. Prerequisite for further work toward teacher licensure. Minimum of 7 hours a week, plus travel time, required. Prereq: permission. Special fee. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**EDUC 506 - Mentoring Readers and Writers in the Elementary Grades****Credits:** 4

This course supports and extends the experiences of students who are simultaneously volunteering with the Seacoast Reads program. Students explore mentoring relationships, elementary students' engagement and motivation, effective practices for supporting literacy development, lesson planning, understanding student growth, and volunteers' own development as educators.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**EDUC 507 - Mentoring Adolescents in Community Settings****Credits:** 2

This course is designed to help UNH students develop tutoring, communication, and interpersonal skills necessary to support the academic and personal development of under-served youth in our local secondary schools. Students provide 1.5-2 hours of tutoring a week to an assigned youth and complete a minimum of 20 hours tutoring for the semester. They also attend an in-person seminar on campus every other week. The seminars provide a time to develop and process new skills, critically reflect on the complex and changing needs and realities facing youth, and explore the role of race, language, culture, and socioeconomics in developing healthy mentor-mentee relationships.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**EDUC 520 - Education, Poverty, and Development****Credits:** 4

An examination of the human and institutional relationships among education, poverty, and social development. This course will emphasize the ways in which access to universal, effective education is correlated with the incidence of childhood poverty and its reduction in the US and selected countries in the developing world. Interactive, discussion-based classes. Prior coursework in social or political sciences, economics, international affairs, health sciences, or related fields suggested. A minimum of 15 hours of fieldwork beyond classroom time is required. Students can fulfill this requirement through a variety of experiences on and off campus.

**Attributes:** Social Science (Discovery)**Grade Mode:** Letter Grading**EDUC 525 - Teaching Race****Credits:** 4

This course examines the idea of race from the perspective of science, history, and lived experience to help the student properly evaluate inequalities of treatment (on the basis of race or any other marker) in various sectors of life in the United States. The course aims at helping the student a) perceive what is taught about race and what is communicated in our schools and colleges about the meaning of racial ascription, of color, and whiteness and b) to figure out how the power of educational institutions can best be used to promote equality and racial justice in society.

**Grade Mode:** Letter Grading

**EDUC 550 - Language and Linguistic Diversity in Schools****Credits:** 4

The course offers a broad examination of language and linguistic diversity and identities, drawing from education, sociolinguistics, anthropology, child development, and related fields. Content includes a critical examination of the evolution of the laws and policies affecting linguistic minorities in the U.S. and how they inform the educational rights of emerging and developing bilingual learners. A minimum of 20hrs of fieldwork beyond classroom time is required. Students have the opportunity to identify age group preference for field placement.

**Grade Mode:** Letter Grading**EDUC 556 - Peer to Peer Mentoring for Students with Disabilities****Credits:** 2

This in person course is open to all undergraduates pursuing any major who have an interest in learning more and experiencing the importance of mentoring and diversity expansion at UNH. The primary goal is to introduce UNH undergraduates with and without intellectual disabilities to a mentoring experience. UNH students will develop a beginning understanding of the importance of expanding the diversity of the UNH campus to include students with disabilities in authentic campus life experiences including taking courses, extra-curricular activities, residential life, and on campus employment. Each mentor/mentee relationship will be individualized based on the needs of the students enrolled in the course and mentoring relationships will be matched based on the completion of individualized student directed personalized future planning.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**EDUC 605 - Educational Perspectives in Critical Times****Credits:** 4

In this course students inquire, reflect on and teach ethical dilemmas in the practice of education. Students will establish a foundation of knowledge on which to build philosophies of education in preparation for a career in which they face policies influenced by political agendas, fads, and economic interests. Through readings, discussions and field experiences, students will become more practiced and comfortable in having difficult discussions related to pressing issues of education and equity. Special Fee.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**EDUC 610H - Field Experience in Educational Studies****Credits:** 1-4

Work with an agency, institution, or organization to gain technical and/or professional competence not otherwise available. Student plans experience with departmental adviser. Credit approval subject to recommendation of faculty members and performance of student. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**EDUC 650 - Introduction to Disability in Inclusive Schools and Communities****Credits:** 4

In this foundational course, students will be introduced to evidenced based practices in equity-based inclusive education leading to improved academic, social, communication, and behavioral outcomes for all students. Through a variety of films, readings, podcasts, interviews, and fieldwork assignments, students will explore education through the lens of learners with disabilities, families, and educators perspectives. Students in this course represent a broad array of disciplines including special education, social work, communication disorders, family studies, occupational therapy, early childhood, and more. Prereq: EDUC 500 or EDUC 402.

**Grade Mode:** Letter Grading**EDUC 656 - Advocating for Diverse and Inclusive Family-School-Community Partnerships****Credits:** 4

The course is to examine the socio-cultural circumstances surrounding racially, culturally and linguistically diverse (RCLD) families raising children with disabilities, address the implications of the Individuals with Disabilities Education Act (IDEA) and Every Student Succeeds Act (ESSA) for families and professionals, discuss issues regarding families' experience during the special education process, assess family strengths and coping styles, and develop knowledge and skills to advocate for diverse and inclusive family-school-community partnerships.

**Grade Mode:** Letter Grading**EDUC 694 - Courses in Supervised Teaching****Credits:** 8

Supervised Teaching of Music. Cr/F. Supervised Teaching of Adult and Occupational Education. Cr/F. Supervised Teaching of Mathematics. Cr/F.

**Grade Mode:** Credit/Fail Grading**EDUC 694A - Supervised Teaching/Music****Credits:** 8

Supervised Teaching of Music. Special fee. Cr/F.

**Grade Mode:** Credit/Fail Grading**EDUC 694C - Supervised Teaching/Mathematics****Credits:** 8

Supervised Teaching of Mathematics. Cr/F.

**Grade Mode:** Credit/Fail Grading**EDUC 694D - Supervised Teaching/Kinesiology****Credits:** 4

Supervised Teaching of Kinesiology. Cr/F.

**Grade Mode:** Credit/Fail Grading**EDUC #700 - Educational Structure and Change****Credits:** 4

To assume leadership roles, beginning teachers need to develop an informed understanding of how they can operate effectively as decision-makers and agents of change within educational institutions. Such understanding entails knowledge of the politics, history, organization, and function of schools from a variety of viewpoints: historical, sociological, political, and cross-cultural. This course focuses on the structure of public education, on the nature of educational change, and the teacher's role in the change process.

**Grade Mode:** Letter Grading



**EDUC 701 - Human Development & Learning: Cultural Perspectives****Credits:** 4

Learning in formal and informal contexts and cultural aspects of learning and development with an emphasis on childhood and adolescence. Theories of learning including behaviorism, constructivism, sociocultural, and design perspectives. Topics include research and varied cultural perspectives on intelligence, motivation, identity and the self, concept learning and knowledge, noncognitive aspects of learning, social and emotional learning, deficit thinking and social justice perspectives, design-based perspectives on educational innovation, and assessment. Junior and Senior status. Special fee.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**EDUC 703C - Classroom Management: Creating Positive Learning Environments****Credits:** 4

This course is designed to help prospective and current teachers create and maintain caring, respectful classroom communities in which learners feel safe, valued, cared for, valued, and empowered. The course includes a strong emphasis on developing knowledge about the culture and backgrounds of children and families in order to establish positive interactions within the classroom community. The course addresses the challenges and opportunities in creating community in the increasingly diverse student populations in US schools. We will consider what it means to be culturally responsive in order to establish a classroom in which all students can succeed academically and socially.

**Grade Mode:** Letter Grading**EDUC 703D - Social Studies Methods for Middle and High School Teachers****Credits:** 4

The social studies theory and methods course begins with an overview of the varied and, at times, competing goals and visions of the profession. Students examine these goals and their underlying rationales, and then develop their own philosophy of social studies teaching and learning. Students also examine state and national scope and sequence frameworks for the social studies, as well as the language arts Common Core standards. A variety of classroom strategies and methods are explored during the remainder of the course, including unit design, leading class discussions, how to approach controversial issues, teaching concepts and generalizations, increasing student engagement and empathy with the past, incorporating technology and the arts, management and discipline, and formats for assessment and grading.

**Grade Mode:** Letter Grading**EDUC 703F - Teaching Elementary School Science****Credits:** 4

This course is designed to increase pre-service teachers' pedagogical content knowledge and enthusiasm with respect to teaching science at the elementary level. Throughout this course, students will familiarize themselves with reform-based approaches to elementary science instruction through inquiry, readings, and class discussions. Science will be explored not only as an important element of elementary education, but also as a means by which to support a diverse class of elementary students in literacy and mathematics learning.

**Grade Mode:** Letter Grading**EDUC 703M - Teaching Elementary Social Studies****Credits:** 4

Social Studies Methods explores practical teaching models, techniques of implementation, and relationships to curricula in elementary classroom instruction. The New Hampshire Social Studies Frameworks and Common Core Curriculum Standards for instruction are identified and implemented in creating lesson plans for a mini unit.

**Grade Mode:** Letter Grading**EDUC #705 - Contemporary Educational Perspectives****Credits:** 4

Students formulate, develop, and evaluate their own educational principles, standards, and priorities. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**EDUC 706 - Teaching & Learning Literacy in the Elementary Classroom****Credits:** 4

Methods in reading and writing instruction, including current theories, practices and materials for teaching, learning and assessment. Course includes a weekly practicum in an elementary classroom and satisfies reading/language arts requirement for prospective elementary teachers in the elementary or P-3 certification programs. Special fee.

**Grade Mode:** Letter Grading**EDUC 707 - Teaching Reading through the Content Areas****Credits:** 2

Approaches and methods for teaching reading through content materials; coursework includes practical applications through development of instructional strategies and materials. Required for candidates seeking certification in art, biology, chemistry, earth science, general science, physical science, physics, or social science.

**Grade Mode:** Letter Grading**EDUC 710 - Navigating Difficult Dialogue****Credits:** 4

This course is designed to support navigating the inevitable 'difficult dialogues' we encounter in schools (and life). This course emphasizes practicing basic counseling skills and deeper listening skills to facilitate effective dialogue and outcomes in a variety of settings. Teachers and administration in schools, managers in the workplace, business leaders in organizations, leaders in communities, and other educators in various fields will find this course useful in their professional work with individuals and groups.

**Grade Mode:** Letter Grading**EDUC 712 - Teaching Multilingual Learners****Credits:** 4

This course is for people interested in teaching in schools and/or community agencies serving multilingual populations. Topics include: theories of first and second language acquisition, translanguaging, language policies and laws, strategies for teaching academic content to emerging bilinguals in mainstream classroom, creating classroom/school cultures that invite all students into learning, and the role of advocacy and professional collaboration in linguistically diverse public schools. In addition to designing and exploring a variety of teaching activities and techniques, students conduct a rich collection of field assignments including interviewing bi-/multilingual adults; visiting community agencies; and collaboratively designing community engagement activities.

**Grade Mode:** Letter Grading

**EDUC #717 - Growing up Male in America****Credits:** 4

An integrative view of growing up male in the American culture from birth through adulthood. Analysis of major perspectives on male development and the implications in parenting with specific emphasis on male education. Participants are expected to develop awareness of their own development as a male or alongside males, using current male development perspectives as a guide. They also create an awareness of how this will affect their behavior toward boys in their classrooms.

**Grade Mode:** Letter Grading**EDUC 718 - Critical Social Justice in and Beyond Education****Credits:** 4

Students will become familiar with key concepts and principles of critical theory, critical pedagogy, and social justice education so that they may use this body of work to inform their teaching, leadership, and scholarship. We will examine the role of a) schools in providing equity of educational access and outcomes, b) teacher agency to change unjust conditions, and c) micro experiences within schools and the macro layer of context (i.e., history, politics, economics, culture).

**Grade Mode:** Letter Grading**EDUC 720 - Educational Technology****Credits:** 4

Educators with any experience level will develop the skills and mindset to find and use technology tools that can enhance student learning. Assignments and online discussions focus on foundational educational technology topics, including ethical and social justice considerations, best practices, and national technology standards. Assignments are completed using each week's tech tool category, such as presentations, image/video editing, and website creation. Participants will curate educational technology tools that fit their preferences and needs. This class will include the focus on facilitating remote learning.

**Grade Mode:** Letter Grading**EDUC 733 - Teaching Writing in the Elementary Grades****Credits:** 4

An exploration of writing and writing instruction across a range of expressive forms, including digital technologies, social media, and video. Special emphasis on engagement with and preparation to teach multimodal literacies in elementary classrooms. Includes a focus on language diversity, the relationship between reading, writing, and literacy development, student-centered assessments, and integrating the arts into the reading and writing workshop.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**EDUC 734 - Critical Perspectives on Children's Literature****Credits:** 4

Interpretive and critical study of literature and nonfiction texts written for elementary and middle school readers. Applications of children's literature in educational settings.

**Grade Mode:** Letter Grading**EDUC 739 - Equitable Assessment and Individualized Educational Planning: Building Access and Agency****Credits:** 4

The first course in a two-semester sequence, this course develops beginning inclusive and special educators' abilities in assessing learners and learning environments, designing, implementing, and evaluation intensive instruction, and implementing high-leverage practices in the areas of collaboration, assessment, and social/emotional/behavioral supports. Provides a focus on federal and state legal and procedural mandates.

**Prerequisite(s):** EDUC 650 with a minimum grade of D- and EDUC 751 with a minimum grade of D-.**Grade Mode:** Letter Grading**EDUC 740 - Advanced Methods for Inclusive Curricular Design and Teaching: Building Access and Agency, Part II****Credits:** 4

The second course in a two-semester sequence, this course develops educator expertise to analyze learners and learning environments; specify learner characteristics; and to design, implement, and evaluate specialized appropriate educational interventions in the areas of language and literacies, mathematics, content area and social/behavioral competencies.

**Prerequisite(s):** EDUC 739 with a minimum grade of D-.**Grade Mode:** Letter Grading**EDUC #741 - Exploring Mathematics with Young Children****Credits:** 4

A laboratory course offering those who teach young children mathematics, and who are interested in children's discovery learning and creative thinking, offers a chance to experience exploratory activities with concrete materials, as well as mathematical investigations, on an adult level, that develop the ability to provide children a mathematically rich environment, to ask problem-posing questions, and to establish a rationale for doing so. Prereq: MATH 601.

**Grade Mode:** Letter Grading**EDUC 745 - Math with Technology in Early Education****Credits:** 2

The primary goal of this course is that students gain knowledge of learning standards and teaching methods for the instruction of mathematics in early education settings with infants through 3rd grade. In addition, participants gain experience in applying their newfound knowledge in the areas of mathematics with technology through a combination of teaching and digital experiences. On-line course; no campus visits required. Please note the minimal technical requirements for a UNH e-course.

**Grade Mode:** Letter Grading**EDUC 751A - Inclusive Elementary Education: Literacies and Learning for Diverse Learners****Credits:** 4

This course examines the role and responsibility of the elementary educator as an advocate for, and educator of, students with diverse learning needs. Methods and structure to enable educators to understand, engage, and respond to the challenges presented within an academically diverse classroom are addressed. Special focus is given to research and applications for facilitating emergent literacies and social, emotional and behavioral development.

**Grade Mode:** Letter Grading

**EDUC 751B - Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions****Credits:** 4

This course examines the role and responsibility of the secondary educator as an advocate for, and educator of students with diverse learning needs. Methods and structures to enable educators to understand, engage, and respond to the challenges presented within an academically diverse classroom are addressed. Special focus is given to research and applications for developing literacy, knowledge and competence within the content areas, and for facilitating post secondary transitions.

**Grade Mode:** Letter Grading**EDUC #752 - Contemporary Issues in Learning Disabilities****Credits:** 4

Critical analysis of current and historical conceptions of learning disability in the areas of definition, supporting theories, assessment practice, and teaching methodologies. Focus on contemporary issues in the field that relate to working with students labeled as learning disabled at both elementary and secondary levels.

**Grade Mode:** Letter Grading**EDUC #757 - Contemporary Issues in Autism Spectrum Disorders****Credits:** 4

The goal of this course is to enhance students' understanding of contemporary issues related to educating students with autism spectrum disorders (ASD). The course is grounded in a theoretical foundation that values the perspectives of individuals with ASD in academic, research, policy, and clinical endeavors. Learning outcomes focus on strategies for identifying opportunities for learning, communication, literacy, and social relationships in a variety of inclusive environments.

**Grade Mode:** Letter Grading**EDUC 760 - Introduction to Young Children with Special Needs****Credits:** 4

Needs of children (birth to eight years) with developmental delays or who are at risk for disabilities. Strengths and special needs of such children; causes, identification, and treatment; current legislation; parent and family concerns; program models.

**Grade Mode:** Letter Grading**EDUC 761 - Designing Curriculum for Inclusive, Equitable Settings for Young Children (birth-8)****Credits:** 4

This course focuses on designing curriculum for inclusive and equitable settings for young children, birth through age 8. Classroom applications for constructivist theory in the areas of curriculum planning and implementation; issues of equity and diversity in curriculum and assessment; overview of research and theory related to teaching and learning of specific content areas, with emphasis on integrated approach to early childhood curriculum. Stresses the reciprocal nature of student-teacher relationship in the inclusive and equitable settings.

**Grade Mode:** Letter Grading**EDUC 762 - Curriculum for Young Children with Special Needs: Evaluation and Program Design****Credits:** 4

Overview of evaluation and intervention issues relevant to early childhood special education, focusing on ages three through eight. Norm-referenced and criterion-referenced assessment tools. Judgment-based evaluation and observation skills. Translation of evaluation information into goals and objectives for individual education programs. Developing appropriate programs in inclusive settings.

**Equivalent(s):** EDUC 947**Grade Mode:** Letter Grading**EDUC 767 - Students, Teachers, and the Law****Credits:** 4

Our public schools play a vital role in our society. What shall be taught and who shall teach our children are perennial questions. This course explores how the law impacts the educational lives of students and teachers, including issues of church-state relations, free speech, dress codes, and search and seizure. (Also offered as JUST 767.)

**Equivalent(s):** JUST 767**Grade Mode:** Letter Grading**EDUC 784 - Educators as Community-Engaged Researchers****Credits:** 4

With the guidance and support of the instructor, students work in collaborative teams to conduct a systematic inquiry into a current educational studies issue and present their findings and interpretations at a professional or community forum open to the public. Students are encouraged to conduct their research in non-formal education settings including but not limited to community agencies, museums, and after-school programs. Note: EDUC 784 is the principal option for the DMES capstone. Permission required.

**Grade Mode:** Letter Grading**EDUC #791 - Methods of Teaching Secondary Science****Credits:** 4

This course is designed to provide experiences and resources that will support individuals who are planning to teach middle or high school science. Through interactive activities, readings, and class discussions, the class explores key elements and challenges of secondary science teaching and provide a foundation for continued growth and reflection throughout the students' teaching careers. Some of the main topics discussed in this course are national and state science standards, reform-based approaches to instruction, the use of technology in science teaching, laboratory safety, curriculum evaluation, and assessment.

**Grade Mode:** Letter Grading**EDUC 795 - Independent Study****Credits:** 2 or 4

Juniors and seniors only, with approval by appropriate faculty member. Neither course may be repeated.

**Grade Mode:** Letter Grading**EDUC 797 - Special Topics in Education****Credits:** 1-4

An experimental course for the purpose of introducing a new course or teaching a special topics for a semester in an area of specialization in Education.

**Repeat Rule:** May be repeated up to 2 times.**Grade Mode:** Letter Grading**EDUC 798 - Internship and Seminar in Inclusive Teaching****Credits:** 4

This course is the fall teaching internship for students enrolled in the BA: Equity, Diversity, and Inclusion program. This internship (as part of a two course sequence) is the culminating field experience as required for certification. Students will complete internships hours with a certified teacher, supervised by a UNH instructor. Students will also attend a weekly seminar where course assignments will be completed.

**Grade Mode:** Credit/Fail Grading

**EDUC 799 - Internship and Seminar in Inclusive Teaching****Credits:** 8

This course is the spring teaching internship for students enrolled in the BA: Equity, Diversity, and Inclusion program. This internship (as part of a two course sequence) is the culminating field experience as required for certification. Students will complete internships hours with a certified teacher, supervised by a UNH instructor. Students will also attend a weekly seminar where course assignments will be completed.

**Grade Mode:** Credit/Fail Grading

## Electrical & Computer Engineering (ECE)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ECE 401 - Perspectives in Electrical and Computer Engineering****Credits:** 4

An introductory course for electrical and computer engineering majors that introduces incoming students to the fundamental concepts of analysis and design. Concepts are presented through an examination of real-world problems. Students are introduced to electrical and computer engineering problem solving and design through active learning techniques in lecture and in a laboratory setting. Provides a context for the electrical engineering and computer engineering curriculum and introduces the profession and activities of electrical and computer engineering. Lab.

**Attributes:** Inquiry (Discovery)**Grade Mode:** Letter Grading**ECE 444 - Bionics: Technology from Nature****Credits:** 4

Bionics is the study of living systems with the intention of applying their principles to the design of useful technology for mankind. Students learn strategies to discover bio-inspired technology. The student investigates the fields of bio-inspired cyborgs, defense and attack mechanisms in biology leading to military applications including non-lethal weapons, bio-inspired sensors including brain-computer interfaces, bio-inspired robots, and animal and plants that generate energy for technology. Writing Intensive. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course; Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**ECE 537 - Introduction to Electrical Engineering****Credits:** 4

Fundamentals of electrical engineering. Topics are circuit elements; signal waveforms; circuit laws and theorems; transfer functions; free, forced, and steady state responses; power calculations; amplifiers; and magnetic circuits. Non-ECE majors only. Prereq: PHYS 408. Pre- or Coreq: MATH 527. Lab.

**Grade Mode:** Letter Grading**ECE 541 - Electric Circuits****Credits:** 0 or 4

Linear passive circuits beginning with resistive circuits, power and energy relations, mesh and node analysis. Transient and steady-state behavior of simple circuits containing energy storage elements (capacitors, inductors). Introduction to linear active circuits using dependent source models and ideal op amps. Introduction to transfer function and frequency response concepts. For ECE majors only. Pre- or Coreq: MATH 426; PHYS 408. Lab.

**Grade Mode:** Letter Grading**ECE 543 - Introduction to Digital Systems****Credits:** 4

Fundamental analysis and design principles. Number systems, codes, Boolean algebra, and combinational and sequential digital circuits. Lab: student-built systems using modern integrated circuit technology and an introductory design session on a CAD workstation. Lab.

**Grade Mode:** Letter Grading**ECE 548 - Electronic Design I****Credits:** 4

Introduction to electronic design for analog signal processing. Basic Concepts of Semiconductor Materials (electrons and holes, n-type and p-type semiconductors), Diodes (Modeling, Biasing, Zener Diodes, and Rectifier Circuits), FETs (Device Structure, Modes of Operation, and I-V Characteristics), BJTs (Device Structure, Modes of Operation, and I-V Characteristics), Transistor Amplifiers (Biasing a Transistor, Small-Signal Modeling, and Configurations), Operational Amplifier circuits for amplification and filtering. Prereq: ECE 541. Lab.

**Grade Mode:** Letter Grading**ECE 562 - Computer Organization****Credits:** 4

Basic computer structure, including arithmetic, memory, control, and input/output units; the tradeoffs between hardware, instruction sets, speed, and cost. Laboratory experiments will use hardware and software to understand the concepts of instruction set architecture, machine language programming, control and data path design, and I/O interfacing. Prereq: ECE 543 and CS 410C or equivalent.

**Grade Mode:** Letter Grading**ECE 583 - Designing with Programmable Logic****Credits:** 4

This course covers topics related to field programmable logic devices. Students will be introduced to Hardware Description Language (HDL) design entry languages and simulation procedures, along with common logic synthesis tools. In laboratory exercises, each student will prototype a digital system starting with HDL entry, functional and timing simulations, logic synthesis, device programming, logic probing, and system verification. Prereq: ECE 562 and ECE 543 and CS 410C or equivalent.

**Grade Mode:** Letter Grading**ECE 602 - Engineering Analysis****Credits:** 3

Analyze and solve engineering problems using linear algebra and integral and differential calculus of functions of several variables. Boundary-value problems in mechanics, fluid dynamics, and electrostatics. Examination of electrostatics, magnetostatics, and fluid and wave mechanics using vector differential and integral calculus. Introduction of approximation and error analysis methods as fundamental engineering tools. Prereq: MATH 527. Pre- Coreq: MATH 645.

**Grade Mode:** Letter Grading

**ECE 603 - Electromagnetic Fields and Waves I****Credits:** 3

Maxwell's equations in integral and differential form with applications to static and dynamic fields. Uniform plane waves in free space and material media. Boundary conditions; simple transmission line theory; parallel plate and rectangular waveguides; simple radiating systems.

**Prerequisite(s):** PHYS 408 with a minimum grade of D- and ECE 602 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**ECE 617 - Junior Laboratory I****Credits:** 4

Application of laboratory instrumentation to the investigation of active and passive circuit characteristics; introduction to computer-aided design, analysis, and testing; development of report writing and oral presentation skills. Pre- or Coreq: ECE 633; ECE 651. Writing intensive.

**Attributes:** Writing Intensive Course

**Grade Mode:** Letter Grading

**ECE 618 - Junior Laboratory II****Credits:** 0 or 4

Laboratory exercises in the design and analysis of active circuits, techniques of signal processing, and the properties of distributed circuits. Continued development of report writing and oral presentation skills.

Prereq: ECE 617. Pre- or Coreq: ECE 603. Writing intensive.

**Attributes:** Writing Intensive Course

**Grade Mode:** Letter Grading

**ECE 633 - Signals and Systems I****Credits:** 3

Mathematical characterization of continuous-time systems using time- and frequency-domain concepts. Properties of linear systems described by ordinary differential equations. Fourier analysis of signals and system frequency response functions. Applications to communication and control systems. Introduction to system simulation using computer methods. Prereq: MATH 527. Pre- or Coreq: MATH 645.

**Equivalent(s):** ECE 633H

**Grade Mode:** Letter Grading

**ECE 633H - Honors/Signals and Systems I****Credits:** 4

Mathematical characterization of continuous-time systems using time- and frequency-domain concepts. Properties of linear systems described by ordinary differential equations. Fourier analysis of signals and system frequency response functions. Applications to communication and control systems. Introduction to system simulation using computer methods. Honors students will attend an additional one-hour meeting each week. Prereq: MATH 527. Pre- Coreq: MATH 645. permission required.

**Attributes:** Honors course

**Grade Mode:** Letter Grading

**ECE 634 - Signals and Systems II****Credits:** 3

Transient response analysis of linear systems using Laplace transforms, application to feedback control systems. Introduction to discrete-time linear systems; system response determination using Z-transform; elementary design of digital filters and controllers. State variable formulation of dynamical systems.

**Prerequisite(s):** ECE 633 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**ECE 647 - Random Processes and Signals in Engineering****Credits:** 3

Emphasis on applied engineering concepts such as component failure, quality control, noise propagation. Topics include random variables, probability distributions, mean and variance, conditional probability, correlation, power spectral density. Prereq: MATH 426; ECE 602.

**Equivalent(s):** ECE 647H

**Grade Mode:** Letter Grading

**ECE 647H - Honors/Random Processes and Signals****Credits:** 4

Emphasis on applied engineering concepts such as component failure, quality control, noise propagation. Topics include random variables, probability distributions, mean and variance, conditional probability, correlation, power spectral density. Honors students attend an additional one-hour meeting each week. Prereq: MATH 426; ECE 602, permission required.

**Attributes:** Honors course

**Grade Mode:** Letter Grading

**ECE 649 - Embedded Microcomputer Based Design****Credits:** 4

Topics include: architectures for embedded processors, hardware and software aspects of interfacing, handling interrupts, low-level programming including debugging of real-time systems, and embedded application implementations. Laboratory studies will be required to reinforce theoretical and applied concepts in an embedded architecture. Prereq: ECE 562, ECE 583.

**Grade Mode:** Letter Grading

**ECE 651 - Electronic Design II****Credits:** 4

Design of fundamental circuit blocks in electronic systems. Multistage amplifiers; feedback systems and stability; power amplifiers. Nonlinear electronic circuits: oscillators, function generators; clippers and peak detectors; A/D and D/A conversion. Switching mode and logic circuits. Prereq: ECE 548.

**Grade Mode:** Letter Grading

**ECE 652 - Electronic Design II****Credits:** 6

Design of fundamental circuit blocks in electronic systems. Multistage amplifiers; feedback systems and stability; power amplifiers. Laboratory exercises in the design and analysis of active circuits. Application of laboratory instrumentation to the investigation of active circuit characteristics; computer-aided design, analysis, and testing; development of report writing skills. Writing intensive. Prereq: ECE 548. This course is required of EE majors, but it is not required of CE majors.

**Grade Mode:** Letter Grading

**ECE 653 - Electronic Design III****Credits:** 6

Continuation of ECE 652 with emphasis on more advanced circuits including: active filters, Nonlinear electronic circuits: oscillators, function generators, phase-locked loops; clippers and peak detectors; A/D and D/A conversion, switching mode circuits. Laboratory exercises in the design and analysis of active circuits. Further advanced application of laboratory instrumentation to the investigation of active circuit characteristics; computer-aided design, analysis, and testing; development of report writing skills. Writing intensive. Prereq: ECE 652. This course is required of EE majors, but it is not required of CE majors.

**Grade Mode:** Letter Grading



**ECE 714 - Introduction to Digital Signal Processing****Credits:** 4

Introduction to digital signal processing theory and practice, including coverage of discrete time signals and systems, frequency domain transforms and practical spectral analysis, digital filter terminology and design, and sampling and reconstruction of continuous time signals. Laboratory component providing an introduction to DSP design tools and real-time algorithm implementation. Prereq: ECE 634. Lab.

**Grade Mode:** Letter Grading**ECE 715 - Introduction to VLSI****Credits:** 4

Principles of VLSI (Very Large Scale Integration) systems at the physical level. CMOS circuit and logic design, CAD tools, CMOS system case studies. Students exercise the whole development cycle of a VLSI chip: design and layout with the up-to-date commercial EDA tools. An IA (continuous grading) grade is given at the end of semester I. Lab.

**Grade Mode:** Letter Grading**ECE 717 - Introduction to Digital Image Processing****Credits:** 4

Digital image representation; elements of digital processing systems; multidimensional sampling and quantization; image perception by humans, image transformations including the Fourier, the Walsh, and the Hough Transforms; image enhancement techniques including image smoothing, sharpening, histogram equalization, and pseudo color processing; image restoration fundamentals; image compression techniques, image segmentation and use of descriptors for image representation and classification. Prereq: ECE 634; ECE 647. Lab.

**Grade Mode:** Letter Grading**ECE 724 - Ubiquitous Computing Fundamentals****Credits:** 4

Ubiquitous computing, or ubicomp, explores embedded, interconnected computing devices that are part of everyday objects and activities. This course takes an interdisciplinary look at the foundations of ubiquitous computing. Topics include software and hardware for ubicomp, human-computer interaction in ubicomp, and issues related to privacy and security in ubicomp. Students undertake a research project inspired by the material. Registration by permission only.

**Grade Mode:** Letter Grading**ECE 757 - Fundamentals of Communication Systems****Credits:** 4

Spectra of deterministic and random signals; baseband and bandpass digital and analog signaling techniques; transmitter and receiver architectures; performance analysis of digital and analog signaling in additive noise channels; carrier and symbol timing synchronization methods. Prereq: ECE 634; ECE 647. Lab.

**Grade Mode:** Letter Grading**ECE 772 - Control Systems****Credits:** 4

Development of advanced control system design concepts such as Nyquist analysis; lead-lag compensation; state feedback; parameter sensitivity; controllability; observability; introduction to non-linear and modern control. Includes interactive computer-aided design and real-time digital control. Prereq: ECE 634. Lab. (Also offered as ME 772.)

**Equivalent(s):** ME 772**Grade Mode:** Letter Grading**ECE 775 - Applications of Integrated Circuits****Credits:** 4

Design and construction of linear and nonlinear electronic circuits using existing integrated circuits. Limitations and use of operational amplifiers. Laboratory course in practical applications of non-digital integrated circuit devices. Prereq: ECE 651. Lab.

**Grade Mode:** Letter Grading**ECE 784 - Biomedical Instrumentation****Credits:** 4

Principles of physiological and biological instrumentation design including transducers, signal conditioning, recording equipment, and patient safety. Laboratory includes the design and use of instrumentation for monitoring of electrocardiogram, electromyogram, electroencephalogram, pulse, and temperature. Current research topics, such as biotelemetry, ultrasonic diagnosis, and computer applications. Prereq: ECE 651. Lab.

**Grade Mode:** Letter Grading**ECE 791 - Senior Project I****Credits:** 3

First semester of the capstone design experience. Topics include creativity, design methodology, specification development, project management, ethics, safety, reliability and preparation for oral and written reports. Students develop project plans, and prepare and present written and oral project proposals. The project plans must include aspects of design, implementation and evaluation. At the end of the semester, students prepare a written progress report. Prereq: ECE senior standing. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ECE 791H**Grade Mode:** Letter Grading**ECE 791H - Senior Honors Project I****Credits:** 4

First semester of the capstone honors senior thesis research. Topics include creativity, design methodology, specification development, project management, ethics, safety, reliability and preparation for oral and written reports. Students develop project plans, and prepare and present written and oral project proposals. The project plans must include aspects of design, implementation and evaluation, similar to ECE 791. However, honors thesis research must also include independent research beyond the normal scope of ECE 791. At the end of the semester students prepare a written progress report. Prereq: ECE senior standing, permission required. Writing intensive.

**Attributes:** Honors course; Writing Intensive Course**Equivalent(s):** ECE 791**Grade Mode:** Letter Grading**ECE 792 - Senior Project II****Credits:** 3

This course requires the completion of the capstone design experience begun in ECE 791. At the end of the semester students prepare written final project reports, and present their results in a research poster session. Prereq: ECE 791. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ECE 792H**Grade Mode:** Letter Grading

**ECE 792H - Senior Honors Project II****Credits:** 4

This course requires the completion of the capstone honors thesis research begun in ECE 791H. At the end of the semester students prepare honors theses, and present their research results in a research poster session. ECE 791H/792H fulfills the requirement of one professional elective. Prereq: ECE 791H, permission required. Writing intensive.

**Attributes:** Honors course; Writing Intensive Course**Equivalent(s):** ECE 792**Grade Mode:** Letter Grading**ECE 795 - Electrical and Computer Engineering Projects****Credits:** 1-4

Laboratory course. Student undertakes a project of mutual interest with an ECE faculty advisor. A written final report must be filed with the ECE Department. Prereq: permission.

**Grade Mode:** Letter Grading**ECE 796 - Special Topics****Credits:** 1-4

New or specialized courses and/or independent study. Prereq: permission. 1 to 4 credits some sections may use credit/fail grading.

**Grade Mode:** Letter Grading

## Engineering Technology (ET)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ET 401 - Introduction to Additive Manufacturing****Credits:** 4

This project-based course introduces current methods in the design and fabrication of #D models. Students will apply and integrate techniques from mathematics, engineering, and computing design #D models and then manufacture them by the use of 3D printers. Credit cannot be earned by students who have completed UMST 599 SpcTop/Intro to 3D Printing.

**Attributes:** Environment, TechSociety(Disc)**Grade Mode:** Letter Grading**ET 405 - Engineering Design****Credits:** 4

This course introduces the engineering design process and solid modeling software tools to create 3D CAD models and generate professional industry engineering drawings. Industry codes and procedures are practiced e.g. Geometric Dimensioning & Tolerancing (GD&T). Students complete hands-on projects and activities. The engineering design process includes: problem identification, concept creation, modeling, analysis, and documentation. Industry standard 3D modeling software is used with project design methodology for graphical, written, and oral communication of mechanical design ideas.

**Attributes:** Inquiry (Discovery)**Grade Mode:** Letter Grading**ET 411 - Manufacturing and Materials Processing****Credits:** 0 or 4

This course covers the basic manufacturing processes used to convert raw materials into finished goods. Various manufacturing methods including both traditional and computer controlled covered include: machining, forming, casting, welding, 3D printing. The complex relationship between design and manufacturability is investigated and emphasized. The lab portion of this course will demonstrate the use of various machining processes which are capable in the UNHM Machine Shop Lab.

**Prerequisite(s):** MATH 418 with a minimum grade of D- and ET 405 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 421 - Digital Electronics I****Credits:** 0 or 4

The fundamental analysis and design concepts of digital theory needed for more advanced study of digital circuits. Topics covered include: number systems, codes, Boolean algebra, K-mapping, and combinational, sequential digital circuits. Lab exercises explore modern integrated circuit technology and introductory design using Electronic Design Automation (EDA) tools.

**Co-requisite:** COMP 424**Prerequisite(s):** MATH 418 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 431 - Circuit Analysis I****Credits:** 0 or 4

First course in electronic circuit analysis exploring the fundamental idea of current and voltage. Topics include the basic laws and theorems that govern simple electrical systems; Kirchhoff's laws, Ohm's law, power relationships, resistance, inductance, and capacitance. Laboratory exercises will introduce the student to the basic measurement techniques of electronic systems using circuit building, power supplies, multi-meters and oscilloscopes. This course will also introduce basic circuit simulation techniques.

**Co-requisite:** MATH 418**Grade Mode:** Letter Grading**ET 432 - Circuit Analysis II****Credits:** 0 or 4

Second course in electronic circuit analysis, introducing time varying circuits and more advanced electronic circuit analysis; including super position, node/mesh methods, phasor representation, frequency response, impedance, and reactance. Lab exercises use oscilloscopes, function generators to build and analyze circuits with reactive elements.

**Co-requisite:** MATH 425**Prerequisite(s):** MATH 418 with a minimum grade of D- and ET 431 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 450 - Statics and Strength of Materials****Credits:** 0 or 4

The statics portion of the course analyzes equilibrium force systems applied to rigid bodies and the internal stresses and strains which result. The strength of materials portion of the course investigates the relationship between internal stress and strain to material properties and behavior. Topics include free body diagrams, equilibrium force analysis, tension, compression, shear and moment diagrams, torsion, bending, trusses, and beam deflection analysis. Lab.

**Prerequisite(s):** MATH 418 with a minimum grade of D- and PHYS 407 (may be taken concurrently) with a minimum grade of D-.**Grade Mode:** Letter Grading

**ET 502 - Measurement and Control****Credits:** 0 or 4

The course covers basic electricity and electronics (analog and digital) and electronic components (transistors, op-amps, SCR's). Electromechanical principles are introduced involving sensors and transducers used in production processes. Programming using the Arduino software and microcontroller is introduced. The basics of Programmable Logic Control (PLC) using Relay Ladder Logic programming is covered. Students use both hardware and software covered in the lecture portion of the course in the laboratory session.

**Prerequisite(s):** MATH 418 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 505 - Material Science****Credits:** 0 or 4

This course studies the properties and behavior of engineering materials. Materials considered are ferrous and nonferrous metals and alloys, as well as plastics, ceramics, and composites. Material property and behavior modification through thermal and mechanical means is studied: such as heat treatment of steel or cold work forming. Selection of materials based upon manufacturing and design requirements is emphasized. Lab experiments will complement lecture material where appropriate.

**Prerequisite(s):** MATH 425 with a minimum grade of D- and ET 450 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 522 - Digital Electronics II****Credits:** 0 or 4

Advanced topics in digital design techniques. Topics covered include: complex digital circuits, Flip-Flop circuits, counters, state machines, state diagrams, and memory devices. Laboratory exercises work with modern digital design methods with schematic entry, synthesis using VHDL, simulation modern digital systems implemented on Field Programmable Gate Arrays (FPGA).

**Prerequisite(s):** ET 421 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 529 - Introduction to Thermodynamics****Credits:** 4

This course covers the fundamentals of equilibrium thermodynamics. Topics include: thermodynamic properties of gases and liquids, thermodynamic tables, ideal gas laws, open and closed systems, thermodynamic processes and process diagrams, First and Second Laws of Thermodynamics, entropy, and an introduction to thermodynamic cycles.

**Prerequisite(s):** MATH 425 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 541 - Electronic Devices****Credits:** 0 or 4

Introductory course in Electronic devices looking at modern components used in current electronic systems. This course will develop techniques to analyze basic semiconductor devices such as diodes, field effect transistors and bipolar transistors. Specific diode circuits covered include: rectifying, clipping, and clamping circuit configurations. Methods to model, analyze and bias the basic transistor amplification circuits will be developed. Lab exercises will explore these types of circuit both in physical prototyping and simulation.

**Prerequisite(s):** MATH 425 with a minimum grade of D- and ET 431 with a minimum grade of D- and ET 432 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 542 - Analog Electronics****Credits:** 0 or 4

Design of fundamental analog circuit blocks in electronic systems. Multistage amplifiers; feedback systems and stability; power amplifiers. Nonlinear electronic circuits: oscillators, function generators; clippers and peak detectors; A/D and D/A conversion. Laboratory exercises will explore building physical prototypes and the use of simulation to build and analyze Analog systems.

**Grade Mode:** Letter Grading**ET 550 - Dynamics and Machine Design I****Credits:** 0 or 4

The dynamics portion of the course covers basic fundamentals of particle and rigid body dynamics, rectilinear and curvilinear motion, and kinematic motion. The machine design portion covers static and dynamic stress analysis theories, combined stress, and fatigue and endurance strength. Introduction to various machine element analyses are begun including fasteners, springs, and shaft design. Computer applications are employed where appropriate using CAD and Excel. Lab.

**Prerequisite(s):** ET 405 with a minimum grade of D- and ET 450 with a minimum grade of D- and MATH 425 (may be taken concurrently) with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 560 - Machine Design II****Credits:** 0 or 4

This course is a continuation of ET 550 Machine Design portion. Additional machine elements and their related analyses are covered. Power transmission drive components such as gears, belts, chains, clutches and brakes are covered. Lab projects will involve individual components or combined items above. Computer application software is used where appropriate, including CAD and Excel. Lab.

**Prerequisite(s):** ET 550 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 590 - Embedded Microcontrollers****Credits:** 0 or 4

The purpose of this course is to explore the subject of microprocessors and embedded systems, covering architectural issues, programming, and interfacing. The course will also cover processor organization, emphasizing the typical structure of today's microcontrollers, processor models, and programming styles. Throughout the material, the consideration of input/output systems to the use of various embedded peripherals and interfacing external loads for a spectrum of diverse applications will be addressed.

**Equivalent(s):** ET 522**Grade Mode:** Letter Grading**ET 625 - Technical Communications****Credits:** 4

Designed to improve students' capabilities to prepare and present technical information in written and oral form and through electronic means. ET majors should take this course early in their program of study so that proficiencies developed can be utilized in later courses. (Also listed as ENGL 502.) Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENGL 502, ENGL 502H**Grade Mode:** Letter Grading

**ET 635 - Fluid Technology and Heat Transfer****Credits:** 0 or 4

Fundamental principles of fluid technology and basic principles of heat transfer, with applications in solving practical problems, and how these concepts are used in the HVAC area. Lab.

**Prerequisite(s):** ET 529 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 641 - Production Systems****Credits:** 4

Market forecasting; waiting line theory; manufacturing inventories and their control; production scheduling; quality control.

**Prerequisite(s):** MATH 425 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 644 - Mechanical Engineering Technology Concepts in Analysis and Design****Credits:** 4

Kinematics, kinetics, work and energy, fluids, heat transfer; application of these concepts to problems in mechanical design.

**Prerequisite(s):** ET 450 with a minimum grade of D- and ET 560 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 645 - Fluid Technology and Heat Transfer II****Credits:** 0 or 4

The course prepares the student to apply thermal and fluid engineering principles to situations typical of those encountered in industry. Topics covered include thermodynamics of two phase fluids, fluid dynamics of piping systems, principles of turbomachinery, and analysis of power cycles. No credit for students who have taken ET 696 Special Topics in Mechanical Engineering Technology for credit. Lab.

**Prerequisite(s):** ET 635 with a minimum grade of D- and MATH 425 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 671 - Digital Systems****Credits:** 0 or 4

Digital systems design and application using TTL and CMOS devices, design of systems, and interfacing. Digital design project required. Lab.

**Prerequisite(s):** ET 522 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 674 - Control Systems and Components****Credits:** 0 or 4

Topics include linear systems analysis, the Laplace transform and its properties, controllers, root locus technique, transient response analysis, first- and second-order systems, error analysis, and control system design. Lab.

**Prerequisite(s):** MATH 425 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 675 - Electrical Technology****Credits:** 0 or 4

Electrical circuits: DC and AC network analysis, power factors, transformers, power supplies. Electronic circuits—diodes, transistors and operational amplifiers. Digital circuits and introduction to computer-aided engineering. Lab.

**Prerequisite(s):** MATH 425 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 677 - Analog Systems****Credits:** 0 or 4

Operational amplifiers. Transducers and measurement systems. Frequency response. Grounding and shielding. Signal and power interfacing techniques. Design project. Lab.

**Prerequisite(s):** ET 542 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 680 - Communications and Fields****Credits:** 0 or 4

Topics include Fourier series analysis; the Fourier transform and its properties; convolution; correlation including PN sequences; modulation theory; encoding and decoding of digital data (NRZ-M, NRZ-S, RZ, Biphase-L, and Manchester); antennas and antenna pattern; Radar Range Equation; and an introduction to information theory. Lab.

**Prerequisite(s):** MATH 425 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 696 - Topics in Mechanical Engineering****Credits:** 0-4

New or specialized courses not covered in regular course offerings.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** ET 695**Grade Mode:** Letter Grading**ET #697 - Topics in Electrical Engineering Technology****Credits:** 0-4

New or specialized courses not covered in regular course offerings.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Letter Grading**ET 751 - Mechanical Engineering Technology Project****Credits:** 4 or 8

Students are required to find solutions to actual technological problems in design, fabrication, and testing as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. A year-long course: 4 credits per semester; an IA grade (continuous course) given at the end of first semester. Withdrawal from course results in loss of credit.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ET 781 - Introduction to Automation Engineering****Credits:** 4

Students are introduced to the topics needed to develop a good understanding of the basic principles of Automation Engineering. This introductory course covers a wide variety of topics such as performance of sensors, actuators, motors and drives, PLC's and HMI, environmental controls, robots, machine vision systems, and controls and system integration. Open to Electrical Engineering Technology, and Mechanical Engineering Technology majors only.

**Grade Mode:** Letter Grading**ET 788 - Introduction to Digital Signal Processing****Credits:** 0 or 4

This course will deal with the topics of spectral representation of periodic and non-periodic analog signals followed by discrete sampling and aliasing and how it relates to Nyquist sampling theorem. The z-transform will be introduced as the required mathematical tool along with an introduction to MATLAB and its associated DSP tool box. Spectral analysis of digital signal will be accomplished using these tools. Convolution and digital filtering will also be covered. Lab.

**Prerequisite(s):** ET 680 with a minimum grade of D-.**Grade Mode:** Letter Grading

**ET 790 - Microcomputer Technology****Credits:** 0 or 4

Microcomputer systems design, including assembly language, interfacing, processor timing and loading, and inter-processor communications via local area networks. Hardware, software, and architecture of both Intel 80X86 and Motorola 68XX0 microprocessors. Microcomputer applications with emphasis on lab work using Motorola HCII microcontroller. Lab.

**Prerequisite(s):** ET 671 with a minimum grade of D-.**Grade Mode:** Letter Grading**ET 791 - Electrical Engineering Technology Project****Credits:** 4 or 8

Students are required to find solutions to actual technological problems in design, fabrication, and testing, as posed by industry. Students define the problem, prepare a budget, and work with the client company to research, design, build, and test the software and/or hardware needed. Prereq: senior standing in E.T. A year-long course: an IA grade (continuous course) given at end of first semester. Withdrawal from course results in loss of credit.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## English (ENGL)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ENGL 400 - English for International Students****Credits:** 1-4

Designed for international students to provide additional support in course work. Students continue to develop skills in listening comprehension, speaking, reading, and writing in English. No letter grades. Course graded. Prereq: permission from ESL Institute. Cr/F.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** ENGL #400A**Grade Mode:** Credit/Fail Grading**ENGL #400A - Academic English for ESL****Credits:** 4

Preparation for the reading, writing, and speaking assignments that students encounter in academic courses. Students complete reading, writing, and speaking assignments every week, with close guidance from the instructor. In addition to the time they spend in class, students also have frequent individual conferences with the instructor. No more than 16 combined credits for ENGL 400 and ENGL #400A may be counted toward a UNH degree. Special fee.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ENGL 400**Grade Mode:** Letter Grading**ENGL 401 - First-Year Writing****Credits:** 4

Training to write more skillfully and to read with more appreciation and discernment. Frequent individual conferences for every student.

**Attributes:** Writing Skills(Discovery); Writing Intensive Course**Equivalent(s):** ENGL 401A, ENGL 401H**Grade Mode:** Letter Grading**ENGL 401A - First Year Writing for Multi-Lingual Students****Credits:** 4

A special section of first-year writing for students whose native language is not English. Training to write more skillfully and to read with more appreciation and discernment, with special attention to the challenges of non-native speakers of English. Supplemental work on listening and speaking as necessary. Frequent individual conferences for every student. Students may not take both ENGL 401 and ENGL 401A for credit.

**Attributes:** Writing Skills(Discovery); Writing Intensive Course**Equivalent(s):** ENGL 401, ENGL 401H**Grade Mode:** Letter Grading**ENGL 401H - Honors/First-Year Writing****Credits:** 4

Training to write more skillfully and to read with more appreciation and discernment. Frequent individual conferences for every student.

**Attributes:** Honors course; Writing Skills(Discovery); Writing Intensive Course**Equivalent(s):** ENGL 401, ENGL 401A**Grade Mode:** Letter Grading**ENGL 401S - Literacy Studio****Credits:** 2

Develops college-level literacy skills through scaffolded instruction, necessary for success in English 401.

**Co-requisite:** ENGL 401**Grade Mode:** Credit/Fail Grading**ENGL #402 - Introduction to Literature for International Students****Credits:** 4

The art of thoughtfully enjoying major literary works. This course is intended for students who are participating in the ESL program. Permission required from ESL Institute.

**Grade Mode:** Letter Grading**ENGL 403W - Exploring Literature****Credits:** 4

The art of thoughtfully enjoying major literary works. Writing intensive.

**Attributes:** Humanities(Disc); Writing Intensive Course**Equivalent(s):** ENGL 403**Grade Mode:** Letter Grading**ENGL 405 - Introduction to Linguistics****Credits:** 4

Overview of the study of language: universal properties of human language, Chomsky's innateness of hypothesis, language acquisition in children, dialects and language variation, language change. Includes introduction to modern grammar (phonology, syntax, semantics) and to scientific linguistic methodology. (Also offered as LING 405.)

**Attributes:** Social Science (Discovery); Inquiry (Discovery)**Equivalent(s):** ENGL 405H, ENGL 505, ENGL 505H, LING 405, LING 405H, LING 505, LING 505H**Grade Mode:** Letter Grading



**ENGL 415C - Literature and Medicine****Credits:** 4

Literary representations of medical practice are used to prompt discussion of broad issues concerning medical philosophy and medical ethics, the image of the medical professional in the media, differing conceptions of healing in various social contexts worldwide, and changes in biological science and medicine on the larger society. Ideal for students interested in: Health Care, Biomedical Sciences, Physical therapy, and Nutrition. Prereq: ENGL 401 (with a B or better). Writing intensive.

**Attributes:** Humanities(Disc); Writing Intensive Course**Equivalent(s):** ENGL 415A, ENGL 415B, ENGL #415E, ENGL 415F, ENGL 415G, ENGL 415J**Grade Mode:** Letter Grading**ENGL #415E - Literature and Cyberculture****Credits:** 4

What is "cyberculture" and how has it been portrayed in various forms of literature? This course explores the very nature of what cyberculture is, and looks at various aspects of this culture - computers, coders and hackers, online communities, cyber-commerce, digitization, e-mail, and so on. Students study how essayists, novelists, and dramatists have raised fundamental questions about the nature and effects of digitization upon our society. Ideal for students interested in: Business, Communications, and Computer Science. Prereq: ENGL 401 (with a B or better). Writing intensive.

**Attributes:** Humanities(Disc); Writing Intensive Course**Equivalent(s):** ENGL 415A, ENGL 415B, ENGL 415C, ENGL 415D, ENGL 415F, ENGL 415G, ENGL 415J**Grade Mode:** Letter Grading**ENGL 419 - How to Read Anything****Credits:** 4

Whether epic or tweet, song lyric or script, English 419 prepares you for close, detailed, and critical readings and for writing with clarity and precision. You'll discover selected prose, poetry, plays and films from across the English-speaking world throughout history. Whatever your major, this course develops skills in research, writing, and critical thinking. Prerequisite (with minimum grade of C) for declaring one of the four majors or two options offered in the English Department.

**Attributes:** Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** ENGL 419H**Grade Mode:** Letter Grading**ENGL 440A - On Race in Culture and Society****Credits:** 4

Of our special concern will be the claim that race is a culturally or socially, not biologically, constructed category. The reading list will include literary texts (Toni Morrison's "Recitatif"), works of African American comedians (Bill Cosby, Richard Pryor, Eddie Murphy, etc.), philosophical texts (Immanuel Kant, W.E.B. DuBois, K.A. Appiah, etc.) as well as some legal documents (recent U.S. Supreme Court decisions concerning affirmative action). We will also do two case studies, one on the name of Redskins and one the Whiteness Project. The general goal of the course is to improve the student's ability to speak and think critically about race and race relations in the U.S. Writing intensive.

**Attributes:** Honors course; Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 440B - Honors/Seeing is Believing: How the Copernican Revolution Changed the Way We See Ourselves****Credits:** 4

This course explores the various ways that scientists, philosophers, poets, novelists, and literary theorists have tried to reconcile what we see (or think we see) with what we know (or think we know), from the ancient past to the 21st century. Our special focus will be on how the Copernican Revolution prompted a wholesale reevaluation of perception and knowledge. We will explore how writers, artists musicians, and philosophers embraced or lamented the enormous cultural and psychological changes that the Copernican evolution helped to introduce. We also will investigate how these changes continue to shape our worldview in the 21st-century.

**Attributes:** Honors course; Humanities(Disc)**Grade Mode:** Letter Grading**ENGL #441 - On Race and Culture in Society****Credits:** 4

Of our special concern will be the claim that race is a culturally or socially, not biologically, constructed category. The reading list will include literary texts (Toni Morrison's "Recitatif"), works of African American comedians (Bill Cosby, Richard Pryor, Eddie Murphy, etc.), philosophical text (Immanuel Kant, W.E.B. DuBois, K.A. Appiah, etc) as well as some legal documents (recent U.S. Supreme Court decisions concerning affirmative action). We will also do two case studies, one on the name of the Redskins and one on the Whiteness Project. The general goal of the course is to improve the student's ability to speak and think critically about race and race relations in the U.S.

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 444D - The Irish Experience****Credits:** 4

Explores the historical causes and literary effects of emigration from Ireland to other regions in the North and South Atlantic. Considers the political and economic conditions of Ireland itself and asks how Irish identities are first formed dialectically through contact with indigenous others and then nostalgically constituted through the experience of migration. Writing intensive.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 444N - Monsters!!!****Credits:** 4

This course will introduce students to a number of critical thinking processes by examining one of the most symbolically significant human archetypes, Monsters. By engaging works of historical significance and popular texts, students will explore a familiar subject from historical, political, psychological, and literary points of view. Writing intensive.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 501 - Introduction to Creative Nonfiction****Credits:** 4

A writing course that explores types of creative nonfiction such as nature writing, the profile, the memoir, and the personal essay. Extensive reading of contemporary authors to study the sources and techniques used in creative nonfiction. Regular papers, conferences, and workshops. Prereq: ENGL 401.

**Attributes:** FinePerformingArts(Discovery); Writing Intensive Course**Equivalent(s):** ENGL 501H**Grade Mode:** Letter Grading

**ENGL 502 - Professional and Technical Writing****Credits:** 4

A writing course introducing students to the effective communication of technical information through various workplace documents including resumes, memos, business letters, reports, brochures, etc. Special emphasis on an introduction to professional conventions and genres and to the transferable skills of rhetorical and audience analysis, document design and collaborative work. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENGL 502H, ET 625**Grade Mode:** Letter Grading**ENGL 503 - Persuasive Writing****Credits:** 4

Writing of all types of persuasive nonfiction prose, including argumentative essays and position papers. Special attention to argumentative structures and analysis of audiences. Weekly papers of varying lengths and formats, frequent conferences. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 504 - Resume Writing****Credits:** 2

Write your resume now! Readings from recruiters, scholars, and managers reveal what employers want in resumes and cover letters, and what they don't want. Topics include: understanding ATS (applicant tracking systems); analyzing purpose and audience; learning cutting-edge designs; writing detailed and efficient content; tailoring your resume to the job advertisement; writing persuasive cover letters; and formatting and editing tips. Students will identify two job advertisements and write a resume and letter for each. Cr/F.

**Grade Mode:** Credit/Fail Grading**ENGL 510 - Introduction to the Digital Humanities****Credits:** 4

Digital methods can greatly intensify our understanding of literary works, non-fiction writing, film and many other modes of expression in the humanities. This course introduces students to the methods of thought, research and argumentation that digital technology makes possible. These may include identifying quantifiable language patterns, working with archival documents, mapping locations in written works, illuminating historical works, creating digital visualizations of texts, or working with translation tools and concordances. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ENGL 511 - Major Writers in English****Credits:** 4

In-depth study and discussion of a few American and/or British writers. Topics and approaches vary depending on instructors. May be repeated for credit, barring duplication of topic.

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 512 - British Literature I Age of Heroes: Beowulf to Dr. Faustus****Credits:** 4

An introduction to the earliest poetry, prose and drama in English, considered in chronological order and in historical context. Examine important literary works as the old English epic Beowulf, Chaucer's entertaining collection Canterbury Tales, the Arthurian romance Sir Gawain and the Green Knight, the devotional autobiography The Book of Margery Kempe, the sermon in dramatic form Everyman, Edmund's Spenser's chivalric saga The Faerie Queen and the sonnets of Philip Sidney and William Shakespeare. Writing intensive.

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 513W - British Literature II Age of Revolutions: Shakespeare to Austen****Credits:** 4

The English literary tradition from the Renaissance to the early Romantics spans a period of great social tumult. It includes civil war, new ideas in science, theology, and politics, and expanding British power abroad. Amidst such change flourished reinvented classical genres like the epic, satire, and stage comedy, as well as new forms like the novel, the pamphlet and the newspaper. This class provides a brisk survey of the revolutionary literature of this fascinating age.

**Attributes:** Humanities(Disc); Writing Intensive Course**Equivalent(s):** ENG 513H, ENGL 513**Grade Mode:** Letter Grading**ENGL #514 - British Literature III: Revolts, Renewals, Migrations****Credits:** 4

Encounter the Romantic fantasies of John Keats's nature poetry and Mary Shelley's Frankenstein, the Victorian novels that brought us Jane Eyre, Ebenezer Scrooge and Mr. Hyde, the experiments of Modernists like Virginia Woolf and James Joyce, and Postmodern transformations by a shifting cast of contemporaries. We'll read these works in the context of imperial expansion and contraction, the crises of world wars, and the civil rights and independence struggles of the 20th and 21st centuries.

**Attributes:** Humanities(Disc)**Equivalent(s):** ENGL 514H, ENGL 514W**Grade Mode:** Letter Grading**ENGL 514W - British Literature III: Revolts, Renewals, Migrations****Credits:** 4

Encounter the Romantic fantasies of John Keats's nature poetry and Mary Shelley's Frankenstein, the Victorian novels that brought us Jane Eyre, Ebenezer Scrooge and Mr. Hyde, the experiments of Modernists like Virginia Woolf and James Joyce, and Postmodern transformations by a shifting cast of contemporaries. We'll read these works in the context of imperial expansion and contraction, the crises of world wars, and the civil rights and independence struggles of the 20th and 21st centuries.

**Attributes:** Humanities(Disc); Writing Intensive Course**Equivalent(s):** ENGL #514, ENGL 514H**Grade Mode:** Letter Grading

**ENGL 515W - American Literature I Conquest and Nation: First Contact to the Civil War****Credits:** 4

Read texts from the English settlement of North America to the founding of the U.S. and to the national crisis of the Civil War. Encounter an astonishing range of voices in exploration accounts, sermons, captivity narratives, Native American writings, Revolutionary texts, autobiographies, fiction, nature writing, slave narratives, and poetry. The course offers students knowledge of the formative period of American literature and experience in textual analysis through reading and writing about multiple genres. Writing intensive.

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**ENGL #516 - American Literature II Money, Migration, and Modernity:****Huck Finn to Beloved****Credits:** 4

Students will discuss novels, plays, poems, and essays that address the difficult issues of national rebuilding, the temptations of a new consumer culture, the devastations of numerous wars fought overseas, and encounters with European, Jewish, Latin American, and Asian immigrants. Whether comparing nineteenth-century Huckleberry Finn with twentieth-century Beloved or making sense of modern and postmodern literary playfulness, students will become thoughtful readers and writers.

**Attributes:** Humanities(Disc)**Equivalent(s):** ENGL 516H, ENGL 516W**Grade Mode:** Letter Grading**ENGL 516W - American Literature II Money, Migration, and Modernity:****Huck Finn to Beloved****Credits:** 4

Students will discuss novels, plays, poems, and essays that address the difficult issues of national rebuilding, the temptations of a new consumer culture, the devastations of numerous wars fought overseas, and encounters with European, Jewish, Latin American, and Asian immigrants. Whether comparing nineteenth-century Huckleberry Finn with twentieth-century Beloved or making sense of modern and postmodern literary playfulness, students will become thoughtful readers and writers. Writing intensive.

**Attributes:** Humanities(Disc); Writing Intensive Course**Equivalent(s):** ENGL #516, ENGL 516H**Grade Mode:** Letter Grading**ENGL #517 - Black Creative Expression****Credits:** 4

What is African American culture? What defines it? This course surveys the diverse forms of African American creative expression, from literature and music to theatre and the visual arts Set against the historical backdrop of the slave trade, Civil War, and the black freedom movement, we will examine how writers, artists, and performers have engaged the African American experience of home and family; life and death; past and future.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** AMST 502, ENGL 517H**Grade Mode:** Letter Grading**ENGL 518W - Bible as Literature****Credits:** 4

Have you ever wanted to read the Bible to gain a better understanding of history, religion, and the arts? Do you want to be able to discuss current religious and political issues in a Biblically informed way? Or maybe you just want bragging rights. Approaching the Bible as a literary work, this course investigates the intense and complicated emotional relationship between God and humanity. For people of faith, some faith, or no faith.

**Attributes:** Humanities(Disc); Writing Intensive Course**Equivalent(s):** ENGL 518, ENGL 518H**Grade Mode:** Letter Grading**ENGL 520 - Dystopian and Post-Apocalyptic Fiction****Credits:** 4

What's behind the explosion of the dystopian and post-apocalyptic subgenres in the past decade? How do these seer-like representations of the future revisit older narrative traditions? We will discover why these prophetic forms—straddling the realms of science, politics, literature, and psychology—are at the forefront of the popular imagination. Assignments include blog posts, an op-ed, an imitative style exercise, and participation in online group chats from which you have a wide selection of times.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**ENGL 521 - Nature Writers****Credits:** 4

Literary non-fiction writings by naturalists on natural environments. The course explores questions about what is "nature" or "natural" and why are they valued? What is sought, exploited, abused, known in "nature"? What does nature writing achieve or relieve? What might it teach us as writers and planetary citizens? Is nature or nature writing raced? Gendered? Gilbert White, Henry David Thoreau, Emerson, Muir, Carson, and a diversity of others.

**Attributes:** Humanities(Disc); Writing Intensive Course**Equivalent(s):** ENGL 521H**Grade Mode:** Letter Grading**ENGL 526 - Introduction to Fiction Writing****Credits:** 4

Writing fiction asks us to say: who am I? What's happening in the world around me? Awakening to the story in your life, and thus to your own imagination, will change your life. Repeatedly, we see fiction writers find their power as creative people. You might become the head of a major corporation! You might just write a great novel or short story. Or just be happier. Join us: write stories, change your life. Prereq: ENGL 401.

**Attributes:** FinePerformingArts(Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 527 - Introduction to Poetry Writing****Credits:** 4

Writing poetry is training for life - its practice deepens both the liveliness and rigor of the mind. This course is run in a workshop/discussion format - it uses innovative exercises, guided prompts, language games, and readings that teach the basics of craft, while showing you how to think like a writer, opening up to the pleasures and surprises of the creative process. No prior experience necessary. Prereq: ENGL 401.

**Attributes:** FinePerformingArts(Discovery); Writing Intensive Course**Grade Mode:** Letter Grading

**ENGL 533 - Introduction to Film Studies****Credits:** 4

A survey of the international development of the motion picture from the silent period to the present, emphasizing film's narrative practices. Introduces students to the study of the art, history, technology, economics, and theory of cinema. Films and film makers of various nations, periods, movements, and genres examined. Mandatory weekly screenings in addition to class. Students cannot receive credit for both ENGL 533 and CMN 550.

**Attributes:** Humanities(Disc)**Equivalent(s):** CMN 550, ENGL 533H, ENGL 533W**Grade Mode:** Letter Grading**ENGL 534 - 21st Century Journalism: How the News Works****Credits:** 4

This class explores ways new technology, including social media, has affected the practice of journalism, and examines journalism past and present. Students discuss libel law, ethics and how to define plagiarism in the digital age. This survey is meant not only to lay a foundation for prospective journalists, but also to provide a broad understanding of the news media for those interested in how the news works.

**Attributes:** Environment, TechSociety(Disc)**Grade Mode:** Letter Grading**ENGL 549 - In the Groove: African American Music as Literature****Credits:** 4

This is a music appreciation course that focuses on getting students into, behind, and under "the groove" of African American music and its intellectual traditions of black pride, power, and cultural expressivity. This course will contain a broad introduction to African American music origins but it will also consider the impact of cultural contexts such as slavery and Euro-American musical influences on African American culture. Students will gain new appreciation for the multi-faceted and wide-ranging ways in which African American music is performed how this music has helped unite one nation under its soulful groove.

**Attributes:** FinePerformingArts(Discovery)**Grade Mode:** Letter Grading**ENGL 550 - Introduction to the Literature and Culture of Race****Credits:** 4

This course introduces students to readings across the field of ethnic literature and culture in order to form their capacity to speak and think critically about race relations in America. Readings will include those in race theory, racial construction and authenticity, histories of raced subjects in America, the rise of ethnic studies, white ignorance and whiteness studies, the intersectionality of race with gender, sexual orientation, economic class, religion, and faith. Includes Asian American, African American, Native, and Latino/a literature.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ENGL 555 - Science Fiction****Credits:** 4

This course examines stories, novels, and film from the popular genre of science fiction. A variety of literary critical approaches are deployed to discuss a number of key authors and texts from the nineteenth century to the present.

**Attributes:** Humanities(Disc)**Equivalent(s):** ENGL 555H**Grade Mode:** Letter Grading**ENGL 560 - Introduction to Latinx Literature and Culture****Credits:** 4

This course introduces students to the field of Latinx literature and culture in order to develop the ability to speak and think critically about race relations in the USA. Course readings will be drawn from texts produced primarily in English by individuals of Latin American descent. Readings may include immigration and borderlands discourse, art, music, television and film, histories of Latinx subjects in America, and the intersectionality of race with gender, sexual orientation, economic class and religion. Writing intensive.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 565 - Literary Dublin: Short-Term Study Abroad****Credits:** 4

In this short-term study abroad experience, students will gain an appreciation of Ireland's many challenges of self- and other identity related to its location, conquest, colonization, emigration, religions, and recent global immigration. Contemporary course selections reference people (including Irish Americans) and events brought to life on site in Dublin. The course includes UNH guest speakers from English, history, and anthropology; Dublin-based speakers when available. Offers Irish American students research into their genealogy. Students must have a 3.25 GPA and 32 credits. Special Fee.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**ENGL 575 - Sex and Sensibility: The Rise of Chick Lit****Credits:** 4

This course examines the courtship novel, with an emphasis on female protagonists. How have various writers addressed the institution of marriage and long-term commitment, and the role finances play in partner choice? We'll start with the novels of Jane Austen and move to contemporary "chick lit", the latest incarnation of the romantic quest narrative, in order to understand this genre's continuing popularity. Assignments include blogs, online chats, research essays, and creative writing opportunities.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**ENGL 581 - Reading the Postcolonial Experience****Credits:** 4

Modern South Asia and Africa have been shaped by their history of colonization. What is it like to live in places once dominated by foreigners, then reshaped by nationalisms and various injustices intensified by globalization? In this course, we'll read literary depictions that illuminate the lives, dreams, joys, hates, and failures of individuals and groups in these places, exploring both ordinary life and extraordinary experiences created by dispossession, political tyranny, civil war, and environmental trauma.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Equivalent(s):** ENGL 581H**Grade Mode:** Letter Grading

**ENGL 585 - Introduction to Women in Literature****Credits:** 4

The goal of this course is to examine women's roles in literary traditions, including women as authors and women as characters. We interrogate categories of sex, gender, and sexuality as they intersect with other categories of identity including race, class, and nation. Specific topics differ each semester according to the individual instructor. Recent semesters have included "Jewish Women Writers" and "Female Authors of the Mystery Novel". May be repeated for credit, barring duplication of topic.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ENGL 585H, ENGL 585R**Grade Mode:** Letter Grading**ENGL 585R - Introduction to Women in Literature****Credits:** 4

The goal of this course is to examine women's roles in literary traditions, including women as authors and women as characters. We interrogate categories of sex, gender, and sexuality as they intersect with other categories of identity including race, class, and nation. Specific topics differ each semester according to the individual instructor. Recent semesters have included "Jewish Women Writers" and "Female Authors of the Mystery Novel". May be repeated for credit, barring duplication of topic.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ENGL 585**Grade Mode:** Letter Grading**ENGL 595 - Literary Topics****Credits:** 4

Investigate in depth a literary topic of particular interest, in a course specially designed for both majors and non-majors. Themes vary from semester to semester—recent topics include the contemporary short story, Irish literature, animals in literature, and the literature of the Vietnam War. See the English Department for details of current offerings. May be repeated for credit, barring duplication of topic.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ENGL 595H, ENGL 595W**Grade Mode:** Letter Grading**ENGL 600 - English for International Students****Credits:** 1-4

Designed for international students to provide additional support in course work. Students continue to develop skills in listening comprehension, speaking, reading, and writing in English. No letter grades. Prereq: permission from ESL Institute. Cr/F. Writing intensive. Credits received for this course can help satisfy the requirements for student visa, but they will normally not count towards a graduate degree. Students are encouraged to check with their individual academic advisors.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Credit/Fail Grading**ENGL 602 - Advanced Professional and Technical Writing****Credits:** 4

An advanced writing course focusing on writing in a global and technological workplace. In addition to fluency in the documents of the workplace, students focus on visual rhetoric in a technological environment through web design and usability while studying the issues of globalism, ethics, and the environment that affect all professional writing today.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 605 - Intermediate Linguistic Analysis****Credits:** 4

Introduces analysis methods and problem solving in phonology, morphology, and syntax using data from many languages. Emphasis will be both practical (learning how to describe the grammar and sound system of a language) and theoretical (understanding languages' behavior). Prereq: ENGL 405/LING 405, or permission. (Also offered as LING 605.)

**Equivalent(s):** LING 605**Grade Mode:** Letter Grading**ENGL 606 - Languages of the World****Credits:** 4

A survey of the languages of the world from genetic, areal, and typological perspectives. Students learn about the geographic and demographic distribution of language families and language isolates, as well as about structural characteristics of languages, language families and language areas. Additional topics include language endangerment and the question of linguistic universals. Students work collaboratively on a project investigating a particular language family, giving in class presentations and writing up a final project report. Some prior knowledge of phonetics, phonology, morphology, and syntax is necessary. Prereq: ENGL 605/LING 605 or ENGL 405/LING 405 and permission of the instructor.

**Equivalent(s):** LING 606**Grade Mode:** Letter Grading**ENGL 609 - Ethnicity in America: The African American Experience in the 20th Century****Credits:** 4

Investigation of the music, literature, and social history of African American America in the period of the Harlem Renaissance, in the Great Depression, World War II, and in the 1960s. Special attention to the theme of accommodation with and rejection of dominant white culture.

**Attributes:** Writing Intensive Course**Equivalent(s):** AMST 609, HUMA 609**Grade Mode:** Letter Grading



**ENGL 616A - Studies in Film/Genre****Credits:** 4

Advanced, focused study of the narrative, dramatic, and poetic practices of cinema, within one of four possible subject areas: A) Genre; B) Authorship; C) Culture and Ideology; D) Narrative and Style. Precise issues and methods may vary, ranging from general and specific considerations of how a given subject area involves film theory, criticism, and history, to its use in diverse analyses of selected national cinemas, periods, movements, and filmmakers. May be repeated for credit barring duplication of topic. Barring duplication of material taken for credit in CMN 650, course may be repeated for credit. Detailed course descriptions available in the English department office.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** AMST 605, ENGL 616**Grade Mode:** Letter Grading**ENGL 616B - Studies in Film/Authorship****Credits:** 4

Advanced, focused study of the narrative, dramatic, and poetic practices of cinema, within one of four possible subject areas: A) Genre; B) Authorship; C) Culture and Ideology; D) Narrative and Style. Precise issues and methods may vary, ranging from general and specific considerations of how a given subject area involves film theory, criticism, and history, to its use in diverse analyses of selected national cinemas, periods, movements, and filmmakers. May be repeated for credit barring duplication of topic. Barring duplication of material taken for credit in CMN 650, course may be repeated for credit. Detailed course descriptions available in the English department office.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** AMST 605, ENGL 616**Grade Mode:** Letter Grading**ENGL 616C - Studies in Film/Culture and Ideology****Credits:** 4

Advanced, focused study of the narrative, dramatic, and poetic practices of cinema, within one of four possible subject areas: A) Genre; B) Authorship; C) Culture and Ideology; D) Narrative and Style. Precise issues and methods may vary, ranging from general and specific considerations of how a given subject area involves film theory, criticism, and history, to its use in diverse analyses of selected national cinemas, periods, movements, and filmmakers. May be repeated for credit barring duplication of topic. Barring duplication of material taken for credit in CMN 650, course may be repeated for credit. Detailed course descriptions available in the English department office.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** AMST 605, ENGL 616**Grade Mode:** Letter Grading**ENGL 616D - Studies in Film/Narrative and Style****Credits:** 4

Advanced, focused study of the narrative, dramatic, and poetic practices of cinema, within one of four possible subject areas: A) Genre; B) Authorship; C) Culture and Ideology; D) Narrative and Style. Precise issues and methods may vary, ranging from general and specific considerations of how a given subject area involves film theory, criticism, and history, to its use in diverse analyses of selected national cinemas, periods, movements, and filmmakers. May be repeated for credit barring duplication of topic. Barring duplication of material taken for credit in CMN 650, course may be repeated for credit. Detailed course descriptions available in the English department office.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** AMST 605, ENGL 616**Grade Mode:** Letter Grading**ENGL 618 - Film Theory****Credits:** 4

Examines basic theories of film and their relationship to the practice of close analysis of film. Theories are meant to provide students with a vocabulary for critical analysis and stress the many ways of seeing film.

**Grade Mode:** Letter Grading**ENGL 620 - English Major Internship****Credits:** 1-4

Open to all English majors. Internships allow students to use skills learned in the major in a supervised work setting. In addition to the job experience, the English major internship requires research and writing assignments overseen by a faculty sponsor. These supplementary assignments must be outlined in a written proposal describing the work involved in the internship and how it relates to the student's academic training. Registration requires permission from the employer, faculty sponsor, major advisor, and department chairperson. The employer must be an established organization approved by Career Services. This course does not count toward the English major or substitute for English 720, the Journalism Internship. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ENGL 621 - Newsriting****Credits:** 4

Students get a strong journalistic foundation with hands-on experience reporting and writing compelling news stories for print and digital platforms. Skills taught include finding news stories and tracking down sources; conducting interviews and verifying facts; and drafting and revising stories. Prereq: ENGL 401, ENGL 534 and permission of the instructor. ENGL 621 may be taken more than once for credit with the approval of the Journalism Program Director, up to a maximum of 8.00 credits. Students must fill out a Permission to Repeat an English Course For Credit form, available in the department office.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

**ENGL 623 - Creative Nonfiction****Credits:** 4

Intensive writing course emphasizing the blend of basic elements that constitute creative nonfiction: research, observation, and personal experience. Also readings and discussion of some of the best published creative nonfiction. Prereq: ENGL 501, 526, 527 or permission of the instructor. May be taken more than once for credit, recommended with two different instructors.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ENGL 625 - Intermediate Fiction Writing Workshop****Credits:** 4

Students continue to explore the aspects of fiction writing. Through short exercises students learn to create visual scenes, integrate exposition with dramatic scene, and construct convincing characters in believable situations. We'll continue to explore the basic elements of what makes a short story, such as point of view, dialogue, dramatization, voice, meaning, language. Students write short stories and significantly revise them.

Through discussion of student writing in a workshop format, as well as reading and responding to short stories by published authors, we'll address the questions: What is a short story? How do we create a world in which the reader is fully involved? Where does the story evoke emotion or meaning? Prereq: ENGL 501, 526, 527 or permission of the instructor.

ENGL 625 may be taken more than once for credit, recommended with two different instructors.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ENGL 625A - Intermediate Fiction Writing Workshop: Screenwriting****Credits:** 4

In this course, intermediate creative writers will learn the craft of writing scripts for film and television. Students will continue to explore the elements of effective storytelling by writing and significantly revising loglines, outlines, and complete short screenplays. The course will combine in-depth analysis of classic and contemporary screenplays (including shorts, teleplays, and feature-length films) with lectures, writing exercises, and peer workshops. Topics will include dramatic structure, professional formatting and planning, and how to develop vividly compelling characters, scenes, conflict and dialogue. The aim of the course will not be to simply reinforce existing narrative principles but rather to test the validity of existing conventions. Throughout we will address the questions: What makes a story relevant, moving, thrilling, or meaningful? Why does this story need to be told visually? What makes a great script great? Prereq: ENGL 501, ENGL 526 or ENGL 527 or Permission of the Instructor. Course may be repeated up to a maximum of 8 credits.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ENGL 627 - Intermediate Poetry Writing Workshop****Credits:** 4

Workshop discussion of poems written by students, with focus on more complex techniques and forms. Individual conferences with instructor. Prereq: ENGL 501, 526, 527 or permission of the instructor. ENGL 627 may be taken more than once for credit, recommended with two different instructors.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ENGL 631 - Digital Reporting****Credits:** 4

This course immerses students in the digital news landscape and teaches them to report across multiple platforms. Students learn reporting tools and strategies for producing dynamic digital journalism. Prereq: ENGL 534, ENGL 621 with a 'B' or better and written permission of the instructor. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENGL 531**Grade Mode:** Letter Grading**ENGL 636 - Literature and the Environment****Credits:** 4

How do writers represent the environment? What's at stake in those depictions? Includes both literary and critical readings. Topics may vary and engage different historical periods: women and environmental justice, the urban environment, postcolonial environmental writers. Interdisciplinary perspectives (drawn from history, geography, visual arts, media studies, etc.) may inform the discussion of the readings. May be repeated for credit, barring duplication of topic.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ENGL 650 - I Hear America Singing: Studying American Literature and Culture****Credits:** 4

Examine unique themes, theories, and works of art in American Studies that are not offered on a regular basis. This course explores the intersection of literature and medicine; as well as comics and graphic narrative; music and social protest, photography and nonfiction; the literature of Stonewall. Learn how to approach the proposed subject, its specialized vocabulary, history and politics in its pages, and its value for the contemporary moment. May be repeated for credit, barring duplication of topic.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** AMST 603, ENGL 650R**Grade Mode:** Letter Grading**ENGL 650R - I Hear America Singing: Studying American Literature and Culture****Credits:** 4

Examine unique themes, theories, and works of art in American Studies that are not offered on a regular basis. This course explores the intersection of literature and medicine; as well as comics and graphic narrative; music and social protest, photography and nonfiction; the literature of Stonewall. Learn how to approach the proposed subject, its specialized vocabulary, history and politics in its pages, and its value for the contemporary moment. May be repeated for credit, barring duplication of topic.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** AMST 603, ENGL 650**Grade Mode:** Letter Grading

**ENGL 655 - Reading in all Directions: Comics and Graphic Narrative**  
**Credits: 4**

"Reading happens in all directions," says Hilary Chute about the study of comics and graphic narrative. In this course, students will learn to read images and texts from all directions: up, down, horizontally, vertically, across panels and jacket flaps, in seriality and on the internet. Comics' ability to represent both trauma and the trivial takes students from newspaper funnies to the Holocaust, from superheroes in mid-century floppies to Underground comix and current autobiographical comics, comics journalism, comics history, and fiction.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

**ENGL 657 - Shakespeare**

**Credits: 4**

An introduction to the main periods of Shakespeare's playwriting career, addressing representative works from each of the genres in which he wrote (tragedy, comedy, history, romance). We will discuss such matters as a Renaissance theater architecture and performance conventions, Shakespeare's poetic language, the representation of women, commoners and minorities on stage, royal power and court politics, love, sex, religion, and revenge. Live and filmed performances will be included as available. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course

**Equivalent(s):** ENGL 657H

**Grade Mode:** Letter Grading

**ENGL 681 - Contemporary African Literature**

**Credits: 4**

What was the first African novel in English? Should African writers write in the language of erstwhile colonizers? What is literature's function in corrupt autocracies? What was theatre like under apartheid? Who are the New South Africa's major writers? We'll explore answers to these and many other questions. Marked by colonial history and cultural exchanges between Africans, Arabs, Europeans and Asians, postcolonial African literature will challenge your understanding of Africa and of literature itself.

**Attributes:** Writing Intensive Course

**Grade Mode:** Letter Grading

**ENGL 690 - African American Literature**

**Credits: 4**

Whether in poetry and prose, or fiction and nonfiction, what issues have occupied African American writers and readers? What joy do these writers and readers derive from the written word and oral tradition? Motivated by these questions, this class traces the origins of an African American literary tradition in British North America; charts the circulation of ideas about democracy and citizenship in the nineteenth-century United States; and maps ongoing debates about race and representation today.

**Attributes:** Writing Intensive Course

**Grade Mode:** Letter Grading

**ENGL 693 - Special Topics in Literature**

**Credits: 4**

A) Old English Literature, B) Medieval Literature, C) 16th Century, D) 17th Century, E) 18th Century, F) English Romantic Period, G) Victorian Period, H) 20th Century, I) Drama, J) Novel, K) Poetry, L) Nonfiction, M) American Literature, N) A Literary Problem, O) Literature of the Renaissance, R) Race and Racial Theories. The precise topics and methods of each section vary. Barring duplication of subject, course may be repeated for credit. For details, see course descriptions available in the English department. (Not offered every year.) Special fee on some topics. Writing intensive.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated up to 2 times.

**Grade Mode:** Letter Grading

**ENGL 693R - Special Topics in Literature**

**Credits: 4**

A) Old English Literature, B) Medieval Literature, C) 16th Century, D) 17th Century, E) 18th Century, F) English Romantic Period, G) Victorian Period, H) 20th Century, I) Drama, J) Novel, K) Poetry, L) Nonfiction, M) American Literature, N) A Literary Problem, O) Literature of the Renaissance, R) Race and Racial Theories. The precise topics and methods of each section vary. Barring duplication of subject, course may be repeated for credit. For details, see course descriptions available in the English department. (Not offered every year.) Special fee on some topics.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Equivalent(s):** ENGL 693

**Grade Mode:** Letter Grading

**ENGL 694 - Special Topics in Creative Writing**

**Credits: 4**

Courses offered under this number feature a variety of topics having to do with creative writing. Barring duplication of subject, course may be repeated for credit. For details, see the course descriptions available in the English Department.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

**ENGL 701 - Advanced Fiction Writing Workshop**

**Credits: 4**

Students come to this course with a firm grasp of all the elements of fiction, ready to write short stories that construct convincing characters in believable situations. In a workshop format, students give and receive critiques on classmates' work. Significant revisions of short stories and thorough discussions of work by published authors will round out the course as students continue to explore the art of writing the short story. Students are responsible for leading discussion of published stories. Prereq: ENGL 625 with a grade of B or better. ENGL 701 may be taken more than once for credit, recommended with two different instructors.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

**ENGL 703T - Travel Writing****Credits:** 4

A workshop devoted to reading and writing and writing narratives of place. Travel writing requires the author to research and reflect, exploring both the external—the place—and the internal—the author's experience. Students write multiple travel pieces and read widely essays of place by writers such as John Steinbeck, Joan Didion, Pico Iyer and Eliza Griswold. Permission of instructor required. Prereq: ENGL 501, ENGL 621 or ENGL 623.

**Co-requisite:** INCO 589**Attributes:** Writing Intensive Course**Equivalent(s):** ENGL 703**Grade Mode:** Letter Grading**ENGL 710 - Teaching Writing****Credits:** 4

This course will introduce you both to the theories and practices of teaching writing in middle and high school at a time of increased accountability. The course is designed for students who are interested in exploring teaching as a possible career. In the course we will try out varied literacy activities and study teaching writing using a process approach. We discuss different approaches to planning instruction and various forms of writing assessment, including state-wide tests. Open to juniors and seniors only. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 711 - Editing****Credits:** 4

Survey of newspaper and news website editing, covering topics ranging from grammar and style to headline writing to ethics. Prereq: ENGL 621 with a minimum grade of B and written permission of instructor.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 712 - Multimedia Storytelling****Credits:** 4

In this course, students explore the theory and practice of visual storytelling – including composition, lighting, editing and more – to produce short yet vibrant journalistic video documentaries. Students learn to shoot and edit audio and video. They explore narrative techniques and structure. They broaden their reportorial range, bringing visual sensitivity to storytelling. Prereq: ENGL 621 and ENGL 631 and permission of the instructor.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 714 - Critical Skills****Credits:** 4

This course provides training in critical analysis of various texts (literature, film, and media). Criticism is often applied to the hot-button issues of the day. We ask questions like: How does gender shape the way we read? How to interpret texts in a globalized world? Does the truth matter? This course satisfies a post-1800 literature requirement for English Department majors; may be taken for elective credit by English Teaching Majors. Prereq: ENGL 419 or equivalent.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENGL 617**Grade Mode:** Letter Grading**ENGL 715 - Teaching English as a Second Language: Theory and Methods****Credits:** 4

A course on the linguistic, psychological, and sociological theories that inform our understanding of language acquisition and current best practices in the teaching of ESOL. Provides an overview of first and second language acquisition, bilingualism, learner individual differences (e.g., age, motivation, aptitude, learning strategies), and sociocultural contexts of ESL teaching and learning.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 716 - Curriculum, Materials and Assessment in English as a Second Language****Credits:** 4

A hands-on approach to developing curriculum and course material for teaching English as a Second Language. Students work on lesson plan development (needs analysis, objective writing, task sequencing, assessment of proficiency and objective), conduct ESL classroom observations, and engage in teaching demonstrations.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 717 - Languages in Contact****Credits:** 4

This course will explore topics related to languages in contact, including borrowing, code-switching, second language acquisition, bilingual mixed languages, language shift and maintenance, pidgins and creoles, and the linguistic and social factors which play a role in language contact. Prereq: ENGL 405 or LING 405 or permission of instructor.

**Attributes:** Writing Intensive Course**Equivalent(s):** LING 717**Grade Mode:** Letter Grading**ENGL 718 - Morphology****Credits:** 4

Morphology is the study of word formation and the mental lexicon. This course explores processes of derivation, compounding and inflection that allow us to form new words. Students will become proficient in analyzing word formation processes in English and other languages, including deploying terminology used by morphologists. Students will learn and practice the conversations of "writing like a linguist". Prereq: ENGL 405 or LING 405.

**Attributes:** Writing Intensive Course**Equivalent(s):** LING 718**Grade Mode:** Letter Grading**ENGL 719 - Sociolinguistics Survey****Credits:** 4

How language varies according to the characteristics of its speakers: age, sex, ethnicity, attitude, time, and class. Quantitative analysis methods; relationship to theoretical linguistics. Focus is on English, but some other languages are examined. Prereq: ENGL or LING 405 (previously numbered 505) or permission.

**Equivalent(s):** LING 719**Grade Mode:** Letter Grading**ENGL 720 - Journalism Internship****Credits:** 1-16

Students intending to pursue careers in journalism spend a semester working full or part time, reporting and writing, editing or producing content for a news organization. Pre-req: ENGL 621 with a B or better, ENGL 631 and permission of the ENGL 631 instructor.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**ENGL 721 - Advanced Reporting****Credits:** 4

While the theme of this course is teaching students advanced techniques of writing and reporting, each semester the course is offered it focuses on different areas of journalism. One semester, students may learn multimedia reporting - storytelling across multiple platforms, including video and audio - and in other semesters the course may focus on sportswriting. Yet in others, students will develop their news reporting skills. The course may be taken multiple times for credit with the approval of the Journalism Program Director. Prereq: 'B' or better in ENGL 621 and written permission of instructor.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**ENGL 722 - Feature Writing****Credits:** 4

An intermediate workshop that asks students to report in greater depth and experiment with different storytelling methods. Prereq: B or better in ENGL 621 and permission of the instructor.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 723 - Issues in Journalism****Credits:** 4

This upper-level seminar focuses on the shifts in technology and public perception that are changing the definition of excellence in journalism. Special attention to legal and ethical issues reshaping journalism's public service role. Prereq: Grade of B in ENGL 621 and written permission. May be repeated once for credit with permission of the journalism director.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ENGL 725 - Seminar in English Teaching****Credits:** 4

In this seminar on teaching English at the middle- and secondary-school levels, students meet the requirements for both English 710, Teaching Writing and English 792, Teaching Secondary School English. The two-semester course integrates the teaching of reading, writing, speaking, and listening, addressing both theoretical and practical issues. Through the study of different approaches, students develop their own philosophies of instruction. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 725L - Seminar in English Teaching: Lab****Credits:** 2

Classroom and research lab experiences give English Teaching majors enrolled in the Seminar in English Teaching opportunities to put their pedagogical and theoretical readings into practice and grow as teachers. This Lab should be taken simultaneously with ENGL 725. Students must have JR or SR status at the start of the course. Permission of instructor required.

**Co-requisite:** ENGL 725**Equivalent(s):** ENGL 810S**Grade Mode:** Credit/Fail Grading**ENGL 726 - Seminar in English Teaching****Credits:** 4

In this seminar on teaching English at the middle- and secondary-school levels, students meet the requirements for both English 710, Teaching Writing and English 792, Teaching Secondary School English. The two-semester course integrates the teaching of reading, writing, speaking, and listening, addressing both theoretical and practical issues. Through the study of different approaches, students develop their own philosophies of instruction. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 726L - Sem in English Teaching: Lab****Credits:** 2

Classroom and research lab experiences give English Teaching majors enrolled in the Seminar in English Teaching opportunities to put their pedagogical and theoretical readings into practice and grow as teachers. This lab should be taken simultaneously with ENGL 726. Students must have JR or SR status at the start of the course. Permission of instructor required.

**Co-requisite:** ENGL 726**Equivalent(s):** ENGL 892S**Grade Mode:** Credit/Fail Grading**ENGL 727 - Issues in Second Language Writing****Credits:** 4

Study of various issues in second language writing theory, research, instruction and administration. Topics include the characteristics and needs of second language writers, second language writing processes, contrastive rhetoric, grammar instruction, teacher and peer feedback, assessment, course design and placement. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 728 - Language and Gender****Credits:** 4

This course will explore a variety of topics around the theme of language and gender, including the relationship between gender, language and power; the linguistic marking of gender; how people use language to construct and perform their gender; how gender intersects with other facets of identity, including sexuality and race and ethnicity. Prereq: ENGL 405/LING 405, or WS 401, or WS 405, or permission of instructor.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 729 - Special Topics in Composition Studies****Credits:** 4

Advanced course on a topic chosen by the instructor. Precise topics and methods of each section vary. Possible topics include alternative discourses and rhetorics, contrastive rhetoric, electronic discourse and digital rhetoric, women's rhetorics and feminist pedagogies, Montaigne and the essay tradition, theories of literacy, theories of persuasive writing, theories of transactional writing, and written discourse analysis. Barring duplication of subject, may be repeated for credit. For details see descriptions available in the English Department. Writing intensive when topic is studies in rhetoric and composition.

**Grade Mode:** Letter Grading



**ENGL #730 - Practicum in Teaching English and the Language Arts****Credits:** 1-6

A site-based course for practicing teachers that features in-class observations and demonstrations, individual consultation, and group meetings in the schools. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ENGL 921**Grade Mode:** Letter Grading**ENGL 735 - Entrepreneurial Journalism****Credits:** 4

This course teaches journalism students to think like business people so they can compete in the exploding world of online publishing. Students work on ways to monetize good journalism practices by studying opportunities available and applying what they learn to a publishing project. Those who prefer print will find the course valuable as they learn to balance business objectives with quality journalism. Prereq: ENGL 621 with a B or better and written permission of the instructor. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 736 - Environmental Theory****Credits:** 4

Theoretical approaches to nature writing. Topics vary but may include eco-memoirs, environmental rhetoric, native peoples and the land, land and national identity, animals in literature, and environmental activist non-fiction. May be repeated for credit if topic differs.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ENGL 738 - Asian American Studies****Credits:** 4

Are you captivated by the stories, histories and experiences of Asian Americans? Do you want to learn about their cultures, struggles, and accomplishments? This course examines the variety and complexity of Asian Americans through literature, poetry, film, essays, photography, music, and web-based presences. Specific course topics, as arranged by the instructor, include the Japanese American internment, the literature of popular culture of the Vietnam War, Asian American graphic narratives, transnational adoption, and food and culture. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Equivalent(s):** AMST 615**Grade Mode:** Letter Grading**ENGL 739 - American Indian Literature****Credits:** 4

Close study of traditional and/or contemporary American Indian literature and folklore with historical and cultural background. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL #741 - Early American Literature: Colonialism, Revolution, Nation****Credits:** 4

English writings from settlement through the early U.S. (up to 1800): the literature of exploration, conquest, and cross-cultural contact; Puritan sermons, poetry, and a trial; captivity narratives; Native American writings; Enlightenment-era autobiographies, slave narratives, political writing, and fiction. These texts raise crucial issues: religion and violence; settler colonialism; New World race and gender constructions; and the social/textual constructions of nationhood. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 743R - American Literature, 1865-1915: The Birth of the American Empire****Credits:** 4

The term millionaire; battles over citizenship; advocating for anarchism; mail order stores; yellow journalism; scientific revolutions; radical new art forms; war abroad and protests at home--and the invention of both the ice-cream cone and intercollegiate athletics: how did writers respond to and shape this tumultuous period in American history? Fiction, nonfiction, poetry; both individual works and historical and critical background.

Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENGL 743**Grade Mode:** Letter Grading**ENGL 745 - Contemporary American Literature****Credits:** 4

Mark Twain supposedly said, "reports of my death have been greatly exaggerated." So too, American literature. In an era of globalization, what is American? In a digital era, what is literature? Nonetheless, American literature thrives, and American writers continue to produce work that inspires and challenges, exposes and explores, both the most pervasive aspects of modern life and its most isolated corners. Fiction, nonfiction, poetry; individual works and historical and critical background. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 749R - Major American Authors****Credits:** 4

How does a writer come to embody a particular moment? This course answers the question by focusing on an individual or community of writers: their work to be sure, but also their biographies; the historical context for the work; the cultural moment in which they participated; and the innovations they brought to their craft. May be repeated for credit, barring duplication of topic. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ENGL 749**Grade Mode:** Letter Grading**ENGL 751 - Medieval Romance****Credits:** 4

This course provides an overview of one of the most unique genres of medieval literature: the romantic epic. From brave knights and marvelous wizards to cunning queens and hungry dragons, the literature of this class gives a fascinating introduction to the imaginative potential of the medieval world. This course also emphasizes how entertainment overlapped with ethical crisis, as romance reinforces social norms of gender and sex, race and religion. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 752 - History of the English Language****Credits:** 4

Evolution of English from the Anglo-Saxon period to the present day. Relations between linguistic change and literary style. (Not offered every year.) Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 753 - Old English****Credits:** 4

Introduction to Old English language and literature through the reading of selected poetry and prose. Prereq: ENGL 401.

**Grade Mode:** Letter Grading

**ENGL 756 - Chaucer****Credits:** 4

Geoffrey Chaucer is one of the most famous poets in the English language - but why? This course offers students an overview of Chaucer's poetry, spending particular time on his masterpiece, "The Canterbury Tales". Sometimes tragic, sometimes bawdy, and almost always humorous, Chaucer's poetry offers a glimpse of a world long-lost, while simultaneously forcing us to ask hard questions about justice, love, and the nature of human creation. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 758 - Advanced Shakespeare****Credits:** 4

This course offers an in-depth look at a few Shakespeare plays, which you'll study intensively through the lens of a single topic. Topics vary from semester to semester. Recent examples include Shakespeare on Screen, Shakespeare and Race, Shakespeare's History Plays, Unknown Shakespeare, and Shakespearean Tragedy. Live and filmed performances will be included as available. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 758R - Advanced Shakespeare****Credits:** 4

This course offers an in-depth look at a few Shakespeare plays, which you'll study intensively through the lens of a single topic. Topics vary from semester to semester. Recent examples include Shakespeare on Screen, Shakespeare and Race, Shakespeare's History Plays, Unknown Shakespeare, and Shakespearean Tragedy. Live and filmed performances will be included as available. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENGL 758**Grade Mode:** Letter Grading**ENGL 759 - Milton****Credits:** 4

Readings include a wide selection of Milton's poetry and prose with a special focus on "Paradise Lost". Milton's writings contain arguments regarding free will, tyranny, and slavery that inform modern conceptions of civil liberty, republican government, and free speech. In the US Benjamin Franklin, Thomas Jefferson, John Adams and other early framers credit "Paradise Lost" as having shaped their ideas of religious and civil liberty in a democratic republic. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 767 - Literature of the Restoration and Early 18th Century****Credits:** 4

The English "Restoration" (roughly 1660-1688) was a comparatively free-spirited time following a decade of dogmatic and intolerant evangelical Christian rule. This course studies a variety of literary genres and academic disciplines, the opening of theaters and women performing on stage for the first time, the beginnings of the media, and the rise of scientific Enlightenment. Works by John Dryden, Aphra Behn, Jonathan Swift, and others. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 768 - Literature of the Later 18th Century****Credits:** 4

Examines the economic, religious, and political preconditions necessary for the development of imperial Britain while analyzing how the material conditions of slavery and colonialism effectively underwrote the new British identity and literary world of the period. Explores the tension between reason and emotion characteristic of the Enlightenment. Works by Jane Austen, Olaudah Equiano, Mary Wollstonecraft, William Blake, Adam Smith, Edmund Burke, Thomas Paine, and others. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 773 - Literary Modernisms: Return, Revolt, Recycle****Credits:** 4

This course focuses on modernist writers such as T.S. Eliot, who sought to revitalize modern culture by looking backward to the past; Virginia Woolf, who experimented with the form of the novel; and performance artist Kabe Wilson, who recycles texts of high modernism. We explore modernist literature in its geopolitical contexts with special attention to imperial expansion and contraction, the rise of fascism, world wars, and struggles for suffrage, and national belonging. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 774R - Modern & Contemporary British Literature: New Departures****Credits:** 4

This course celebrates the growing diversity of British literature over the past half century. These years witnessed the final breakup of the British empire, a civil war in Northern Ireland, the rise of Scottish nationalism, and an influx of immigrants from former colonies worldwide. Beginning with the "little Englander" attitudes of the postwar era, we will explore the emergence of postmodern and postcolonial Britain in fiction, graphic narrative, poetry, drama, film and performance. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENGL 774**Grade Mode:** Letter Grading**ENGL 775 - Modern Irish Literature: A Changing Landscape****Credits:** 4

In this course we will explore Irish literature and culture from the Celtic Renaissance in the early twentieth century to the Celtic Tiger of the early twenty-first. Readings will trace Ireland's transformation from an inward-looking agricultural nation to one of the most globalized countries in the world. Recurring themes will include the status of the Church, changing gender roles, sectarian conflict, and Ireland's relation to the world. Prereq: ENGL 401.

**Grade Mode:** Letter Grading**ENGL 777 - The English Novel in the World****Credits:** 4

Novels written in English from Asia and Africa during the mid-twentieth century to the present day. We will discuss shifts from realism to magical realism and back; domestic, historical and speculative fiction; narratives of the rise of new nations and nationalism; experiences of exile and migration; the 'global' city; transnational cultural exchanges and networks that dismantle assumed civilizational boundaries. Newer novels offer opportunities to understand how literary narratives grasp ecological destruction, animal extinction, and human responsibility.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**ENGL 778 - Race and Gender in Film and Popular Culture****Credits:** 4

This course explores representations of race and gender in American cinema and popular culture and features weekly readings in contemporary race and gender theories. Topics include the black women's gaze; woman as object; the action hero and hyper-masculinity; hybridity; race/ethnicity and hypersexuality; the crisis of white masculinity; white privilege; sexual orientation; transsexual and transgender performance. This course is reading and Canvas intensive, requiring weekly writing assignments and papers. It is NOT writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 779 - Linguistic Field Methods****Credits:** 4

Study of a non-Indo-European language by eliciting examples from an informant, rather than from written descriptions of the language. Students learn how to figure out the grammar of a language from raw data. Prereq: ENGL 405/LING 405. (Also offered as LING 779). (Not offered every semester).

**Attributes:** Writing Intensive Course**Equivalent(s):** LING 779**Grade Mode:** Letter Grading**ENGL 780 - Drama of Shakespeare's Contemporaries: Will and Company****Credits:** 4

Who were Shakespeare's contemporaries in the London theater, his models and mentors, his competitors, compatriots and rivals? Read the plays of those who inspired, fought with, befriended, and followed Shakespeare in one of the great eras of English literature. We'll discuss the development of revenge tragedy, histories and comedy, new styles of acting and theater buildings, presentations of court intrigue, the representation of women and "others", and the changing mores of early London. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 782 - Modern and Contemporary Drama****Credits:** 4

An overview of the best writing for the modern stage. We'll survey developments in theater in the past 100 years, sampling such genres as absurdist drama, psychological gothic, "in yer face" theatre, theater that incorporates new media, and work by women, African-American, Latinx, gay and immigrant writers. We'll discuss the changing role of theater in society, identity politics onstage and off, and shock, sex and violence as dramatic techniques. Live and filmed performances as available. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 783 - English Novel of the Eighteenth Century****Credits:** 4

The eighteenth-century was the period in which the English made the novel, a hitherto European genre, into their own. Finance, slavery, colonialism, war, and the development of the printing press created the media environment in which this genre could thrive, and women authors quickly came to dominate it. Themes include money and marriage, abolition of slavery, and human sympathy. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL #784 - English Novel of the 19th Century****Credits:** 4

The highly popular novels of nineteenth-century Britain produced such memorable characters as Sherlock Holmes, Count Dracula, Alice in Wonderland, Frankenstein's monster, and Dr. Jekyll. The novel's literary engagements with science, love, and the city are entangled with cultural discourses on animals, monstrosity, supernaturalism, degeneration, empire, race, and crime. In this course, students will sample a set of novels that exemplify the distinct generic and thematic innovations of the period. Prereq: ENGL 401.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 787 - English Major Seminar****Credits:** 4

This Capstone course offers you an opportunity to study a specialized topic in depth in a seminar format. Enrollment is limited to 15 so that you can take active part in discussion and work closely with the instructor on a research project. Topics vary from semester to semester. Recent topics include Tragedy, Comedy, American Women Poets, Medicine in Literature, and Feminist Print Culture. Pre-req: ENGL 419 with a grade of B or better. Barring duplication of subject, course may be repeated for credit. For details see semester specific course descriptions available in the English Department.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ENGL 787R**Grade Mode:** Letter Grading**ENGL 787R - English Major Seminar****Credits:** 4

This Capstone course offers you an opportunity to study a specialized topic in depth in a seminar format. Enrollment is limited to 15 so that you can take active part in discussion and work closely with the instructor on a research project. Topics vary from semester to semester. Recent topics include Tragedy, Comedy, American Women Poets, Medicine in Literature, and Feminist Print Culture. Pre-req: ENGL 419 with a grade of B or better. May be repeated for credit, barring duplication of topic. For details see semester specific course descriptions available in the English Department.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ENGL 787**Grade Mode:** Letter Grading**ENGL 788 - Senior Honors****Credits:** 4

Open to senior English majors who, in the opinion of the department, have demonstrated the capacity to do superior work; permission required. An honors project consists of supervised research leading to a substantial thesis or writing of poetry or fiction portfolio. Required of students in the honors in major program. (Not offered every year.) Writing intensive.

**Attributes:** Honors course; Writing Intensive Course**Grade Mode:** Letter Grading

**ENGL 789 - Special Topics in English Teaching****Credits:** 4

Advanced theories and practices course on English Teaching. Topics such as A) Teaching Young Adult Literature, C) Teaching English in Diverse Contexts, D) Teaching Drama, N) Teaching Nonfiction, R) English Teachers as Researchers, and T) Alternate Literacies and Teaching Technologies. Barring duplication of subject, course may be repeated for credit. For details see course descriptions available in the English department.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ENGL 790 - Special Topics in Linguistics****Credits:** 4

Advanced course on a topic chosen by the instructor. Inquire at the English department office for a full course description each time the course is offered. Topics such as word formation, dialectology, linguistic theory and language acquisition, history of linguistics, language and culture, cross-disciplinary studies relating to linguistics. Barring duplication of subject, may be repeated for credit. (Also offered as LING 790.) Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** LING 790**Grade Mode:** Letter Grading**ENGL 791 - English Grammar****Credits:** 4

An introduction to the terminology and major concepts in English grammar. Covers descriptive vs. prescriptive grammar, parts of speech, phrase structure, clause types, and basic sentence patterns. Useful for pre-service teachers seeking to acquire the background knowledge needed to make informed decisions about teaching of English grammar.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 792 - Teaching Literature and Literacy****Credits:** 4

This course introduces theories and practices of teaching literature and literacy, including teaching reading and writing as well as teaching literary analysis at the secondary level. Students also learn to plan lessons, choose texts, and create learning activities for speaking, listening, and viewing in grade five through twelve. The course is designed for students who are interested in teaching as a possible career.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 793 - Phonetics and Phonology****Credits:** 4

The sound system of English and other languages as viewed from the standpoint of modern linguistic theory, including the following topics: the acoustic and articulatory properties of speech sounds, the phonemic repertoires of particular languages, phonological derivations, and prosodic phenomena such as stress and intonation. (Also offered as LING 793.) Prereq: a basic linguistics course or permission.

**Equivalent(s):** LING 793**Grade Mode:** Letter Grading**ENGL 794 - Syntax****Credits:** 4

Relationship of grammar and meaning as viewed from the standpoint of modern linguistic theory. Emphasizes the syntax and semantics of English, with special attention to the construction of arguments for or against particular analyses. (Also offered as LING 794.) Prereq: a basic linguistics course or permission of the instructor. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ENGL 795 - Independent Study****Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with permission of the department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**ENGL 796 - The Internship Experience****Credits:** 4

Students work with their peers to establish a personal definition of professionalism in their respective fields; they will read, critically analyze, and discuss articles covering a wide variety of topics, including writing at work, intended audiences, navigating a difficult work environment or situation, and strategies for professional development. Class sessions in a discussion format, intended to be flexible and to directly support the changing needs of writing in the workplace. Students, along with their supervisors, will create their own learning objectives and evaluation tools. Students will write about their experiences at the end of term. Prereqs: ENGL 419 and ENGL 502 or ENGL 602. Minimum GPA 3.0 required for registration. FR/SO status students excluded. Not open to ENGL/ Journalism or ENGL Teaching majors.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ENGL 695**Grade Mode:** Letter Grading**ENGL 797 - Special Studies in Literature****Credits:** 4

A) Old English Literature, B) Medieval Literature, C) 16th Century, D) 17th Century, E) 18th Century, f) English Romantic Period, G) Victorian Period, H) 20th Century, I) Drama, J) Novel, K) Poetry, L) Non-fiction, M) American Literature, N) A Literary Problem, O) Literature of the Renaissance, R) Race and Racial Theories. The precise topics and methods of each section vary. Barring duplication of subject, may be repeated for credit. For details, see the course descriptions available in the English department.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading



**ENGL 797R - Special Studies in Literature (Race & Racial Theories)****Credits:** 4

A) Old English Literature, B) Medieval Literature, C) 16th Century, D) 17th Century, E) 18th Century, F) English Romantic Period, G) Victorian Period, H) 20th Century, I) Drama, J) Novel, K) Poetry, L) Non-fiction, M) American Literature, N) A Literary Problem, O) Literature of the Renaissance, R) Race and Racial Theories. The precise topics and methods of each section vary. Barring duplication of subject, may be repeated for credit. For details, see the course descriptions available in the English department.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** ENGL 797**Grade Mode:** Letter Grading**ENGL #799 - Study Abroad in Cambridge England****Credits:** 0

UNH Cambridge Summer Program at Gonville & Caius College of Cambridge University in Cambridge, England. This course number is a place-holder. Students register for both this administrative course number and two of the courses being offered through the program. These courses will vary from year to year. To view the courses offered visit <http://www.unh.edu/cambridge>. Permission required. Special fee. Cr/F.

**Co-requisite:** INCO 589**Attributes:** World Cultures(Discovery)**Grade Mode:** Credit/Fail Grading

## English/Speakers of Other Languages (ESL)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ESL #410 - Elementary Reading, Writing, Grammar****Credits:** 4-12

Intensive English, with a focus on reading and writing, for English language learners at an elementary level. Students will develop a basic vocabulary in English and sufficient proficiency in the language to conduct essential business in an English-speaking environment. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ESL #411 - Speaking and Listening, Elementary Level****Credits:** 2-8

Intensive English, with a focus on speaking and listening, for English language learners at an elementary level. Students will develop a basic vocabulary in English and sufficient proficiency in the language to conduct essential business in an English-speaking environment. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ESL 420 - Intermediate Reading, Writing, Grammar****Credits:** 4-12

Intensive English, with a focus on reading and writing, for English language learners at an intermediate level. Students will expand their vocabulary and develop sufficient English proficiency to communicate with English speakers who have little experience with English language learners. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ESL 421 - Intermediate Listening and Speaking****Credits:** 2-8

Intensive English, with a focus on speaking and listening, for English language learners at an intermediate level. Students will expand their vocabulary and develop sufficient English proficiency to communicate with English speakers who have little experience with English language learners. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ESL 430 - Advanced Reading, Writing, Grammar****Credits:** 4-12

Intensive English, with a focus on reading and writing, for English language learners at an advanced level. Students will develop an extensive vocabulary in English, facility with complex sentence structures, and an ability to write coherent, comprehensible essays in English. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ESL 431 - Advanced Listening and Speaking****Credits:** 2-8

Intensive English, with a focus on speaking and listening, for English language learners at an advanced level. Students will develop an extensive vocabulary in English and sufficient English proficiency to function successfully in American university courses that do not rely heavily on language. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ESL #434 - High Advanced Integrated Skills****Credits:** 2-8

Intensive English with a focus on incorporating, analyzing, and synthesizing information from lectures and readings into academic writing. This course is intended for students whose skills are uneven in the reading, writing, listening, and speaking modalities. Students enrolled in ESL #434/ESL 634 will be simultaneously enrolled in ESL 430/ESL 630 or ESL 431/ESL 631. Permission required. Special fee.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ESL 440 - Academic English I****Credits:** 4-8

This course is intended for speakers of other languages who have already achieved a 500 score on the TOEFL (or an equivalent score on another standardized test of English proficiency). Students will learn to read academic materials, write coherent essays on academic topics, and participate in group work and class discussion. Students enrolled in ESL 440/ESL #640 are also eligible to enroll in one University of New Hampshire course. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ESL #445 - Introduction to US Academic Culture****Credits:** 4

This course will introduce students to the academic expectations, resources, policies and traditions of university life in the US and serve as an ongoing orientation to the University of New Hampshire. The course is designed to help new international students adjust to college life, establish skills that will help them be successful through their transition into their academic program and develop a sense of belonging and engagement with all the university has to offer.

**Grade Mode:** Credit/Fail Grading



**ESL 450 - Academic English II****Credits:** 4

This course is intended for speakers of other languages who have already achieved a score of 525 or higher on the TOEFL (or an equivalent score on another standardized test of English language proficiency). Students will learn to read academic materials, do basic library research, write short papers in standard academic form, understand academic lectures, and participate in group work and class discussion. Writing Intensive. Students enrolled in ESL 450/ESL 650 are also eligible to enroll in two University of New Hampshire courses. Permission required. Special fee.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ESL #610 - Elementary Reading, Writing, Grammar****Credits:** 4-12

Intensive English, with a focus on reading and writing, for English language learners at an elementary level. Students will develop a basic vocabulary in English and sufficient proficiency in the language to conduct essential business in an English-speaking environment. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Graduate Credit/Fail grading**ESL #640 - Academic English I****Credits:** 4-8

This course is intended for speakers of other languages who have already achieved a 500 score on the TOEFL (or an equivalent score on another standardized test of English proficiency). Students will learn to read academic materials, write coherent essays on academic topics, and participate in group work and class discussion. Students enrolled in ESL 440/ESL #640 are also eligible to enroll in one University of New Hampshire course. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Graduate Credit/Fail grading**ESL #645 - Introduction to US Academic Culture****Credits:** 4

This course will introduce students to the academic expectations, resources, policies and traditions of university life in the US and serve as an ongoing orientation to the University of New Hampshire. The course is designed to help new international students adjust to college life, establish skills that will help them be successful through their transition into their academic program and develop a sense of belonging and engagement with all the university has to offer.

**Grade Mode:** Graduate Credit/Fail grading

## Environmental & Resource Economics (EREC)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**EREC 411 - Environmental and Resource Economics Perspectives****Credits:** 4

Microeconomic theory and analysis in resource management and use decisions. Survey of significant resource problems from an economic perspective and the application of economic analysis.

**Attributes:** Social Science (Discovery)**Mutual Exclusion:** No credit for students who have taken ECN 412, ECN 412W, ECON 402, ECON 402A, ECON 402H.**Grade Mode:** Letter Grading**EREC 444 - The New Pirates of the Caribbean****Credits:** 4

Inquiry into many facets of tourism from the standpoint of tourists and tour destination. Economic and institutional factors affecting human well-being from the use of land and water resources; discussions of distributional aspects of benefits from tourism activities.; environmental impacts; ownership patterns and uses; cultural attributes; and local economies in small Caribbean island nations. Cruise ships, time-shares, all-inclusive resorts, hurricanes, casinos, bars, rum, sex, and drugs are investigated through extensive readings and web surfing.

**Attributes:** World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**EREC 525 - Statistical Methods and Applications****Credits:** 4

Applications of elementary statistical concepts and methods including probability, descriptive techniques, statistical inference and bivariate and multivariate statistical analysis. Orientation is toward analysis and interpretation of data commonly encountered in social science disciplines.

**Attributes:** Quantitative Reasoning(Disc)**Mutual Exclusion:** No credit for students who have taken ADM 430, ADMN 420, ADMN 510, BIOL 528, HHS 540, MATH 439, MATH 539, MATH 644, PSYC 402, PSYC 402H, SOC 402, SOC #402H, SOC 502, SOC 502H.**Grade Mode:** Letter Grading**EREC 572 - Introduction to Natural Resource Economics****Credits:** 4

Introduces theory, methods of analysis, and current literature of natural resource economics and policy. Topics include multiple use, taxation, optimal harvest scheduling, market failure, property rights, public goods, benefit-cost analysis, amenity values, non-market resource services and natural resource policy. Topics applied to forests and forestry, wildlife management, outdoor recreation, public lands, agriculture, fisheries, water, energy and mining/nonrenewable resources.

**Grade Mode:** Letter Grading**EREC #600 - Field Experience****Credits:** 1-4

A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. Prereq: permission. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** EREC 600W, RECO 600**Grade Mode:** Credit/Fail Grading**EREC 601 - Agribusiness Economics and Management****Credits:** 4

Applications of economic and management principles in production, marketing, finance, and other operational decisions facing small agribusiness firms. Prereq: EREC 411 or ECON 402 or equivalent.

**Grade Mode:** Letter Grading**EREC 606 - Land Economics Perspectives: Uses, Policies, and Taxes****Credits:** 4

Economic and institutional perspectives affecting human use of land resources; discussion of land ownership patterns and uses; land rent, location, and resource use; institutional constraints; partial ownership policies; and local planning for more efficient use of land. Real estate markets, transfers, valuation, and taxation. Prereq: EREC 411 or equivalent or permission.

**Equivalent(s):** RECO 606**Grade Mode:** Letter Grading

**EREC 627 - Community Economics****Credits:** 4

Economic factors affecting community and local government decisions. Emphasizes use of economic theory for decision making and community problem solving. Prereq: EREC 411 or equivalent.

**Equivalent(s):** CD 627, RECO 627**Grade Mode:** Letter Grading**EREC 680 - Agricultural and Food Policy****Credits:** 4

Analysis of issues that led to government involvement in the agricultural and food sector. Application of economic concepts and tools to the evaluation of public policies affecting agriculture and food. Prereq: EREC 411 or equivalent.

**Equivalent(s):** EREC 704**Grade Mode:** Letter Grading**EREC 708 - Environmental Economics****Credits:** 4

Environmental pollution, the market economy, and optimal resource allocation; alternative control procedures; levels of environmental protection and public policy; property right issues. Prereq: ECON 605 or equivalent.

**Attributes:** Writing Intensive Course**Equivalent(s):** RECO 708**Grade Mode:** Letter Grading**EREC 756 - Rural and Regional Economic Development****Credits:** 4

Concepts and methods of delineating regional economies, methods of measuring activity, regional development, and public policies. Emphasizes empirical research studies. Prereq: intermediate economic theory or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** RECO 756**Grade Mode:** Letter Grading**EREC 760 - Ecological-Economic Modeling for Decision Making****Credits:** 4

In this course, students will develop ecological-economic models and use them to inform economic decision making related to the management of natural resources. These models range from analytical models using algebra and calculus, to computational models using coding and simulations. The course will focus on spatial-dynamic computational bio-economic models because of their ability to capture economic decision making and ecological processes over time and space. Prereq: ECON 605 or equivalent; MATH 420, or equivalent.

**Grade Mode:** Letter Grading**EREC 795 - Investigations****Credits:** 2-4

Special assignments in readings, investigations, or field problems. Topics may include agricultural marketing, agricultural production and farm management, community development, economics of human resources, economics of population and food, land economics, marine economics, rural economic development, regional economics, water economics, or teaching experience. Prereq: permission. May be repeated.

**Equivalent(s):** EREC 795W, RECO 795**Grade Mode:** Letter Grading**EREC 795W - Investigations****Credits:** 2-4

Special assignments in readings, investigations, or field problems. Topics may include agricultural marketing, agricultural production and farm management, community development, economics of human resources, economics of population and food, land economics, marine economics, rural economic development, regional economics, water economics, or teaching experience. Prereq: permission. May be repeated. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** EREC 795, RECO 795**Grade Mode:** Letter Grading**EREC 799 - Honors Senior Thesis****Credits:** 1-4

Honor/thesis students conduct an independent research project, relevant to the student's area of specialization in the major, under the direction of a faculty sponsor. Students submit a research proposal, write a final report, and provide an oral presentation. One or two semester sequence. Restricted to Senior/Natural Resource Majors. Permission required.

**Attributes:** Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** RECO 799**Grade Mode:** Letter Grading

## Exchange (EXCH)

**EXCH 595 - Exchange****Credits:** 0-18

Special fee. Cr/F.

**Grade Mode:** Credit/Fail Grading

## Exercise Science (EXSC)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**EXSC 520 - Contemporary Perspectives in Exercise Science****Credits:** 4

This course is designed to introduce undergraduate students to the field of Exercise Science. Research studies, experiential learning and professional development will be used to explore the different aspects of Exercise Science including fitness, wellness, human performance, research and clinical exercise physiology. Students will discover the many ways exercise is used as a health and fitness intervention. Career options will be studied and evaluated giving students an informed exposure to potential areas of future.

**Equivalent(s):** KIN 520**Grade Mode:** Letter Grading**EXSC 527 - Scientific Foundations of Health and Fitness****Credits:** 4

Provides students with practical, scientific, entry-level information relative to physical conditioning, health, and wellness from childhood through adulthood. Students are given theoretical information that will be followed by practical, hands-on experiences offered through laboratories experiences.

**Attributes:** Biological Science(Discovery); Discovery Lab Course; Writing Intensive Course**Equivalent(s):** KIN 527**Mutual Exclusion:** No credit for students who have taken NUTR 506.**Grade Mode:** Letter Grading

**EXSC 607 - Biology of Aging****Credits:** 4

Biological mechanisms of the aging process, with special emphasis on human aging; changes due to chronic disease.

**Attributes:** Biological Science(Discovery)**Equivalent(s):** KIN 607**Grade Mode:** Letter Grading**EXSC 620 - Physiology of Exercise****Credits:** 4

Acute and chronic effects of exercise. Muscle physiology, respiration, cardiac function, circulation, energy metabolism, and application to training. Prereq: BMS 507 and BMS 508.

**Equivalent(s):** KIN 620**Grade Mode:** Letter Grading**EXSC 621 - Exercise Laboratory Techniques****Credits:** 4

Laboratory assessment of functional capacity, body composition, anaerobic power, anaerobic threshold, pulmonary function, blood pressure control, muscle strength, and temperature regulation. Field tests are used where appropriate. Extensive out-of-class time is required as each week a detailed lab report is submitted for grading. Prereq: EXSC 620. Exercise Science majors.

**Attributes:** Writing Intensive Course**Equivalent(s):** KIN 621**Grade Mode:** Letter Grading**EXSC 650A - Internship in Exercise Science****Credits:** 4-8

Individualized experiential training in an external (off-campus) exercise science setting (hospital, health & fitness club, business, physical therapy, or medical (physician assistant) offices, research laboratory) offering programs of prevention, intervention, and/or rehabilitation. The internship requires 400 contact hours and is a full-time commitment (10 weeks at 40 hours per week) usually taken the summer following the senior academic year. Activities may include graded exercise testing, exercise prescription, and exercise leadership. Must have completed all requirements for the option or have permission from the instructor prior to starting the internship. The course may be repeated once with 4 credits taken each time for a total of 8 credits. Cr/F. (IA continuous grading). Only open to Exercise Science majors.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** KIN 650A**Grade Mode:** Credit/Fail Grading**EXSC 693 - Teaching Assistantship****Credits:** 2

Students serve as teaching assistants in assigned class activities. Assignments to be made by the class instructor may include teaching assistants' and administrative duties. May be repeated up to a maximum of 4 credits. Prereq: junior standing; departmental approval. Cr/ F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Credit/Fail Grading**EXSC 696 - Independent Study****Credits:** 2-4

An advanced, individual scholarly project under the direct supervision of a faculty member. Prereq: junior or senior; departmental approval.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**EXSC 696W - Independent Study****Credits:** 2-4

An advanced, writing-intensive, individual scholarly project under the direct supervision of a faculty member. Student and Faculty Adviser will prepare a written proposal that outlines: the questions to be pursued, the methods of investigation, the student's qualifications to conduct the research, the nature of the finished written product (e.g. case study, position paper, extended lab report). This proposal must be approved by major faculty and the department chair prior to the student's registration for EXSC 696W. All EXSC 696W projects must include: Some forms of informal, ungraded writing such as a journal, reading summaries, draft chapters, or invention activities. Regular writing interaction between student and faculty adviser (i.e. at least weekly or biweekly), to include written feedback from the adviser. A finished product that is polished via revision. Faculty sponsors and students should consult the resources and guidelines of the UNH Writing Program. Prereq: junior or senior; departmental approval.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**EXSC 699H - Honors Project****Credits:** 4

Project first involves tutorial sessions to introduce the student to the experimental design, after which a research question is developed. After an appropriate literature review, the student collects and analyzes data, forms conclusions, and prepares a written report on the findings.

**Attributes:** Honors course**Grade Mode:** Letter Grading**EXSC 704 - Electrocardiography****Credits:** 4

Designed to provide exposure to basic interpretation and identification of electrocardiograms (ECGs). Includes detailed heart anatomy, coronary circulation, cardiac conduction system, electrocardiogram development, and all aspects pertaining to normal and abnormal ECGs. Prereq: EXSC 621, Exercise Science majors.

**Equivalent(s):** KIN 704**Grade Mode:** Letter Grading**EXSC 705 - Topics in Applied Physiology****Credits:** 4

Advanced exercise physiology course dealing with topics both current and relevant to exercise science majors. Includes genetics, environmental influences, immune system, detraining and over-training, epidemiology, ergogenic acids, and the influence of age and gender. Prereq: EXSC 620, EXSC 621, EXSC 736. Exercise Science majors.

**Equivalent(s):** KIN 705**Grade Mode:** Letter Grading**EXSC 720 - Science and Practice of Strength Training****Credits:** 4

Designed to provide students exposure to the knowledge and practical experience necessary for establishing strength development programs in a variety of populations, including healthy, athletic, and higher risk individuals. Program design, correct lifting techniques, physiological adaptations, and organization and administration of programs are highlighted. Includes fundamentals regarding the selection of programs and equipment, spotting techniques, as well as ways to assess strength and power in humans without expensive equipment. Prereq: EXSC 620, EXSC 621, or instructor permission.

**Equivalent(s):** KIN 720**Grade Mode:** Letter Grading

**EXSC 722 - Applied Biomechanics****Credits:** 4

This course provides students with a background in the fundamental biomechanical principles that describe and govern human movement. Topics of the course include friction, linear and angular motion, tissue material properties, conservation of energy, work and power, fluid mechanics, stability and center of gravity, mechanics of injury, walking and running gait analysis. These topics are taught through the lens of modern biomechanical analyses including dynamometry, electromyography, accelerometry, and optical motion analysis. Prereq: EXSC 620.

**Equivalent(s):** KIN 722**Grade Mode:** Letter Grading**EXSC 724 - Exercise Metabolism: Acute and Chronic Adaptations****Credits:** 4

Overview of the metabolic processes that occur during exercise and metabolic changes that occur as a result of exercise training. Topics include glycogenolysis and glycolysis in muscle, cellular oxidation of pyruvate, lipid metabolism, metabolism of proteins and amino acids, neural and endocrine control of metabolism, and fatigue during muscular exercise. Prereq: EXSC 621, CHEM 404, Exercise Science majors.

**Equivalent(s):** KIN 724**Grade Mode:** Letter Grading**EXSC 736 - Fitness and Graded Exercise Testing****Credits:** 4

Designed to provide students exposure to the knowledge and practical experience necessary for establishing exercise programs in apparently healthy populations. Topics include fitness testing, test interpretation, and exercise prescription. Prereq: EXSC 621, EXSC 704, Exercise Science majors.

**Equivalent(s):** KIN 736**Grade Mode:** Letter Grading**EXSC 737 - Exercise Prescription and Leadership in Healthy and Special Populations****Credits:** 4

Provides exposure to the knowledge and practical experience necessary for establishing exercise and health promotion programs in a variety of populations. Includes fundamentals regarding personal training and program selection, implementation and equipment, legal issues, and budget establishment. Strength training programs and special populations are highlighted. Prereq: EXSC 621, EXSC 736; Exercise Science majors.

**Equivalent(s):** KIN 737**Grade Mode:** Letter Grading**EXSC 794 - Cardiopulmonary Pathologies****Credits:** 4

Lecture study of the anatomy, physiology, and pathophysiology of the cardiac, vascular, and pulmonary systems. Particular emphasis on the study of cardiovascular function in diseased and stressed states. Clinical assessment of the cardiopulmonary patient. Prereq: EXSC 704.

**Equivalent(s):** KIN 794**Grade Mode:** Letter Grading**EXSC 795 - Practicum in Cardiac Rehabilitation****Credits:** 2

Provides students with practical and theoretical experience in all aspects involving cardiac rehabilitation programs.

**Prerequisite(s):** EXSC 704 with a minimum grade of D- and EXSC 794 with a minimum grade of D-.

**Equivalent(s):** KIN 795**Grade Mode:** Letter Grading**EXSC 798 - Special Topics in Exercise Science****Credits:** 1-4

New or specialized courses not normally covered in regular course offerings.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

## Finance (FIN)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**FIN 620 - Topics in Finance I****Credits:** 2-4

Special topics, vary by semester.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading**FIN 650 - Wildcat Investment Fund****Credits:** 2

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Letter Grading**FIN 701 - Financial Policy****Credits:** 4

Development of analytical tools and practical skills for recognizing and solving complex problems of business finance. Working-capital management, capital budgeting, cost of capital, capital structure, and dividend policy. Prereq: ADMN 570.

**Equivalent(s):** ACFI 701**Grade Mode:** Letter Grading**FIN 702 - Investments Analysis****Credits:** 4

Security valuation, efficient markets, portfolio management, options, and alternative investments. Computer research topics. Prereq: ADMN 570.

**Equivalent(s):** ACFI 702**Grade Mode:** Letter Grading**FIN 703 - International Financial Management****Credits:** 4

Financial Management problems facing multinational firms. Primary focus on effects of currency denominations on financial decisions. Prereq: ADMN 570.

**Equivalent(s):** ACFI 703**Grade Mode:** Letter Grading**FIN 704 - Derivatives Securities and Markets****Credits:** 4

Derivative assets and markets, and their role in business decision-making and portfolio management. Emphasis on practical and theoretical aspects of hedging and speculating using futures and options for both commodities and financial assets, including their market mechanics. Prereq: ADMN 570.

**Equivalent(s):** ACFI 704**Grade Mode:** Letter Grading



**FIN 705 - Financial Institutions****Credits:** 4

Examination of financial institutions and markets. Emphasis on how institutions create value, the regulatory environment under which they operate, and the role of risk management. Prereq: ADMN 570.

**Attributes:** Writing Intensive Course**Equivalent(s):** ACFI 705**Grade Mode:** Letter Grading**FIN 706 - Financial Modeling and Analytics****Credits:** 4

The main objective of the course is to bridge the gap between theory and practice by using software applications and real-world data to solve a variety of financial problems. The course is very 'hands-on' and is expected to help students develop skills that are useful in a variety of jobs in finance, accounting, insurance, and real estate. Prereq: ADMN 570.

**Equivalent(s):** ACFI 706**Grade Mode:** Letter Grading**FIN 707 - Equity Analysis and Firm Valuation****Credits:** 4

This course is intended to provide practical tools for analyzing and valuing a company's equity. Primarily an applications course, it covers several valuation models such as market multiples and free cash flow models, and focuses on the implementation of finance theories to valuation problems. Prereq: ADMN 570.

**Equivalent(s):** ACFI 707**Grade Mode:** Letter Grading**FIN 708 - Real Estate Finance****Credits:** 4

This course provides an introduction to residential and commercial real estate. Topics include market analysis, cash flows, debt and equity financing, valuation, and real estate investment trusts. Case studies, projects, and real world applications of the concepts learned are significant components of the course. Prereq: ADMN 570 or HMG 655.

**Equivalent(s):** ACFI 708**Grade Mode:** Letter Grading**FIN 709 - Mortgage Banking and Fixed Income Securities****Credits:** 4

This course focuses on bonds and the bond market. While the cash flows of bonds are specified, their valuation is particularly challenging given interest rate movements, embedded optionality, and credit risk. As part of an examination of structured products, the course will examine the process of creating, valuing, and trading mortgages. Further, the course demonstrates the skills needed to manage fixed income portfolios in light of both client specific objectives and the market environment. Prereq: ADMN 570 or HMG 655, ACFI 702.

**Equivalent(s):** ACFI 709**Grade Mode:** Letter Grading**FIN 710 - Big Data in Finance****Credits:** 4

This course serves as an introduction to many aspects of big data utilization, specifically as it applies to finance. Topics typically include high frequency trading, stock market anomalies, data management, fintech innovations, and safety and ethics when working with big data. Programming languages common to finance, such as Stata, SAS, and Python, are learned and used to analyze and manipulate data. Prereq: ADMN 570.

**Equivalent(s):** ACFI 710**Grade Mode:** Letter Grading**FIN 711 - Investment Banking****Credits:** 4

This course explores several areas of investment banking. Investment bankers play a critical role in financial markets. Among their many roles, they provide advisory services to firms, help raise capital, and assist with complex financial transactions such as mergers and acquisitions. Course topics typically include company strategy, valuation, initial public offerings (IPOs), leveraged buyouts (LBOs), and mergers and acquisitions (M&A). Prereq: ADMN 570. Students cannot earn credit for the course after taking FIN 720 as Investment Banking.

**Grade Mode:** Letter Grading**FIN 714W - Financial Scandals, Upheavals, and Crises****Credits:** 4

This course takes a multidimensional approach to the circumstances that create tumult in the financial world and, by extension, society. Disruptive events in financial history are explored from different perspectives often considering the financial innovations, ethical issues, and notions of economic justice that are involved. The course is writing intensive and requires extensive reading, introspection, and critical thinking. Prereq: ADMN 570. "Students cannot earn credit for the course after taking FIN 720W as Financial Scandals.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**FIN 720 - Topics in Finance II****Credits:** 4

Special topics, vary by semester. Prereq: ADMN 570.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Grade Mode:** Letter Grading**FIN 720W - Topics in Finance II****Credits:** 4

Special topics, vary by semester. Prereq: ADMN 570.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 16 credits.**Grade Mode:** Letter Grading**FIN 725 - Independent Studies in Finance****Credits:** 1-4

Student-designed individual research projects, approved by a faculty sponsor. Paper required. Course credits vary according to the nature of the project, to be determined by the faculty sponsor. For juniors and seniors in high standing; by permission.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**FIN 795 - Internships in Finance****Credits:** 1-4

Finance fieldwork in a business or other type of organization. Supervision provided by the organization, and consultation provided by the faculty sponsor. Written report required. Course credits vary according to the nature of the fieldwork, to be determined by the faculty sponsor. For juniors and seniors in high standing; by permission.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Credit/Fail Grading

## Forest Technology (FORT)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.



**FORT 466 - Forest Surveying and Mapping****Credits:** 0 or 4

Provides instruction and experience in running cruise lines and in the survey and identification of rural property lines. The focus is on field surveying techniques and problem solving of special importance to foresters. Use of magnetic survey data in rural property measurement. Skill and efficiency is developed in analyzing field survey data, plotting, lettering and finishing topographic and planimetric maps, and road plans, both manually and by Computer Assisted Drafting using multiple software applications. Special Fee.

**Equivalent(s):** FORT 266**Grade Mode:** Letter Grading**FORT 470 - Applied Silviculture****Credits:** 0 or 4

Silvicultural practices in the U.S. including reforestation systems. Improvement of forest stands employing the basic tending practices of weeding, thinning, and pruning. Marking of stands prior to logging operations. Prereq: permission of instructor or FORT 461 and FORT 463. 2 lec/1 4-hr lab. Special Fee.

**Equivalent(s):** FORT 270**Grade Mode:** Letter Grading**FORT 527 - Forest Ecology****Credits:** 4

Introduces basic and applied ecology of forests, with emphasis on ecosystem processes, including water, energy, and nutrient cycles; biological interactions, including biodiversity and plant-plant, plant-animal, and plant-microbe relationships; and human impacts, including forest management, land-use/land cover-change, and changes in atmospheric chemistry.

**Equivalent(s):** NR 527**Grade Mode:** Letter Grading**FORT 564 - Arboriculture****Credits:** 0 or 3

Tree selection, care, and maintenance in the urban environment. Includes climbing, safety practices, pruning, hazard tree assessment, and removals. Prereq: FORT 463 or permission. 1 lec/1 4-hr lab. Special Fee.

**Equivalent(s):** FORT 264, FORT 464**Grade Mode:** Letter Grading**FORT 567 - Leadership, Supervision & Safety****Credits:** 2

Fundamentals of leadership and supervision including effective communication in the workplace and public sector are explored. Project management, personnel training and motivation, plus problem-solving and conflict resolution applied through a practical community service forestry project. Accident prevention, first aid, and CPR instruction also included. 2 lec.

**Equivalent(s):** FORT 267**Grade Mode:** Letter Grading**FORT 572 - Mensuration****Credits:** 0 or 4

Field application of forest inventory and timber cruising techniques. Measurement of tree form, volume, quality, and defect. Growth prediction of individual trees and stands. Use of basic statistical methods as a tool in cruising. Prereq: FORT 461 or instructor permission. 2 lec/1 4-hr lab. Special Fee.

**Equivalent(s):** FORT 272**Grade Mode:** Letter Grading**FORT 573 - Management Operation & Analysis****Credits:** 4

An introduction to the basic concepts of forest land management and the practical approaches to forest management planning and financial decision-making. Topics include a silviculture review; deed research and mapping; management plan preparation; multiple-use sustainable forestry; tree valuation; timber sale appraisal methods; contracting; forest taxation; and long-term cost and return analysis. Students individually prepare a comprehensive forest management plan as a semester project.

**Equivalent(s):** FORT 273**Grade Mode:** Letter Grading**FORT 574 - Industrial Forest Management Tour****Credits:** 1

Concentrated field experience and intensive observations of industrial, private, and federal forest holdings and facilities; emphasizing forest utilization and management operations as currently practiced in New England. One week of concentrated field study. Cr/F. Forest Technology majors only. Special Fee.

**Grade Mode:** Credit/Fail Grading**FORT 576 - Forest Products and Wood Science****Credits:** 0-4

Basics of structure and properties of wood as a raw material. Conversion of logs to lumber at Thompson School sawmill. Lumber and log grading and measuring. Studies in processing efficiency, lumber drying, and physical plant operations. Introduction to paper, veneer, and chip products. Marketing of forest products. 2 lec/1 4-hr lab. Special Fee.

**Equivalent(s):** FORT 276, FORT 476**Grade Mode:** Letter Grading**FORT 577 - Forest Harvesting Systems****Credits:** 0 or 4

A study in harvesting methods and their relation to forest management and silviculture of the state and region. Theory and practice of conventional harvesting systems including hands-on application of techniques with a strong emphasis on protection of the environment and the safety and health of workers. Department permission for non-majors. 2 lec/4-hr lab. Special Fee.

**Equivalent(s):** FORT 277**Grade Mode:** Letter Grading**FORT 578 - Ecology and Management of Forest Stressors****Credits:** 4

An introduction to the biology and ecology of forest insects, pathogens, and invasive plants in the context of forest management. Students learn to recognize the signs and symptoms of insect and disease damage in forest trees and products. Students explore the impacts of novel invasions of pests, pathogens, and pernicious plants and evaluate adaptive management strategies. 2 lec/4 hr lab.

**Equivalent(s):** FORT 278**Grade Mode:** Letter Grading**FORT 579 - Wildland Fire Ecology and Management****Credits:** 4

An exploration of the historical context of wildland fire and how our changing climate and past management practices influence future fire regimes at local and national scales. This course will provide instruction in fire ecology, and prescribed fire theory and methods. Students will learn the basic knowledge of forest fire control and use and will focus on firefighting, the impacts of fire on vegetation, and the use of prescribed fire in forest and wildlife management. Special Fee.

**Equivalent(s):** FORT 279, FORT 479**Grade Mode:** Letter Grading

**FORT 581 - Applied Geospatial Techniques****Credits:** 4

Geographic Information Systems (GIS) are integral to natural resource management and these technologies/software have become widespread throughout various fields. Proficiency in fundamental GIS skills is imperative for resource managers. Students will 1) develop an understanding of imagery acquisition and remote sensing systems/technologies; 2) develop skills in identification, interpretation, and mapping of land/vegetation features, including an understanding of map projection; 3) gain experience in GIS software to perform fundamental geoprocessing and mapping techniques.

**Equivalent(s):** FORT 281**Grade Mode:** Letter Grading**FORT 592 - Independent Studies in Forest Technology/Urban Tree Care****Credits:** 1-4

Students who have the ability and adequate preparation to work independently may propose a contract to design a course or research project on a topic not available through existing course offerings. The purpose of this research is to explore new areas in the student's field of study or to pursue course material in greater depth. Work is supervised by an appropriate faculty/staff member and credit varies depending on the proposed project/research. Examples include forest management, forest products, forest protection, wildlife management, or urban tree care. Permission required. Course may be repeated up to a maximum of 8 credits.

**Equivalent(s):** FORT 292**Grade Mode:** Letter Grading**FORT 597 - Work Experience****Credits:** 0

Career-related employment (10 weeks, generally in the summer following freshman year) in a forestry, urban tree care, or other department-approved natural resources area. Cr/F.

**Equivalent(s):** FORT 297**Grade Mode:** Credit/Fail Grading

## French (FREN)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**FREN 401 - Elementary French I****Credits:** 0 or 4

Conducted in French, the course introduces students to French language and culture through speaking, listening, reading, writing, labs and films. Designed for students without previous training in French. Credit only for students who have had less than two years of French in secondary school. FREN 401 - FREN 402 taken together satisfies the foreign language requirement.

**Grade Mode:** Letter Grading**FREN 402 - Elementary French II****Credits:** 0 or 4

See description for FREN 401. FREN 401 is a prerequisite for this course. Cannot be taken separately except with permission of instructor.

**Attributes:** Foreign Language Requirement**Grade Mode:** Letter Grading**FREN 403 - Review of French****Credits:** 4

Conducted in French. Course emphasizes the active use of French through speaking, listening, reading, writing, labs, and films while providing a review of basic grammar. Designed for those students whose study of French has been interrupted for a significant amount of time or who have had two or more years of high school French. FREN 403 does not satisfy the foreign language requirement.

**Equivalent(s):** FREN 501**Grade Mode:** Letter Grading**FREN 503 - Intermediate French I****Credits:** 4

Conducted in French. Review of grammar with emphasis on the development of reading, writing, speaking, and listening skills. With modules on culture tailored to the needs of students in STEM disciplines as well as in agriculture, business, hospitality, and health and human services (among others). Prereq: one year of elementary French or equivalent.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** FREN 503H, FREN 585**Grade Mode:** Letter Grading**FREN 503W - Intermediate French I****Credits:** 4

Conducted in French. Review of grammar with emphasis on the development of reading, writing, speaking, and listening skills, and on culture. Discussion in French of literary and cultural readings. Labs and films.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Equivalent(s):** FREN 503H, FREN 585**Grade Mode:** Letter Grading**FREN 504 - Intermediate French II****Credits:** 4

Conducted in French. Review of grammar with emphasis on the development of reading, writing, speaking, and listening skills, and on culture. Discussion in French of literary and cultural readings. Labs and films.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Equivalent(s):** FREN 504H, FREN 586**Grade Mode:** Letter Grading**FREN 525 - A Road Trip Through France: Baguette, Brie, Bordeaux, and Beyond****Credits:** 4

What makes France France, and how did it evolve from a mostly agricultural to a modern society? Using films, essays, newspaper articles, and television this course examines major social, political, and gastronomic trends, events, debates and personalities that help shed light on contemporary French culture. Taught in English. Not for major credit. May be repeated for credit barring duplication of materials. Offered in Spring.

**Attributes:** World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** WLCE 525F**Grade Mode:** Letter Grading

**FREN #525H - Honors/A Road Trip Through France: Baguette, Brie, Bordeaux, and Beyond****Credits:** 4

What makes France, France, and how did it evolve from a mostly agricultural to a modern society? Using films, essays, newspaper articles, and television this course examines major social, political, and gastronomic trends, events, debates and personalities that help shed light on contemporary French culture. Taught in English. Not for major credit. May be repeated for credit barring duplication of materials. Offered in the Spring.

**Attributes:** Honors course; World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**FREN 526 - Introduction to Francophone Cultures****Credits:** 4

Taught in English. Focus on French-speaking cultures other than France. Includes historical, geographical, and artistic expressions of these cultures. Not for major credit. May be repeated for credit barring duplication of materials. (Not offered every year).

**Attributes:** World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**FREN 595 - French Practicum****Credits:** 2

Practical use of French language or cultural skills outside the classroom through special projects. Prereq: Permission. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.

**Grade Mode:** Credit/Fail Grading

**FREN #595A - A Culinary Exploration in Southern France****Credits:** 0

A 2-week long experience abroad intended to immerse students in French language and culture. The intensive and impactful in-country travel will augment on-campus instruction, and will provide a "living lab" experience for students who have taken FREN 595. Prereq: FREN 595.

**Grade Mode:** Credit/Fail Grading

**FREN 631 - Advanced French: Reading and Writing****Credits:** 4

This course is intended to refine students' ability to write in French through the study and practice of stylistic techniques, pertinent grammatical structures, and vocabulary used in contemporary written French. Working with a variety of texts, students become familiar with, and practice different forms of French rhetoric and styles in creative, argumentative, and analytical writings. Revision and rewriting are an integral part of the course, with students' own work providing a focus for in-class analysis and feedback. Prereq: FREN 504. Offered during the fall semester. The course sequence FREN 631- FREN 632 may be taken in any order.

**Attributes:** World Cultures(Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**FREN 632 - Advanced French: Listening and Speaking****Credits:** 4

This course is intended to refine students' ability to communicate in French, through the practice of debating and exchanging ideas, and a variety of pronunciation exercises. While reviewing and refining pertinent grammatical structures, students discuss current events and other material in class and on-line. Students also have the opportunity to actively practice their French during the weekly Zoom session with French students from Bordeaux. Prereq: FREN 504. Offered during the spring semester. FREN 631 and FREN 632 may be taken in any order.

**Attributes:** World Cultures(Discovery)

**Grade Mode:** Letter Grading

**FREN 651 - Love, War, and Power in French Literature****Credits:** 4

Reading and rigorous oral and written analysis of French literary texts that illustrate a variety of genres, with particular attention paid to the issues of love, war, and power. May be taken before or after FREN 652. Pre- or Co-Req: FREN 631, FREN 632. Required for majors.

**Attributes:** Humanities(Disc); Writing Intensive Course

**Equivalent(s):** FREN 651H

**Grade Mode:** Letter Grading

**FREN 652 - Greatest Hits of French****Credits:** 4

Reading and rigorous oral and written analysis of major French texts spanning 5 centuries of literature that illustrate a variety of genres, from the Chanson de Roland to Moliere's famous comedies. May be taken before or after FREN 651. Pre- or Co-Req: FREN 631, FREN 632. Required for majors.

**Attributes:** Humanities(Disc); Writing Intensive Course

**Equivalent(s):** FREN 652H

**Grade Mode:** Letter Grading

**FREN 676 - Topics in Francophone Culture****Credits:** 4

Topics drawn from all aspects and periods of French civilization. Prereq: FREN 631, FREN 632 and FREN 651 or FREN 652. May be repeated for credit barring duplication of materials. (Not offered every year.)

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Equivalent(s):** FREN 636

**Grade Mode:** Letter Grading

**FREN #677 - France in the European Union****Credits:** 4

Topics drawn from all aspects of contemporary French culture in its relationship with the fifteen member states of the European Union, with emphasis on the role of France in the building of the European Union. Prereq: FREN 631-FREN 632. Coreq: FREN 651 or FREN 652. (Not offered every year).

**Attributes:** Writing Intensive Course

**Equivalent(s):** FREN 645

**Grade Mode:** Letter Grading

**FREN 683 - Summer Study in Dijon (4 weeks)****Credits:** 4

This course offers four weeks of intensive study of French language at the Centre International d'Etudes Francaises (CIEF) in Dijon, France. The prerequisite is at least elementary French or equivalent and depends on the student's level at the time of registration. Minimum GPA of 2.5 or better and permission. Special UNH fee. Student responsible for personal and travel expenses. Offered summers only.

**Co-requisite:** INCO 589

**Grade Mode:** Letter Grading

**FREN 690 - Study Abroad in Dijon France****Credits:** 0-16

Spring semester at the University of Burgundy (Dijon, France) for juniors. This one-semester program is open to majors who have completed with a B- or better FREN 631 and FREN 632 and FREN 651 or FREN 652, or equivalent. Non-majors need to speak with the program director to determine their eligibility. Non-credit orientation meetings are required during the fall semester prior to departure. The normal UNH requirements for studying abroad apply to this program. For further information, interested students should consult with the director in the French program. Special fee. Prereq: FREN 504 with a C or better and permission. Non-majors FREN 631, 632; FREN 651 or FREN 652 for majors. Special fee. Cr/F.

**Co-requisite:** INCO 588**Attributes:** World Cultures(Discovery)**Repeat Rule:** May be repeated for a maximum of 32 credits.**Grade Mode:** Credit/Fail Grading**FREN 691 - Summer Study in Dijon (8 weeks)****Credits:** 8

This course offers eight weeks of intensive study of French language at the Centre International d'Etudes Francaises (CIEF) in Dijon, France. The prerequisite is at least elementary French or equivalent and depends on the student's level at the time of registration. This course is also open to French majors who cannot fulfill their semester-long study abroad requirement for documented academic reasons. By petition only. Minimum GPA of 2.5 or better and permission. Special UNH fee. Student responsible for personal and travel expenses. Offered summers only.

**Co-requisite:** INCO 589**Grade Mode:** Credit/Fail Grading**FREN 765 - Rebellion and Upheaval in 18th-Century Literature and Culture****Credits:** 4

This course presents different facets of the culture, literature, and history from Louis XIV's death to the Napoleonic era, placing particularly emphasis on the intellectual productions that questioned the status quo and played a role in the unfolding of the French Revolution. May be repeated for credit, barring duplication of materials. Prereq: FREN 651, FREN 652.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 2 times.**Grade Mode:** Letter Grading**FREN 775 - Les Mis and their World****Credits:** 4

Inspired by the very popular Victor Hugo's novel Les Miserables, this course examines 19th-century society and many issues of importance during that period: romantic and familial love, the nature of law and justice, morals and religious faith, as well as the architecture and urban design of Paris. It will also consider some of the adaptations for film, television, and the stage. May be repeated for credit, barring duplication of materials. Prereq: FREN 651, FREN 652.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 2 times.**Grade Mode:** Letter Grading**FREN 785 - Francophonies Plurielles****Credits:** 4

Spoken in many countries around the world, French has a rich international literary tradition. This course presents the numerous facets of Francophone literature and film produced in Quebec, Western Africa, the Indian Ocean, and the Caribbeans. Focus will change each time the course is offered. May be repeated for credit, barring duplication of materials. Prereq: FREN 651, FREN 652.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to 2 times.**Equivalent(s):** FREN 653**Grade Mode:** Letter Grading**FREN 790 - Cultural Encounters: A View from Abroad****Credits:** 4

French major capstone course for students returning from studying in a French-speaking country. It provides the opportunity 1) to reflect on an international experience and cross cultural communication; 2) to fine tune their use of different styles and modes of expression; 3) to practice translation skills. Prereq: at least one course in French beyond 652 and academic work in French abroad.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**FREN 795 - Special Studies in French Language and Literature****Credits:** 1-4

Individual guided study of the work of a major author, a genre, or specific topics in literature. Training in bibliography and organization of material. Prereq: permission. (Not offered every year).

**Grade Mode:** Letter Grading

## Genetics (GEN)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**GEN 401 - Professional Perspectives in Genetics****Credits:** 1

Introduction to the fields of genetics and genomics and to the genetics faculty and their research. Careers and professional opportunities for genetic majors presented by invited speakers. Emphasis on skills needed for academic success and strategies for achieving professional goals. Cr/F.

**Grade Mode:** Credit/Fail Grading**GEN 604 - Principles of Genetics****Credits:** 0 or 4

Chemical structure of genetic material, gene recombination, mutation, and chromosome mapping. Gene expression and regulation; recombinant DNA; evolutionary, quantitative, and population genetics. Prereq: BIOL 411 and BIOL 412 or equivalent; CHEM 403 and CHEM 404 or equivalent; or permission. College math or statistics suggested.

**Equivalent(s):** BIOL 604**Grade Mode:** Letter Grading

**GEN 606 - Genetics Lab****Credits:** 4

Hands-on experience with some of the important model organisms used for research in genetics (fruit flies, bacteria, yeast, nematodes, and plants). Investigation of fundamental genetic concepts in the laboratory, experience with transmission and molecular genetic techniques, introduction to bioinformatics, analysis and interpretation of data. Prereq: GEN 604. Special fee.

**Grade Mode:** Letter Grading**GEN 704 - Genetics of Prokaryotic Microbes****Credits:** 5

Maintenance, exchange, and expression of genetic material in bacteria and their viruses. Historical overview of the role microbial genetics played in development of modern molecular biology. Contemporary perspective on methods used to understand the function of genes and their applications to basic science, biomedical research, and biotechnology. Prereq: BMS 503 and BMS 504; GEN 604; or permission. Lab. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**GEN 705 - Population Genetics****Credits:** 3

Exploration of the forces (mutations, selection, random drift, inbreeding, assortative mating) affecting the frequency and distribution of genetic variation in natural populations. Quantifying the structure of populations. Methods of analysis for theoretical and practical applications. Prereq: GEN 604 or equivalent; BIOL 528 or equivalent.

**Equivalent(s):** PBIO 705, ZOOL 665, ZOOL 705**Mutual Exclusion:** No credit for students who have taken NR 664.**Grade Mode:** Letter Grading**GEN 706 - Human Genetics****Credits:** 4

Genetic basis of human traits and diseases including both traditional methods of diagnosis and contemporary molecular genetic approaches stemming from the human genome project. Case studies exemplify common practices in human genetic counseling and integrate the scientific basis of diagnosis with the special ethical implications of human genetic analysis. Prereq: GEN 604 or permission.

**Equivalent(s):** ANSC 706, BCHM 706**Grade Mode:** Letter Grading**GEN 711 - Genomics and Bioinformatics****Credits:** 0 or 4

Methods, applications, and implications of genomics—the analysis of whole genomes. Medical, ethical and legal implications of genomic data. Computer lab provides exposure and experience in a range of bioinformatics approaches used in genome analysis. Prereq: GEN 604. Computer Lab.

**Equivalent(s):** GEN 711W**Grade Mode:** Letter Grading**GEN 711W - Genomics and Bioinformatics****Credits:** 0 or 4

Methods, applications, and implications of genomics—the analysis of whole genomes. Microbial, plant and animal genomics are addressed, as well as medical, ethical and legal implications. The lab provides exposure and experience on a range of bioinformatics approaches—the computer applications used in genome analysis. Prereq: GEN 604. Lab. Writing intensive. Only offered in Manchester.

**Attributes:** Writing Intensive Course**Equivalent(s):** BCHM 711, BCHM 715, GEN 711, MICR 711, MICR 715**Grade Mode:** Letter Grading**GEN 712 - Programming for Bioinformatics****Credits:** 5

Development of programming skills that enable life science students to ask fundamental biological questions that require computers to automate repetitive tasks and handle query results efficiently. Topics include: computer values of important parameters of biological sequence data; pattern search and motif discovery scripts; accessing, querying, manipulating, retrieving, parsing, analyzing, and saving data from local and remote databases. Prereq: GEN 604 and GEN 711. Computer Lab.

**Grade Mode:** Letter Grading**GEN 713 - Microbial Ecology and Evolution****Credits:** 4

Evolutionary and ecological forces that generate the tremendous diversity of microbial life on Earth with emphasis on viruses, archaea and bacteria. Functional roles of microorganisms, their population dynamics and interactions, and their mechanisms of evolutionary change in a variety of environmental settings, including natural communities and laboratory microcosms. Prereq: GEN 604; BMS 503 and BMS 504; or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** MICR 713**Grade Mode:** Letter Grading**GEN 714 - Personal Genomics****Credits:** 4

Analysis and implications of personal genomic data is the focus of this course. Students understand and appreciate all aspects of the availability of personal genomic information and tools including scientific, medical, social, ethical and legal issues. Students have the opportunity to analyze their own individual genome to one of the publicly available genomes to learn about all various aspects of this emerging field. The course will be an entirely online format. Prereq: GEN 604. UNHM only.

**Grade Mode:** Letter Grading**GEN 715 - Molecular Evolution****Credits:** 4

Rates and patterns of evolutionary change in biomolecules. Forces affecting the size and structure of genomes. Molecular mechanisms of organismal evolution. Emphasizes integrating evidence from biochemistry, molecular genetics and organismal studies. Methods for reconstructing phylogeny from molecular sequences. Prereq: GEN 604. Some knowledge of statistics recommended. Computer Lab.

**Equivalent(s):** ZOOL 715**Grade Mode:** Letter Grading**GEN 717 - Molecular Microbiology****Credits:** 5

Fundamental physiological and metabolic processes of archaea, bacteria and fungi with a strong emphasis on prokaryotes. Literature-based course. Topics include regulation and coordination of microbial metabolism, bacterial cell cycle, global control of gene expression, signal transduction, and microbial cell differentiation. Prereq: BMS 503 and BMS 504; GEN 604; or permission. Special fee. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** MICR 717**Grade Mode:** Letter Grading



**GEN 721 - Comparative Genomics****Credits:** 4

Explores the central questions and themes in contemporary comparative genomics, including genome biology, phylogenomics, human origins, population genomics, and ecological genomics. Provides the conceptual framework required to evaluate new work in this fast-changing field.

Prereq: GEN 604 or equivalent.

**Grade Mode:** Letter Grading

**GEN 725 - Population Genetics Lab****Credits:** 2

Hands-on approach to exploration of evolutionary forces affecting the frequency and distribution of genetic variation in natural populations. Wet lab techniques include DNA extraction, restriction enzyme digestion, PCR, DNA fragment size-selection. Computational skills include high-throughput sequencing data control, identifying allelic variants, and generation of population genetic summary statistics. Prereq: GEN 604 or equivalent; BIOL 528 or equivalent.

**Co-requisite:** GEN 705

**Grade Mode:** Letter Grading

**GEN 771 - Molecular Genetics****Credits:** 4

Structure, organization, replication, dynamics, and expression of genetic information in eukaryotes. Focus on molecular genetic and epigenetic mechanisms of gene expression and its control; molecular genetic control of cell division and differentiation during development. Prereq: GEN 604 or permission.

**Grade Mode:** Letter Grading

**GEN 772 - Evolutionary Genetics of Plants****Credits:** 4

Mechanisms of genetic change in plant evolution, both in nature and under human influence. Topics include neo-Darwinian theory; speciation and hybridization; origins and co-evolution of nuclear and organelle genomes; gene and genome evolution; transposable elements; chromosome rearrangements; polyploidy; genetic modification. Lab introduces methods in information gathering, bioinformatics, genome analysis, plant breeding, and genetic manipulation. Prereq: GEN 604 or equivalent. Lab. Writing intensive.

**Attributes:** Writing Intensive Course

**Equivalent(s):** PBIO 772

**Grade Mode:** Letter Grading

**GEN 774 - Techniques in Plant Genetic Engineering and Biotechnology****Credits:** 4

Theory and hands-on experience with techniques used in plant genetic engineering, including cell and tissue culture, gene cloning, and analysis of foreign gene expression. Discussion of role of plant biotechnology in sustainable agriculture and climate change; modifying plants for better nutrition and stress response, environmental remediation, and production of pharmaceuticals; controversies associated with this technology. Lab. Special fee. Prereq: GEN 604 or permission.

**Equivalent(s):** PBIO 774, PBIO 775

**Grade Mode:** Letter Grading

**GEN 790 - Undergraduate Teaching Experience****Credits:** 1-4

Provide academic support to graduate teaching assistants or faculty in preparing, presenting, and executing Genetics lectures or labs. Permission required.

**Repeat Rule:** May be repeated for a maximum of 4 credits.

**Equivalent(s):** BMS 790, MICR 790

**Grade Mode:** Letter Grading

**GEN 795 - Investigations in Genetics****Credits:** 1-4

Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply advanced knowledge and techniques of the major to a specific problem or question. Permission required.

**Repeat Rule:** May be repeated for a maximum of 4 credits.

**Equivalent(s):** GEN 795W

**Grade Mode:** Letter Grading

**GEN 795W - Investigations in Genetics****Credits:** 1-4

Advanced research or scholarly projects developed and conducted under the supervision of a faculty member. Provides the opportunity to apply advanced knowledge and techniques of the major to a specific problem or question. Permission required.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 4 credits.

**Equivalent(s):** GEN 795

**Grade Mode:** Letter Grading

**GEN 799 - Senior Thesis****Credits:** 1-4

Independent research project under the direction of a faculty sponsor for seniors in genetics. Final product is a written thesis. One or two semesters. Permission required.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

**GEN 799H - Honors Senior Thesis****Credits:** 1-4

Independent research project under the direction of a faculty sponsor for seniors in genetics and in the Honors Program. Final product is a written thesis. One or two semesters. Permission required.

**Attributes:** Honors course; Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

## Geography (GEOG)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**GEOG 401 - World Regions: Europe and the Americas****Credits:** 4

Examines the rich diversity of human life in the following world regions: North America; Middle and South America; Europe; Russia and the post-Soviet states; and Oceania. We will examine the geography of these regions focusing on the following thematic concepts: Environment; Globalization and development; power and politics; urbanization; and population patterns. This course also serves as an introduction to geography.

**Attributes:** World Cultures(Discovery)

**Equivalent(s):** GEOG 401H

**Grade Mode:** Letter Grading

**GEOG 402 - World Regions: Asia and Africa****Credits:** 4

Examines the unique integration of human and physical phenomena that produces the distinctive character of the following world regions: the Middle East and North Africa; Sub-Saharan Africa; South Asia; Southeast and East Asia. The course also serves as an introduction to the discipline of geography, with its unique spatial perspective.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** GEOG 402H**Grade Mode:** Letter Grading**GEOG 405 - There Is No Planet B****Credits:** 4

Introduces human-environment relations as a central focus of geography, spanning social and environmental sciences. Considers mapping, natural resource use, commons and markets, hazards, political ecology, and land use change. Case studies link core concepts with examples from local to international scales.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**GEOG 473 - Elements of Weather****Credits:** 4

Basic principles of weather phenomena and the physical processes underlying these phenomena. Emphasis on weather patterns of New England. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Grade Mode:** Letter Grading**GEOG 500 - Making Change: Social and Environmental Justice in Practice****Credits:** 4

Provides students with opportunities to consider a personal philosophy and professional action plan for social and/or environmental justice, bridging understandings of social equity and environmental conservation. Spanning theoretical and practical perspectives, students will learn basic community organizing and grantwriting skills that are useful in a range of careers, particularly in the non-profit and government sectors.

**Grade Mode:** Letter Grading**GEOG 530 - China: People, Politics and Economy****Credits:** 4

This course examines China's diverse physical environments, politics, economies, and cultures across the vast territory. Students learn to adopt a relational and spatial perspective to study the contemporary issues in China.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** GEOG #530W**Grade Mode:** Letter Grading**GEOG #530W - China: People, Politics and Economy****Credits:** 4

This course examines China's diverse physical environments, politics, economies, and cultures across the vast territory. Students learn to adopt a relational and spatial perspective to study the contemporary issues in China.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Equivalent(s):** GEOG 530**Grade Mode:** Letter Grading**GEOG 540 - Geography of the Middle East****Credits:** 4

Environmental, cultural, political-geographic, and ecological foundations of the Middle East. Selected regional problems and issues, e.g., geographical dimensions of the Arab-Israeli conflict, oil, urbanization, population growth, and nomadism.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**GEOG 550 - Sub-Saharan Africa: Environmental Politics and Development****Credits:** 4

Explores the political ecologies of development in sub-Saharan Africa. Provides a historical and spatial perspective on sub-Saharan Africa's environments and the politics that influence the region's conservation and development choices. Students will critique conventional knowledge, ideas, and explanations to develop a deeper understanding of environment-development linkages in sub-Saharan Africa over time.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**GEOG 560 - Natural Hazards and Human Disasters****Credits:** 4

A survey of natural hazards, including earthquakes, volcanoes, tsunamis, floods, drought, hurricanes and severe weather, and the human disasters they cause. The geography of community vulnerability to natural hazards and the factors that influence risk and recovery are also examined.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**GEOG 565 - Designing Sustainable Places****Credits:** 4

Introduces sustainable design of the built environment, including small towns, cities, suburbs, and rural areas. From neighborhood to regional scales, thoughtful place-making can link economic growth, justice, and environmental sustainability. Readings, discussions, writings, and hands-on field visits and design activities integrate human, environmental, and aesthetic perspectives to consider key challenges and identify a range of practical solutions.

**Grade Mode:** Letter Grading**GEOG 572 - Geography of the Natural Environment****Credits:** 4

Provides an introduction to geography of the natural environment, including landforms, weather and climate, water resources, and biogeography. Examines the processes that shape the different elements of the environment and the relationships between them.

**Attributes:** Physical Science(Discovery)**Grade Mode:** Letter Grading**GEOG 574 - Global Landscapes and Environmental Processes****Credits:** 4

A survey of earth's major landforms and the geographic factors that influence their development, distribution, and morphology. Topics include mountain building, river systems, desert migration and expansion, glacial and periglacial environments, and shoreline evolution. Discusses interactions with human activities and climate change. Emphasizes how these processes interact to form surface features that are unique to their geographic environment.

**Attributes:** Physical Science(Discovery)**Grade Mode:** Letter Grading

**GEOG 581 - Society, Environment and Justice****Credits:** 4

Introduces human geography with an emphasis on social justice and environmental justice, integrating social and cultural aspects of space, place, and human-environment relations. Discusses urban, suburban, and rural examples in the US and internationally to illustrate basic geographic concepts.

**Attributes:** Social Science (Discovery); Inquiry (Discovery)**Grade Mode:** Letter Grading**GEOG 581O - Human Geography****Credits:** 4

Differentiation of the world in terms of population, race, language, religion, political territory, and economic life. Collection and critical use of empirical data; emphasis on spatial and ecological analysis.

**Attributes:** Social Science (Discovery)**Grade Mode:** Letter Grading**GEOG 582 - Global Trade and Local Development****Credits:** 4

This course examines the ways in which global trade interacts with local development across the world. It studies the special organization of economic activities through basic approaches in economic geography. It also studies the history and contemporary state of international competition and collaboration.

**Attributes:** Social Science (Discovery)**Equivalent(s):** GEOG #582W**Grade Mode:** Letter Grading**GEOG #582W - Global Trade and Local Development****Credits:** 4

This course examines the ways in which global trade interacts with local development across the world. It studies the special organization of economic activities through basic approaches in economic geography. It also studies the history and contemporary state of international competition and collaboration. Writing intensive.

**Attributes:** Social Science (Discovery); Writing Intensive Course**Equivalent(s):** GEOG 582**Grade Mode:** Letter Grading**GEOG 584 - Political Geography****Credits:** 4

Interactions between geographic and political phenomena at the sub-national, national, and international levels. Emphasis on geographical aspects of current political problems within and between states. (Not offered every year.) Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**GEOG 590 - Field Research****Credits:** 4

Explores a range of research methods, emphasizing collection and analysis of field data to understand human-environment dynamics and/or spatial relations. Topics include ethics, sample design, surveys, interviews, participant observation, and qualitative and quantitative analyses. Students complete hands-on research activities.

**Equivalent(s):** GEOG 650**Grade Mode:** Letter Grading**GEOG 591 - Making Maps: GIS Fundamentals****Credits:** 4

Introduces Geographic Information Systems (GIS) to design digital maps, integrate diverse data sources, and conduct basic spatial analyses. Appropriate for students with or without computer technology background. Skills are highly employable in many careers where spatial data can be used, including social justice, public health, sustainability, town and urban planning, economic development, public safety, energy, transportation, construction, environmental hazards, political strategy, security and diplomacy, military intelligence, marketing, education, communications, real estate, and public humanities.

**Grade Mode:** Letter Grading**GEOG #595 - Statistics for Spatial Science****Credits:** 4

Introduces elementary statistics to students of social sciences from a spatial perspective. It is designed to help students approach introductory-level quantitative analysis using basic statistical problem-solving techniques with social and physical science data models. These elementary statistical tools and concepts will be explained during classroom lectures and proficiency obtained during practical exercises.

**Grade Mode:** Letter Grading**GEOG 658 - Introduction to Geographic Information Systems****Credits:** 4

Introduces the use of geographic information systems (GIS) for natural resources and related fields. Data models/structures, map projections, data input/output/storage, data analysis/modeling, interpolation, and data quality/standards. Hands-on lab using ArcGIS software. Students are strongly encouraged to complete an introductory course in statistics before enrolling in course. Restricted to GEOG majors or permission. (Also offered as NR 658).

**Equivalent(s):** NR 658**Grade Mode:** Letter Grading**GEOG 670 - Climate and Society****Credits:** 4

An introduction to climate science and the interaction between humans and climate. Examines the processes that control climate, the mechanisms that drive climate change, and the impact of climate change on society. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** GEOG 570**Grade Mode:** Letter Grading**GEOG 673 - Political Ecology****Credits:** 4

Examines human-environment relations through the geographic subfield of political ecology, integrating social and biophysical sciences. Emphasizes cross-scalar relationships in resource decisions and community development, with substantial coverage of rural, non-US contexts. Seminar-style course with regular readings, writings and discussion. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** GEOG 573**Grade Mode:** Letter Grading

**GEOG 685 - Population and Development****Credits:** 4

A regional approach to the study of population geography with concern for the interaction between the focus of economic growth and the components of population change and development. Considers the environmental impact of developing trends in the developed and developing worlds and the relationship of these trends to sustainable growth and population patterns.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**GEOG #686 - World Economy and Globalization****Credits:** 4

Emphasizes the spatial development of the world economy and the evolution into today's "globalized" economy. Topical emphasis includes the processes of global economic production changes, the role of transnational corporations, and the role of the state in globalization.

Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**GEOG 695 - Internship****Credits:** 1-4

Internships provide an opportunity for on-the-job skill development and practical experience in a closely supervised work setting. The student must provide a written proposal to a supervising faculty member before an internship program is approved. At the end of the semester, the student must make a presentation, provide work samples, or submit a detailed report, log, or portfolio describing the internship experience. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**GEOG 757 - Remote Sensing of the Environment****Credits:** 4

Practical and conceptual presentation of the use of remote sensing and other geospatial technologies for mapping the environment. The course begins with the use of aerial photographs (Photogrammetry and photo interpretation) and includes measures of photo scale and area, parallax and stereo viewing, object heights, flight planning, photo geometry, the electromagnetic spectrum, camera image analysis, global positioning systems (GPS), and geographic information systems (GIS). Conceptual lectures are augmented with practical homework assignments and hands-on lab exercises. Prereq: Algebra. Special fee. Lab. (Also offered as NR 757).

**Equivalent(s):** FOR 757, FORS 757, NR 757**Grade Mode:** Letter Grading**GEOG 759 - Digital Image Processing for Natural Resources****Credits:** 4

Introduces digital remote sensing including multispectral scanners (Landsat and SPOT) radar, and thermal imagery. Hands-on image processing including filtering, image display, ratios, classification, registration, and accuracy assessment. GIS as it applies to image processing. Discussion of practical applications. Use of ERDAS image-processing software. Knowledge of PCs required. Prereq: GEOG 757 or equivalent and permission. (Also offered as NR 759).

**Equivalent(s):** NR 759**Grade Mode:** Letter Grading**GEOG #760 - Geographic Information Systems in Natural Resources****Credits:** 4

This course in geographic information systems (GIS), covers advanced theory, concepts, and applications of GIS for natural resource and related disciplines. Discussion of database structures, data sources, spatial data manipulation/analysis/modeling, data quality and assessment. Students conduct a project of their design exploring aspects of GIS most useful to them. Lecture emphasizes concepts and applications through a text and selected peer reviewed articles. Lab uses the latest version of ArcGIS software and provides hands on experience. Prereq: Introductory GIS course. Permission required. (Also listed as NR 760).

**Equivalent(s):** NR 760**Grade Mode:** Letter Grading**GEOG 795 - Special Project****Credits:** 2 or 4

Readings, library, archival, and fieldwork. Primarily for geography seniors.

Prereq: permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

## German (GERM)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**GERM 401 - Elementary German I****Credits:** 4

For students without previous training in German. Aural comprehension, speaking, writing, reading in a cultural context. No credit for those with two or more years of German in secondary school.

**Grade Mode:** Letter Grading**GERM 402 - Elementary German II****Credits:** 4

See description for GERM 401.

**Attributes:** Foreign Language Requirement**Grade Mode:** Letter Grading**GERM 503 - Intermediate German I****Credits:** 4

Review of grammar; practice in oral and written expression; readings and cultural material. Prereq: GERM 401, GERM 402 or equivalent. Labs.

**Attributes:** World Cultures(Discovery); Foreign Language Requirement**Grade Mode:** Letter Grading**GERM 504 - Intermediate German II****Credits:** 4

Review of grammar; practice in oral and written expression; readings and cultural material. Labs. Prereq: GERM 503 or equivalent.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**GERM 521 - Major German Authors in English****Credits:** 4

Selected masterpieces of the 18th, 19th, and 20th centuries by authors such as Goethe, Mann, Kafka, Hesse, Bachmann, Koeppen, Brecht, Frisch, Wolf, and Durrenmatt. Readings and discussions in English. May be taken for major or minor credit.

**Attributes:** Humanities(Disc)**Equivalent(s):** WLCE 521G**Grade Mode:** Letter Grading

**GERM 525 - Introduction to German Culture and Civilization****Credits:** 4

Aspects of the political, social, and cultural life of Germany, Austria, and Switzerland. Conducted in English. Strongly recommended for any students planning study abroad in a German-speaking country. Required for the major, can be taken for the minor.

**Attributes:** World Cultures(Discovery); Inquiry (Discovery)**Equivalent(s):** GERM 525H, WLCE 525G**Grade Mode:** Letter Grading**GERM 586 - Study in Berlin****Credits:** 0-8

Gives students an immersion experience in the German language and culture. Students will study 5 weeks in Berlin, where they will take an intensive language course (80 hours) at the BSI Private Language School, receive cultural instruction from the on-site UNH faculty member, and pursue an individual research project. Permission required. Special fee.

**Co-requisite:** INCO 589**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**GERM 631W - Advanced Communications Skills I****Credits:** 4

Intensive practice in vocabulary building and developing a sense of appropriate style for various contexts of oral and written communication. Discussion and writing on topics of current interest, written and oral reports, role play, and simulation of everyday situations, reinforced by written work. Required for German major and minor. Prereq: GERM 504.

**Attributes:** Writing Intensive Course**Equivalent(s):** GERM 631, GERM 631H**Grade Mode:** Letter Grading**GERM 632 - Advanced Communications Skills II****Credits:** 4

Intensive practice in vocabulary building and coherent expression in a variety of stylistic contexts. Special emphasis on writing skills, from expository prose to letter and resume writing, essays, journalistic reports, and creative writing, focusing on topics of current interest. Required for the German major. Prereq: GERM 504.

**Grade Mode:** Letter Grading**GERM 728 - Modern German Literature****Credits:** 4

Major literary movements from 1872 to 1945. Reading and analysis of selected works. Conducted in German.

**Attributes:** Writing Intensive Course**Equivalent(s):** GERM 728H**Grade Mode:** Letter Grading**GERM 732 - Public Discourse and Current Affairs****Credits:** 4

Conducted in German. Public discourse and current affairs in German speaking societies. Analysis and interpretation of various media and contemporary events. Refinement of writing and stylistics with particular focus on grammatical accuracy and advanced composition.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**GERM 738 - Contemporary German Theater****Credits:** 4

Course taught in German. Students study German drama from academic and aesthetic perspectives. Students read original plays and selections from plays, followed by attendance at live performances within Germany. With the support of secondary sources, including theoretical and historical texts, students discuss and analyze the performance of these works. Of primary concern to us will be issues of Bühnentechnik (stage technology), Beleuchtung (lighting), Kostume (costumes), Musik (music), Bewegung (movement), Stimme (voice), Regie (direction), and Realismus (realism).

**Attributes:** FinePerformingArts(Discovery)**Prerequisite(s):** GERM 632 with a minimum grade of D-**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**GERM 795 - Independent Study****Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with permission of the department chairperson and supervising faculty member(s). Barring duplication of subject, may be repeated for credit.

**Repeat Rule:** May be repeated up to 4 times.**Equivalent(s):** GERM 795H**Grade Mode:** Letter Grading**GERM 797 - Special Studies in German Language and Literature****Credits:** 4

Selected topics in language, culture, and literature. Conducted in German. May be repeated barring duplication of subject.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**GERM 798 - Special Studies in German Language and Literature****Credits:** 4

Selected topics in language, culture, and literature. Conducted in German. May be repeated barring duplication of subject.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading

## Gerontology (GERO)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**GERO 500 - I'm Old, So What! An introduction to aging in the United States****Credits:** 4

This is the first of two mandatory courses for the GERO Minor, but any student may take it as an elective. It introduces the learner to the field of gerontology (the study of how people age). It explores the biological, psychosocial, and cognitive changes within the context of society. The history of ageism and its influence on how it has affected the individual, families, and society is presented. The range of independence among older people is examined. Various disciplines that work within the field of gerontology are reviewed. Lectures, novels, films and guest speakers help to examine growing old in the U.S. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** GERO 600**Grade Mode:** Letter Grading



**GERO #795 - Independent Study****Credits:** 1-6

Open to Gerontology Minor students only. Content area determined by student and faculty mentor, topic must have a major aging component. A proposal of work must be signed by both student and faculty mentor and given to the Gerontology Minor Coordinator for final approval. Proposals are filed in the student's declared major academic folder. Work may be completed over two semesters, especially if it involves thesis/internship work. Credits compensatory with work: 1 to 6. Prereq: GERO 500 and KIN 607.

**Repeat Rule:** May be repeated for a maximum of 6 credits.**Grade Mode:** Letter Grading

## Global Conflict and Human Security (GCHS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**GCHS 710 - Conflict & Human Security****Credits:** 4

Examines patterns and trends of armed conflict, especially terrorism, insurgency and civil war in the 21st century. Reviews conditions that are likely to lead to war and the myriad ways conflict affects the economy, political system, and cultural norms of a society. Explores how civil wars end, key elements of effective peace processes, and the conditions under which mass violence is likely to resume. Examines conflict prevention strategies such as: preventing and countering violent extremism (P/CVE), disarmament, demobilization and reintegration (DDR) of combatants, and reform of police and military forces (security sector reform/SSR). Case studies on countries in Asia, Middle East, Africa and Latin America.

**Grade Mode:** Letter Grading**GCHS 720 - Global Governance****Credits:** 4

An introduction to the concepts and theories of global governance. Examines the role governments, non-governmental organizations, institutions, civil society, and other actors play in the development and implementation of international law and policies. Focuses on the global institutional infrastructure for foreign aid, humanitarian relief, development programs, peacebuilding, and human rights advocacy. Explores how multilateral organizations, non-governmental organizations and other actors promote human security and sustainable development in countries with weak governments.

**Grade Mode:** Letter Grading**GCHS 730 - International Development & Human Security****Credits:** 4

Introduces international development policy and practice. Explores the interrelatedness of the United Nations' distinct human security domains (economic, food, health, environmental, personal, community, and political security), and reviews their connections to the UN Sustainable Development Goals (e.g., zero hunger, peace, justice and strong institutions). Examines the strategies used by humanitarian and development organizations to enhance people's well-being in fragile states and conflict zones. Topics include: ethics of humanitarianism; how to create effective programs to alleviate poverty, tackle corruption and empower women and girls. Case studies on countries in Asia, Middle East, Africa and Latin America.

**Grade Mode:** Letter Grading**GCHS 740 - Environmental Security, Climate Change and Conflict****Credits:** 4

Explores different dimensions of human security with a focus on environmental security. Explores how environmental challenges (population demographics, food and water insecurity, energy insecurity, etc.) may give rise to socio-political instability around the world. Examines solutions to these problems, using comparisons between more and less developed nations.

**Grade Mode:** Letter Grading

## Greek (GREK)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**GREK 401 - Elementary Classical Greek I****Credits:** 4

Explore the world of the ancient Greeks by learning the basic elements of Attic Greek: the alphabet, vocabulary and grammar. By the end of the first semester students will be prepared to read short adapted passages on the history, poetry, philosophy, religion (ancient Greek and early Christianity), mythology, politics, theater and culture of the ancient Greeks and the many other cultures that they were associated with.

**Grade Mode:** Letter Grading**GREK 402 - Elementary Classical Greek II****Credits:** 4

A continuation of GREK 401, this course expands students' abilities to read simple to moderate complex Greek passages, furthering their insights into the fascinating language and cultural practices of the Ancient Greeks.

**Attributes:** Foreign Language Requirement**Grade Mode:** Letter Grading**GREK 503 - Intermediate Classical Greek I****Credits:** 4

Readings from Xenophon, Plato, Herodotus, Euripides, and the New Testament. Prereq: GREK 402.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**GREK 504 - Intermediate Classical Greek II****Credits:** 4

Readings from Xenophon, Plato, Herodotus, Euripides, and the New Testament. Prereq: GREK 402.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**GREK 595 - Directed Reading in Greek****Credits:** 2 or 4

Independent study of a classical, Byzantine, or modern Greek author. Prereq: GREK 503, GREK 504, GREK 505, and GREK 506, or equivalent. Special fee.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**GREK 751 - Homer and the Archaic Period****Credits:** 4

Readings from the Iliad, the Odyssey, the Homeric hymns, Hesiod, Pindar, and the lyric poets. Prereq: permission.

**Grade Mode:** Letter Grading

**GREK 753 - Advanced Study in Athenian Literature****Credits:** 4

A) Aeschylus, B) Sophocles, C) Euripides, D) Aristophanes, E) Herodotus, F) Thucydides, G) Xenophon, H) Plato, I) Aristotle, J) Lysias, K) Demosthenes, L) Isocrates. Major Attic authors from the Battle of Marathon to the death of Alexander the Great. Prereq: permission. Each special topic may be repeated two times.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**GREK #795 - Special Studies****Credits:** 4

A) Pre-Socratic Philosophers; B) Hellenistic Greek Authors; C) Menander; D) Callimachus; E) Apollonius of Rhodes; F) Theocritus; G) Polybius; H) Greek Authors of the Roman Empire; I) Plutarch; J) Septuagint; K) New Testament; L) Greek Church Fathers; M) Byzantine Authors; N) Spoken Greek O) Advanced Greek Composition; P) Introduction to Classical Scholarship; Q) Greek Epigraphy; R) Greek Dialects; S) Comparative Grammar of Greek and Latin; T) Homer: A Linguistic Analysis; U) Greek Institutions; V) Paleography and Textual Criticism. Topics selected by instructor and student in conference. Prereq: permission. Each special topic may be repeated two times.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**GREK 796 - Special Studies****Credits:** 4

A) Pre-Socratic Philosophers; B) Hellenistic Greek Authors; C) Menander; D) Callimachus; E) Apollonius of Rhodes; F) Theocritus; G) Polybius; H) Greek Authors of the Roman Empire; I) Plutarch; J) Septuagint; K) New Testament; L) Greek Church Fathers; M) Byzantine Authors; N) Spoken Greek O) Advanced Greek Composition; P) Introduction to Classical Scholarship; Q) Greek Epigraphy; R) Greek Dialects; S) Comparative Grammar of Greek and Latin; T) Homer: A Linguistic Analysis; U) Greek Institutions; V) Paleography and Textual Criticism. Topics selected by instructor and student in conference. Prereq: permission. Each special topic may be repeated two times.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Health & Human Services (HHS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**HHS 400A - UNH-4U: Career and Professional Seminar****Credits:** 1-4

In this seminar, UNH-4U students will explore career interests, develop career plans, and learn and practice skills needed to land a job or internship. Specific objectives include: 1) articulating career goals and competencies; 2) creating an academic and career development plan; 3) demonstrating skills for job and internship pursuit; and 4) engaging in professional networking. UNH-4U students can participate in the seminar up to 4 semesters with specific seminar activities established in consultation with mentor.

**Repeat Rule:** May be repeated for a maximum of 4 credits. May be repeated up to 16 times.**Grade Mode:** Credit/Fail Grading**HHS 400B - UNH-4U Seminar: Academic Success and Well-Being Seminar****Credits:** 1-4

In this UNH-4U seminar, students will focus on resource availability and resource navigation to support academic success, healthy living, and well-being. Specific objectives include: 1) identifying and articulating goals in the areas of academic success, healthy living, and well-being; 2) establishing resource utilization plans in support of each of these goals; 3) demonstrating targeted knowledge and skills related to independence in managing individual needs. UNH-4U students can participate in the seminar up to 4 semesters with specific seminar activities established in consultation with mentor.

**Repeat Rule:** May be repeated for a maximum of 4 credits. May be repeated up to 16 times.**Grade Mode:** Credit/Fail Grading**HHS 400C - UNH-4U Seminar: Independent Study****Credits:** 1-4

Qualified UNH-4U student will be permitted to pursue independent studies under faculty guidance.

**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 2 times.**Grade Mode:** Credit/Fail Grading**HHS 401 - College of Health and Human Services Seminar****Credits:** 1 or 2

This course is an introduction to the curricular and co-curricular aspects of the University and specifically the College of Health and Human Services. The course will focus on resource navigation, major and career exploration and fostering "knowledge for healthy living". Permission required.

**Grade Mode:** Credit/Fail Grading**HHS 402 - Foundations of Career and Professional Success****Credits:** 1 or 2

This course will guide CHHS students as they identify ways to self-reflect and build experience to become well rounded applicants for experiential learning (internships, clinicals, fieldwork, etc.), graduate school, and future careers. An emphasis will be placed on identifying robust ways to build transferable skills through activities beyond the classroom such as volunteer work, clubs and orgs, research, and jobs applicable to the student's field of interest.

**Grade Mode:** Credit/Fail Grading**HHS #444 - The Right to be Disabled in the Extreme Makeover Society****Credits:** 4

Explores how society's view of disability, its "construction," is influenced by a variety of cultural variables and the implications of that construction on institutions such as medicine and health care, education, the arts, the legal system, architecture and engineering, etc.

**Attributes:** Social Science (Discovery); Inquiry (Discovery)**Grade Mode:** Letter Grading**HHS 540 - Statistics for Health and Human Service Professionals****Credits:** 4

A conceptual and analytical approach to the use of statistics in the health and human service professions. Emphasizes the logic and purpose of statistics. Attention to special problems of statistical design such as random assignment, single subject trials, and the ethics of control groups. Basic computer skills for manipulating data.

**Attributes:** Quantitative Reasoning(Disc)

**Mutual Exclusion:** No credit for students who have taken ADM 430, ADMN 420, ADMN 510, BIOL 528, EREC 525, MATH 439, MATH 539, MATH 644, PSYC 402, PSYC 402H, SOC 402, SOC #402H, SOC 502, SOC 502H.

**Grade Mode:** Letter Grading

**HHS 598 - Special Topics****Credits:** 1-4

Explores areas related to specific professional health interests. May repeat but not duplicate subject areas. A) Communication Disorders, B) Health Management and Policy, C) Medical Laboratory Science, D) Nursing, E) Occupational Therapy, F) Kinesiology, G) Recreation Management and Policy, J) Family Studies, K) Social Work, L) Health Promotion, M) Women's Leadership N-Z) Interdisciplinary.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Letter Grading**HHS 697W - Professional Writing in the Health and Human Services****Credits:** 1-4

This course will focus on professional writing skills for the health sciences and human services professionals. Writing in these professions is unique because written communication often serves as the foundation for clinical and programmatic decision making requiring swift, precise, accurate, defensible, and objective writing. With this in mind, this course will focus on clinical recording, case documentation, cover letters, fact sheets, brief reports, memos, and infographics.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 4 credits. May be repeated up to 1 time.**Grade Mode:** Letter Grading**HHS 698 - Special Topics****Credits:** 1-4

Explores areas related to specific professional health interests. May repeat but not duplicate subject areas. A) Communication Disorders, B) Health Management and Policy, C) Medical Laboratory Science, D) Nursing, E) Occupational Therapy, F) Kinesiology, G) Recreation Management and Policy, J) Family Studies, K) Social Work, L) Health Promotion, M-Z) Interdisciplinary. Cr/F.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Credit/Fail Grading**HHS 798 - Special Topics****Credits:** 1-4

Explores areas related to specific professional health interests. May repeat but not duplicate subject areas. A) Communication Disorders, B) Health Management and Policy, C) Medical Laboratory Science, D) Nursing, E) Occupational Therapy, F) Kinesiology, G) Recreation Management and Policy, J) Family Studies, K) Social Work, L) Health Promotion, M-Z) Interdisciplinary. Prereq: permission. Special fee on some topics.

**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 7 times.**Grade Mode:** Letter Grading

## Health and Physical Education (HPE)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**HPE 500 - Introduction to Health and Physical Education****Credits:** 2

This course is intended to lay the foundation for future Health and PE pedagogy courses. Topics of discussion will include the role of health and physical education in today's society, "old" versus "new" physical education and philosophy of education and physical education. Also, wellness and health promotion, teaching health via a skills-based approach, outcomes and assessments, career and professional considerations of teaching and future trends within the profession.

**Equivalent(s):** KIN 500**Grade Mode:** Letter Grading**HPE 570 - Elementary Physical Education Practicum****Credits:** 4

As a prospective teacher, you will be asked to examine, discuss, and implement teaching strategies learned in HPE 610 - Elementary Physical Education Pedagogy. Sixty hours of observation and teaching in the schools will be expected. As this is a "gateway" course to student teaching or the 5th year internship, it is expected that students invest efforts into the development of pedagogical skills needed for effective teaching. Prereq: HPE 610.

**Attributes:** Writing Intensive Course**Equivalent(s):** KIN 570**Grade Mode:** Letter Grading**HPE 600 - Movement and Gymnastics Exploration****Credits:** 4

This course is designed to enhance the students' knowledge of and ability to demonstrate, implement, and evaluate the movement fundamentals and gymnastics skills and progression that forms the foundation of preschool, elementary, and secondary school physical education content. The course will combine the elements of movement education and gymnastics progressions to develop a basis for students to learn the fundamentals of movement and how to teach them.

**Equivalent(s):** KIN 600**Grade Mode:** Letter Grading**HPE 601 - Lifetime Sports****Credits:** 3

This course is designed to acquaint students with a variety of lifetime sports. The emphasis will be placed on students' ability to effectively participate in, teach and assess various activities. The following lifetime sports will be covered: cross country skiing, snowshoeing, badminton, pickle ball, tennis, fitness-related activities, weight training and golf.

**Equivalent(s):** KIN 601**Grade Mode:** Letter Grading**HPE 603 - Team Sports****Credits:** 3

This course is designed to expose students to the teaching of games through a tactical approach. This approach places a heavy emphasis on small-sided, modified games with subsequent question and answer sessions. The course will focus on instruction, game play, skill development, and analysis leading to playing competence and knowledge of teaching in soccer, ultimate Frisbee, basketball, handball, flag football, volleyball and softball.

**Equivalent(s):** KIN 603**Grade Mode:** Letter Grading

**HPE 610 - Elementary Physical Education Pedagogy****Credits:** 4

This course is designed for future physical education teachers focusing primarily on “what” and “how” to teach elementary physical education. The class adopts a skill theme and movement concept approach to the curriculum. Teaching skills will be developed through readings, lecture/discussion, assignments, peer teaching and teaching children in the gymnasium.

**Equivalent(s):** KIN 610**Grade Mode:** Letter Grading**HPE 648 - Current Issues in Teaching Health****Credits:** 4

This course provides the background information and skills teachers need to implement a health education program in schools at the grade levels in which they are certified. Aligned with the CDC Characteristics for Effective Health Education the course introduces the National Health Education Standards and prepares students in the development of teaching skills needed for implementing effective health education while including functional information based on local data and student need.

**Equivalent(s):** KIN 648**Grade Mode:** Letter Grading**HPE 653B - Biomechanics of Human Movement****Credits:** 2

Principles and methodology of analyzing movement in sport and physical education using principles of biomechanics and physics. Uses videos and field-based methodology to facilitate students' understanding of movement analysis and applying analyses to teaching and coaching. Prereq: BMS 507 and BMS 508.

**Equivalent(s):** KIN 653B**Grade Mode:** Letter Grading**HPE 655 - Middle School and Secondary Physical Education Pedagogy****Credits:** 4

Course content will include concepts related to effective teaching such as: planning, organization, communication, management, modifications, and evaluation. Mosston's spectrum of teaching styles will be discussed in relationship to meeting the individual needs of students. Curriculum models will be discussed in order to show the range of content available to physical educators. Application of theoretical concepts will occur in peer teaching episodes.

**Equivalent(s):** KIN 655**Grade Mode:** Letter Grading**HPE 666 - Middle School and Secondary Physical Education Practicum****Credits:** 4

Students in this course will be given the opportunity to spend 60 hours in a middle or high school observing, assisting and teaching physical education classes. These experiences will be augmented by weekly seminars whereby issues pertaining to focused observations and thoughts related to teaching and learning will be discussed. A major culminating “I Believe” paper will be required and this course will be the HPE capstone experience.

**Attributes:** Writing Intensive Course**Equivalent(s):** KIN 666**Grade Mode:** Letter Grading**HPE 671 - Health Education Pedagogy****Credits:** 4

This course provides a foundation for teaching health education in K-12 settings. Aligned with the CDC Characteristics for Effective Health Education, the course builds on previous knowledge of the National Health Education Standards and other appropriate practices while preparing pre-service teachers to increase the health literacy and proficiency levels of their future students.

**Equivalent(s):** KIN 671**Grade Mode:** Letter Grading**HPE 675 - Motor Development and Learning****Credits:** 4

This class examines motor development throughout the life-span utilizing an ecological perspective that incorporates the individual, the environmental conditions and the required tasks. The class is divided into 4 modules. Modules include the theoretical underpinnings of motor development, elements of fitness, assessment, and individual constraints. The class concludes with peer teaching episodes.

**Equivalent(s):** KIN 675**Grade Mode:** Letter Grading**HPE 676 - Adventure Activities****Credits:** 3

This course provides for the acquisition of knowledge and skills for students to utilize adventure education methods and philosophies when teaching physical education through an experiential pedagogy. Students will be exposed to adventure methodologies: climbing, orienteering, initiatives, low ropes course and high ropes course. Students will realize facilitation and teaching strategies through peer and practice teaching with local students from Oyster River Middle School in Durham.

**Equivalent(s):** KIN 676**Grade Mode:** Letter Grading**HPE #693 - Teaching Assistantship in HPE****Credits:** 2

This course provides the opportunity for a student to work with a member of the HPE faculty in an experience to be determined and agreed upon. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Credit/Fail Grading**HPE 694 - Supervised Teaching in Health and Physical Education****Credits:** 6

Students in this course will be involved in observing, assisting and teaching health and physical education classes in local schools as their culminating experience in the HPE major. These experiences will be augmented by weekly seminars whereby issues pertaining to focused observations and thoughts related to teaching and learning will be discussed. Throughout the duration of this course, students will be asked to reflect on the teaching they observe as well as their own teaching.

**Co-requisite:** EDUC 694D**Equivalent(s):** KIN 694**Grade Mode:** Credit/Fail Grading**HPE 696 - Independent Study in Health and/or Physical Education****Credits:** 2-4

An advanced, individual scholarly project under the direct supervision of a faculty member. Prereq: junior or senior; departmental approval.

**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 4 times.**Grade Mode:** Letter Grading



**HPE #696W - Independent Study****Credits:** 2-4

An advanced, writing-intensive, individual scholarly project under the direct supervision of a faculty member. Student and Faculty Adviser will prepare a written proposal that outlines: the questions to be pursued, the methods of investigation, the student's qualifications to conduct the research, the nature of the finished written product (e.g. case study, position paper, extended lab report). This proposal must be approved by the major faculty and the department chair prior to the student's registration for HPE 696 WI. All HPE 696 WI projects must include: Some forms of informal, ungraded writing such as a journal, reading summaries, draft chapters, or invention activities. Regular writing interaction between student and faculty adviser (i.e. at least weekly or biweekly), to include written feedback from the adviser. A finished product that is polished via revision. Faculty sponsors and students should consult the resources and guidelines of the UNH Writing Program. Prereq: junior or senior; departmental approval.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 4 times.**Grade Mode:** Letter Grading**HPE #699H - Honors Project****Credits:** 4

Project first involves tutorial sessions to introduce the student to the experimental design, after which a research question is developed. After an appropriate literature review, the student collects and analyzes data, forms conclusions, and prepares a written report on the findings.

**Attributes:** Honors course**Grade Mode:** Letter Grading**HPE 702 - Health Content and Youth Risk Behavior****Credits:** 4

Explore topics related to adolescent health, well-being, and risk behaviors that are relevant in the health education classroom today. Grounded in health behavior theories and behavior change, students explore ten dimensions of wellness: Cultural, Emotional, Environmental, Financial, Intellectual, Occupational, Physical, Sexual, Social, and Spiritual. Students develop a content base for teaching Standard 1 of the National Health Education Standards in coordination with the skill standards as outlined by the NH Health Education Curriculum Guidelines. Prereq: HPE 648.

**Equivalent(s):** KIN 702**Grade Mode:** Letter Grading**HPE 712 - Health Education Practicum****Credits:** 4

This practicum provides prospective educators an opportunity to observe, develop and practice teaching skills in the health classroom. Students are expected to accumulate 60 hours of observing, assisting and teaching experience in schools. In addition, weekly seminars integrate field experience with lesson planning, school wellness policies and the Whole School, Whole Community, Whole Child approach. This serves as an opportunity for refinement and continued development of teacher skills and attributes for teaching health education. Prereq: HPE 648, HPE 671.

**Equivalent(s):** KIN 712**Grade Mode:** Letter Grading**HPE 742 - Physical Education Practicum for Students with Disabilities****Credits:** 4

The purpose of the practicum is to provide the educators with opportunities to create, plan and manage physical education/activity experiences for individuals with disabilities within school and community settings.

**Equivalent(s):** KIN 742**Grade Mode:** Letter Grading**HPE 766 - Middle School and Secondary Physical Education Practicum****Credits:** 4

Students in this course will be given the opportunity to spend 60 hours in a middle or high school observing, assisting and teaching physical education classes. These experiences will be augmented by weekly seminars whereby issues pertaining to focused observations and thoughts related to teaching and learning will be discussed. A major culminating "I Believe" paper will be required and this course will be the HPE capstone experience.

**Attributes:** Writing Intensive Course**Equivalent(s):** HPE 666, KIN 666**Grade Mode:** Letter Grading**HPE 781 - Inclusion in Physical Education****Credits:** 4

As schools move towards inclusive settings, general physical education (GPE) teachers need the knowledge, skills, and dispositions for educating students with disabilities in general and adapted physical education (APE) settings. The course begins with an understanding of the term disability followed by the legal mandates that define school policy and student placement. Throughout the course an overview of disability will be analyzed with readings that include an analysis of the social medical models designed to challenge the social construction of disability and orientations for practice. Classroom time will include direct teaching of individuals with disabilities.

**Attributes:** Writing Intensive Course**Equivalent(s):** KIN 781**Grade Mode:** Letter Grading**HPE 798 - Special Topics in Health and Physical Education****Credits:** 4

New or specialized courses not normally covered in regular course offerings. Special fee on some sections.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Health Management & Policy (HMP)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**HMP 401 - United States Health Care Systems****Credits:** 4

Nature and functions of health care services and health professionals; impact of social, political, economic, ethical, professional, legal, and technological forces on health care systems. Current health policy issues.

**Attributes:** Social Science (Discovery)**Equivalent(s):** HMP #401H, HMP 401W**Grade Mode:** Letter Grading



**HMP #401H - Honors/United States Health Care Systems****Credits:** 4

Nature and functions of health care services and health professionals; impact of social, political, economic, ethical, professional, legal, and technological forces on health care systems. Current health policy issues.

**Attributes:** Honors course; Social Science (Discovery); Writing Intensive Course

**Equivalent(s):** HMP 401, HMP 401W

**Grade Mode:** Letter Grading

**HMP 401W - United States Health Care Systems****Credits:** 4

Nature and functions of health care services and health professionals; impact of social, political, economic, ethical, professional, legal, and technological forces on health care systems. Current health policy issues.

**Attributes:** Social Science (Discovery); Writing Intensive Course

**Equivalent(s):** HMP 401, HMP #401H

**Grade Mode:** Letter Grading

**HMP 403 - Introduction to Public Health****Credits:** 4

This course describes and defines “what is public health” and seeks to convey its critical importance and relevance to both public and individual (personal) wellbeing. It presents an overview of the structure, function, and organization of the public health system/services (government, proprietary, and voluntary sectors) and how they operate, emphasizing core functions and major divisions (public health administration, epidemiology and biostatistics, environmental health, social and behavioral health). Addresses the social, ethical, issues; bioterrorism; epidemics; obesity; tobacco, alcohol, and opioid use; violence. Seeks to challenge students to think critically about existing and emerging U.S. and global public health issues. Introduces public health careers.

**Equivalent(s):** HAP 403

**Grade Mode:** Letter Grading

**HMP #440A - Honors/Global Public Health Issues****Credits:** 4

This course is designed to provide students with an introduction to and overview of the key areas of global health by addressing the major determinants of health and how health status is measured to determine the burden of disease in the developing world. This course is part of the Honors Symposium titled: Reinventing Healthy Communities Nationally and Globally: Medical, Legal, and Cultural Perspectives. This course is the same course as HMP #444A Honors/Global Public Health Issues, that was approved by the Discovery Program as an Inquiry, World Cultures Category course. HMP #440A will not be offered as an Inquiry course, but will maintain the World Cultures Category.

**Attributes:** Honors course; World Cultures(Discovery)

**Equivalent(s):** HMP #444A

**Grade Mode:** Letter Grading

**HMP 444 - From Frankenstein to Dolly, and Beyond****Credits:** 4

This course is an interdisciplinary introductory course designed specifically for first year students. It seeks to stimulate, provoke, and support student inquiry, discussion, and exploration of a wide variety of social and ethical issues associated with scientific research and advances, with an emphasis on ones related to the biomedical and health sciences. It explores the value-laden questions that they often precipitate, and their impact on individuals, population groups, and society at large.

**Attributes:** Environment, TechSociety(Disc); Inquiry (Discovery)

**Grade Mode:** Letter Grading

**HMP #444A - Global Public Health Issues****Credits:** 4

This course is designed to provide students with an introduction to and overview of the key areas of global health by addressing the major determinants of health and how health status is measured to determine the burden of disease in the developing world. Using the perspectives of public health, the course will cover factors associated with the development of health problems and efforts to prevent disease in impoverished areas. Students will also explore the role of social communication, politics, religion, economics, education and culture in contributing to global public health issues and will integrate these factors and values in developing solutions to the widespread public health issues impacting communities worldwide. Students will learn about the magnitude of disease in the developing world (e.g., communicable and non-communicable disease, women and child health, nutrition, and unintentional injuries), how health is assessed and how health systems effectively work together to improve global health.

**Attributes:** World Cultures(Discovery); Inquiry (Discovery)

**Grade Mode:** Letter Grading

**HMP 501 - Epidemiology and Community Medicine****Credits:** 0 or 4

The distribution and determinants of disease, illness, and health in the community. Community health and illness measures, health status, and source of data. Development of hypotheses and study designs to reduce community health problems using epidemiological reasoning, methods, and analyses. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course

**Equivalent(s):** HAP 402, HAP 501, HMP 501H

**Grade Mode:** Letter Grading

**HMP 610 - Survey of Health Information Systems****Credits:** 2

This course introduces you to the nomenclature and foundations of health information technology and systems in health care delivery settings and the management and strategic uses for those systems. It is relevant for those studying health care management and individuals using or installing clinical health information systems. Time will be spent examining health care information flow, data capture, storage within information systems, technology standards, information security, and data usages both internally and externally.

**Prerequisite(s):** HMP 401 with a minimum grade of D-.

**Equivalent(s):** HMP 511, HMP 611

**Grade Mode:** Letter Grading

**HMP 611 - Introduction to Health Information Systems****Credits:** 4

This course introduces the student to the nomenclature and foundations of health information technology and systems in health care delivery settings and the management and strategic uses for those systems. It is relevant for those studying health care management and those using clinical health information systems. It examines health care information flow, information systems, technology standards and information security, and presents relevant examples, practical applications and case studies.

**Equivalent(s):** HMP 511, HMP 610

**Grade Mode:** Letter Grading

**HMP 621 - Pre-practicum Seminar****Credits:** 1-2

Preparation for field practicum experience, orientation to experiential learning and competency development.

**Repeat Rule:** May be repeated for a maximum of 2 credits.**Equivalent(s):** HAP 621**Grade Mode:** Letter Grading**HMP 622 - Field Practicum in Organizational and Project Analysis, and Management Skills Development****Credits:** 3

Experiential learning in a health care organization; application of theories to practice. Planned learning objectives are accomplished through three distinct components. Organizational Analysis, Project Analysis and Management Skills Development, with Supervision by agency personnel. This will include analysis of assigned health care agency, from external and internal viewpoints, development of the basic quantitative and interpersonal skills required for a health services manager, and demonstration of knowledge and analysis of specific problem-solving skills. Students need a GPA of 3.0 or higher, and an approved practicum site.

**Prerequisite(s):** HMP 621 with a minimum grade of D-.**Equivalent(s):** HAP 622, HMP 622A, HMP 622B, HMP 622C**Grade Mode:** Credit/Fail Grading**HMP 624 - Post Practicum Seminar****Credits:** 2

Summary and conclusion from field practicum experience. Individual analysis and panel discussions to include site assessment, project description and methodologies employed, critique of individual skills and knowledge base in relation to internship.

**Prerequisite(s):** HMP 621 with a minimum grade of D- and HMP 622 with a minimum grade of D-.**Grade Mode:** Letter Grading**HMP 631 - Health Issues Seminar****Credits:** 2

Discussion of current issues in the fields of health management, health policy and public health.

**Prerequisite(s):** HMP 624 with a minimum grade of D- and HMP 712 with a minimum grade of D- and HMP 723 with a minimum grade of D- and HMP 735 with a minimum grade of D-.**Grade Mode:** Letter Grading**HMP 635 - Social Marketing Fundamentals****Credits:** 2

This is a course that introduces the vocabulary and tools of social marketing and outlines the structure to develop a social marketing plan with a goal to encourage changes to individuals or groups behaviors that have a negative impact on health or public policy. Throughout the course there will also be an introduction to marketing concepts in healthcare and the legal structure required to launch new services and campaign regulatory rules.

**Prerequisite(s):** HMP 401 with a minimum grade of D-.**Equivalent(s):** HMP 735**Grade Mode:** Letter Grading**HMP 642 - Health Economics****Credits:** 4

Theoretical and empirical analysis of the U.S. health care delivery sector. Topics include health insurance markets and their effects on patients demand, uninsured populations and their access to health care services, breakdowns in the principal/agent relationship between patients' and providers, competition in the medical sector, technology, pharmaceuticals and the scope and effect of government involvement in the delivery of health care.

**Prerequisite(s):** HMP 624 with a minimum grade of D- and HMP 712 with a minimum grade of D- and HMP 723 with a minimum grade of D-.**Grade Mode:** Letter Grading**HMP 669 - Human Behavior and the Public Health****Credits:** 4

Provides a grounding in fundamental concepts of the behavioral sciences as they illuminate public health. Individual and community responses to prevention, identification of symptoms, diagnoses, treatments, chronic ailments, and rehabilitation are discussed. In each of these areas, the course explores the interaction between community, family, patient, and health care provider.

**Equivalent(s):** HMP 569**Grade Mode:** Letter Grading**HMP 702 - Programming in Healthcare Environments****Credits:** 4

This course covers using Python as a programming language to write, implement, and design programs that are relevant to various aspects of programming in a health setting. After completion of this course, students should be comfortable with the basic data structures in Python and R (including arrays, dictionaries and dataframes), conditional logic and iterators, writing Python and R functions, and using Python libraries to read external data and perform data manipulations and data analysis.

**Grade Mode:** Letter Grading**HMP 703 - Translation of Health Data****Credits:** 4

This course will give you the skills you need to leverage data to reveal valuable insights and advance your career. This course teaches you the visualization skills necessary to be effective Data Storytellers which helps engage your audience in a story about the data. This course focuses on concepts as well as hands-on experience of presenting data from initial concepts to final presentation by creating meaningful displays of quantitative and qualitative data to facilitate peer/managerial decision making.

**Grade Mode:** Letter Grading**HMP 711 - Health Systems Research I****Credits:** 4

Introduces intermediate techniques for data manipulation and analysis for the health care field. Also introduces methods for survey research and large data set manipulation and analysis. There is a lab section utilizing a statistical software package where students perform tasks from a large national data set.

**Prerequisite(s):** HMP 401 with a minimum grade of D-.**Grade Mode:** Letter Grading

**HMP 712 - Health Analytics****Credits:** 4

This course introduces students to the field of health analytics and data science. It expands upon introductory statistical and data manipulation methods to include data mining, predictive analytics, cluster analysis, trend and pattern recognition, and data visualization. It couples data skills with interpretive and communication skills. Students will also be exposed to basic statistical programming. There will be a graduate component of the course (812) where students will work on advanced concepts and complete a separate culminating project.

**Prerequisite(s):** HMP 401 with a minimum grade of D- and HHS 540 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**HMP 715 - Environmental Health****Credits:** 4

This course offers a general introduction to environmental health from the community, regional, and global perspective by addressing fundamental topics and current controversies such as air pollution, water pollution, built environment/urban sprawl, food safety, waste disposal, and occupational health. Students learn about environmental health assessment methods. Major issues in environmental health and related regulatory efforts and public health policy reform are examined.

**Grade Mode:** Letter Grading

**HMP 721 - Managing Health Care Organizations****Credits:** 4

Organizational characteristics of ambulatory, acute, and long-term care facilities. Management issues and strategies involving governance, clinical services, human and fiscal resources, and community-based services.

**Prerequisite(s):** HMP 401 with a minimum grade of D-.

**Equivalent(s):** HAP 721

**Grade Mode:** Letter Grading

**HMP 722 - Health Care Management II****Credits:** 4

A continuation of HMP 721 - Managing Health Care Organizations with specific lectures and assignments devoted to organizational behavior, leadership, and managerial skills. Case studies and examples will relate specifically to health care organizations.

**Prerequisite(s):** HMP 721 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**HMP 723 - Health Planning****Credits:** 0 or 4

Theoretical and historical foundations of health planning; the relationship of health planning and regulation; the application of planning methods; and the utilization of strategic planning and its relationships to marketing.

**Equivalent(s):** HAP 723

**Grade Mode:** Letter Grading

**HMP 724 - Long-Term Care Management****Credits:** 4

Exploration of the different components of the long-term-care service delivery system to apply contemporary management theory, concepts and models to the entities that make up the long term care service delivery system.

**Prerequisite(s):** HMP 401 with a minimum grade of D- and HMP 721 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**HMP 735 - Social Marketing****Credits:** 4

An introduction to the vocabulary and tools of social marketing.

Expanding upon the traditional principles of marketing and consumer behavior, students are exposed to the challenges of trying to effect behavior change.

**Prerequisite(s):** HMP 401 with a minimum grade of D- and HMP 403 with a minimum grade of D- and HMP 501 with a minimum grade of D- and HMP 711 with a minimum grade of D- and HMP 740 with a minimum grade of D-.

**Equivalent(s):** HMP 635

**Grade Mode:** Letter Grading

**HMP 740 - Health Care Financial Management****Credits:** 4

Techniques, principles, and practices of managing fiscal aspects of health care organizations. Exploration of concepts and techniques associated with variance analysis, cost allocation, management of working capital, and capital decision analysis. Analysis of the impact of reimbursement on health care organizations.

**Prerequisite(s):** HMP 401 with a minimum grade of D- and HMP 501 with a minimum grade of D-.

**Equivalent(s):** HAP 740

**Grade Mode:** Letter Grading

**HMP 741 - Health Care Financial Management II****Credits:** 4

This course focuses on issues related to effective financial management of health care organizations and programs, building upon material covered in HMP 740, Health Care Financial Management. Topics include the time value of money, long-term debt, stocks and equity, and evaluation of capital projects.

**Prerequisite(s):** HMP 740 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**HMP 742 - Strategic Management for Health Care Organizations****Credits:** 4

Application of managerial methods involving financial, marketing, and operational analysis to health management. Case studies.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** HMP 624 with a minimum grade of D- and HMP 642 with a minimum grade of D- and HMP 711 with a minimum grade of D- and HMP 712 with a minimum grade of D- and HMP 722 with a minimum grade of D- and HMP 723 with a minimum grade of D- and HMP 735 with a minimum grade of D- and HMP 740 with a minimum grade of D- and HMP 744 with a minimum grade of D- and HMP 746 with a minimum grade of D-.

**Equivalent(s):** HAP 742

**Grade Mode:** Letter Grading

**HMP 744 - Health Ethics and Law****Credits:** 4

Ethical theories, core legal principles and cases, and decision-making models; patient's rights and professional responsibilities; social justice and resource allocation; critical ethical dilemma's facing health care managers, policy makers, and executives; managerial versus medical care conflicts.

**Prerequisite(s):** HMP 401 with a minimum grade of D- and HMP 403 with a minimum grade of D- and HMP 501 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**HMP 746 - Health Policy****Credits:** 4

Analysis of the public policy process, the development of health policies in the U.S., and discussion of specific health policy issues.

**Attributes:** Writing Intensive Course**Prerequisite(s):** HMP 401 with a minimum grade of D- and HMP 403 with a minimum grade of D- and HMP 501 with a minimum grade of D-.**Grade Mode:** Letter Grading**HMP 796 - Independent Study****Credits:** 1-4

In-depth study with faculty supervision.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**HMP 798H - Honors Project/Research Design****Credits:** 2

Examines selected research designs and methods used in health services research/program evaluation. Establishes theoretical and methodological foundation for honors-in-major research project to be conducted during the subsequent semester under a faculty member's supervision.

**Attributes:** Honors course**Grade Mode:** Letter Grading**HMP 799H - Honors Project/Research****Credits:** 2-4

In-depth research project (conducting and analysis) under supervision of faculty member. Includes scholarly presentation of findings to faculty and other interested parties and preparation of manuscript suitable for publication in peer-viewed journal.

**Attributes:** Honors course; Writing Intensive Course**Prerequisite(s):** HMP 798H with a minimum grade of D-.**Grade Mode:** Letter Grading

## Health Sciences (HS)

**HS 406 - Introduction to Health Sciences****Credits:** 1

This introductory course is designed to expose students to the broad, interdisciplinary field of health sciences. It will provide students an overview of the prerequisite knowledge that will prepare an individual to pursue a career in any number of allied health professions. In this course, students will explore basic foundational concepts pertinent to a complex, ever-evolving healthcare field.

**Equivalent(s):** AT 406**Grade Mode:** Letter Grading**HS 501 - Medical Terminology****Credits:** 2

This course is an introduction to common medical terminology and vocabulary used by a variety of professionals in the healthcare field; terminology related to organ systems, disease diagnosis and pathophysiology will be emphasized. The origin, roots, prefixes, suffixes, and relevant abbreviations and acronyms of common medical and clinical terms are examined in a systems-based approach.

**Grade Mode:** Letter Grading**HS 605 - Exploration of Allied Health Professions****Credits:** 2

Explore and understand duties, responsibilities, and common work schedules of allied health professions. Complete 10 hours of observation with each profession: athletic training, physical therapy, and physician assistant. Students may substitute observation of other professions by submitting written justification to, and upon permission of course instructor.

**Grade Mode:** Credit/Fail Grading**HS 656 - Musculoskeletal Pathologies for Health Professions****Credits:** 4

Introduces the student to the musculoskeletal injuries common to allied health professions. Cognitive knowledge on anatomy, injury pathology, assessment and diagnosis. In conjunction with HS 657, Musculoskeletal Pathologies for Health Professions Lab, this course prepares the student for continued education in allied health professions. Prereq: BMS 507, BMS 508.

**Co-requisite:** HS 657**Grade Mode:** Letter Grading**HS 657 - Musculoskeletal Pathologies for Health Professions Lab****Credits:** 1

The practical application of the knowledge attaining in HS 656. Students will learn & perform anatomical landmark palpation, injury assessment procedures & techniques, and taping & wrapping procedures. This course, in conjunction with HS 656, prepares the students for further education at the graduate level. Prereq: BMS 507, BMS 508. Special Fee.

**Co-requisite:** HS 656**Grade Mode:** Letter Grading**HS 696 - Independent Study****Credits:** 2-4

An advanced, individual scholarly project under the direct supervision of a faculty member. Prereq: Junior or Senior.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**HS 696W - Independent Study****Credits:** 2-4

An advanced, writing-intensive, individual scholarly project under the direct supervision of a faculty member. Student and Faculty Adviser will prepare a written proposal that outlines: the questions to be pursued, the methods of investigation, the student's qualifications to conduct the research, the nature of the finished written product (e.g. case study, position paper, extended lab report). This proposal must be approved by the major faculty and the department chair prior to the student's registration for HS 696W. All HS 696W projects must include: Some forms of informal, ungraded writing such as a journal, reading summaries, draft chapters, or invention activities. Regular writing interaction between student and faculty adviser (i.e. at least weekly or biweekly), to include written feedback from the adviser. A finished product that is polished via revision. Faculty sponsors and students should consult the resources and guidelines of the UNH Writing Program. Prereq: junior or senior; departmental approval.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

**HS 699H - Honors Project****Credits:** 4

Project first involves tutorial sessions to introduce the student to the experimental design, after which a research question is developed. After an appropriate literature review, the student collects and analyzes data, forms conclusions, and prepares a written report on the findings.

**Attributes:** Honors course**Grade Mode:** Letter Grading**HS 717 - Cultural Considerations in Health Care****Credits:** 4

Capstone course to introduce concepts of culture, cultural humility, and diversity as related to professional practice for students preparing for careers in healthcare professions. Patient-centered course teaching students about patient types, and how to appropriately consider and care for those with differing cultural backgrounds, beliefs and practices.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 10 credits.**Grade Mode:** Letter Grading**HS 767 - Pharmacology for Health Professions****Credits:** 4

This course will be an introduction to the general principles of pharmacology, the organ systems affected by the various drug types, and drug classifications as appropriate for future allied health professionals.

Students will also explore common prescribing in various practice settings as well as the applicable U.S. laws relative to the sale, supply, and administration of drugs.

**Prerequisite(s):** CHEM 403 with a minimum grade of C- and CHEM 404 with a minimum grade of C-.**Equivalent(s):** AT 667, KIN 667**Grade Mode:** Letter Grading**HS 770 - General Medical Conditions for Health Professions****Credits:** 4

This course will be an introduction to the general medical conditions commonly diagnosed and treated among allied health professionals, with emphasis on disease etiology, pathophysiology, signs and symptoms, diagnostic procedures, and therapeutic measures involved in treatment.

**Prerequisite(s):** BMS 507 with a minimum grade of C- and BMS 508 with a minimum grade of C-.**Equivalent(s):** AT 670**Grade Mode:** Letter Grading

## History (HIST)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**HIST 403 - Introduction to Greek Civilization****Credits:** 4

A broad historical exploration of Greek civilization. Topics include: architecture, art, law, literature, philosophy, poetry, politics, religion, society, warfare, and the Greek's legacy to the modern world. Open to all students. No prior knowledge of the ancient world assumed; all readings are in English. Ideal background for students of English, philosophy, history, Latin, Greek, the arts, music, modern languages.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** CLAS 403, CLAS 405**Grade Mode:** Letter Grading**HIST 404 - Introduction to Roman Civilization****Credits:** 4

A broad historical exploration of Roman civilization. Topics include: architecture, art, law, literature, philosophy, poetry, politics, religion, society, warfare, and their legacy to the modern worlds. Open to all students. No prior knowledge of the ancient world assumed; all readings are in English. Ideal background for students of English, philosophy, history, Latin, Greek, the arts, music, modern languages.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** CLAS 404, CLAS 406**Grade Mode:** Letter Grading**HIST 405 - History of Early America****Credits:** 4

America from the early era of European discovery through the American Civil War. Emphasizes the interaction of European, Native American, and African peoples; the separation of the English colonies from Great Britain; and the establishment and early history of the United States. Course meets the History major requirement for Group 1.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** HIST 405H, HIST 405W**Grade Mode:** Letter Grading**HIST 405W - History of Early America****Credits:** 4

America from the early era of European discovery through the American Civil War. Emphasizes the interaction of European, Native American, and African peoples; the separation of the English colonies from Great Britain; and the establishment and early history of the United States. Writing intensive. Course meets the History major requirement for Group 1.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course**Equivalent(s):** HIST 405, HIST 405H**Grade Mode:** Letter Grading**HIST 406 - History of the Modern United States****Credits:** 4

History of the United States since the mid-19th century. Political, social, and economic developments as well as relationships of the modern U.S. with other countries. Course meets the History major requirement for Group 1.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** HIST 406H, HIST 406W**Grade Mode:** Letter Grading**HIST 410 - Historic Survey of American Civilization****Credits:** 4

Topical survey, within broad chronological divisions, of the development of American civilization since 1600. Students may take the course up to two times as long as the topic for the two courses is different. Writing intensive. Course meets the History major requirement for Group 1.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** HIST 410H**Grade Mode:** Letter Grading**HIST 421 - World History to the 16th Century****Credits:** 4

The global experience of human communities with special emphasis on the development of the major civilizations and their interactions. Comparisons of social, cultural, religious, and political life and the emergence of distinctive and diverse human societies are examined. Course meets the History major requirement for Group III.

**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading



**HIST 422 - World History in the Modern Era****Credits:** 4

Emergence of major global human interactions due to the growth of major civilizations. The global context for the rise of the modern West. The rise and decline of Western global domination and the emergence of new states and changing societies throughout the world. Course meets the History major requirement for Group III.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** HIST 422H**Grade Mode:** Letter Grading**HIST 425 - Foreign Cultures****Credits:** 4

Introduces the culture of a particular nation or region; preparation for experiencing a foreign culture. Consult department for listing of topics. Course meets the History major requirement for Group II or III, depending on the topic.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** HIST 425H, HIST 425W**Grade Mode:** Letter Grading**HIST 435 - Origins of European Society****Credits:** 4

This course traces the contours of human experience in what has come to be called "Western Civilization," from its beginnings in the ancient Near East, Greece, and Rome, to the dawn of the modern global world in sixteenth-century Europe. Although topics will vary by instructor, all sections examine the myriad forms of social, political, religious, military, and economic organization that emerged in this rich tradition. Course meets the History major requirements for Group II.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** HIST 435H, HIST 435W**Grade Mode:** Letter Grading**HIST 435W - Origins of European Society****Credits:** 4

This course traces the contours of human experience in what has come to be called "Western Civilization," from its beginnings in the ancient Near East, Greece, and Rome, to the dawn of the modern global world in sixteenth-century Europe. Although topics will vary by instructor, all sections examine the myriad forms of social, political, religious, military, and economic organization that emerged in this rich tradition. Course meets the History major requirements for Group II. Writing intensive.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course**Equivalent(s):** HIST 435, HIST 435H**Grade Mode:** Letter Grading**HIST 436 - Europe and the Modern World****Credits:** 4

The course focuses on major encounters between Europe and its Global rivals from the Age of the Revolution to the rise of modern terrorism. While the topics covered will vary by instructor, all sections address the rise of Democracy, the birth of Capitalism, the apocalyptic destruction of the two World Wars, and the emergence of a diverse multi-cultural Europe in the years following World War II. Course meets the History major requirements for Group II.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** HIST 436H, HIST 436W**Grade Mode:** Letter Grading**HIST 436W - Europe and the Modern World****Credits:** 4

The course focuses on major encounters between Europe and its Global rivals from the Age of the Revolution to the rise of modern terrorism. While the topics covered will vary by instructor, all sections address the rise of Democracy, the birth of Capitalism, the apocalyptic destruction of the two World Wars, and the emergence of a diverse multi-cultural Europe in the years following World War II. Course meets the History major requirements for Group II. Writing intensive.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course**Equivalent(s):** HIST 436, HIST 436H**Grade Mode:** Letter Grading**HIST 437H - Honors/The Mad Among Us: A Global History of Mental Disorder****Credits:** 4

Mental disorder is a universal and persistent condition in human history. Every society has struggled to make sense of it; every society has struggled to address it. But, what is mental disorder? Is it a disease? If so, of what? The body? The brain? The soul? Is it a chemical imbalance? Genetic destiny? Is it the wage of sin? The mark of the devil? The curse of a god? Or is it a social label or cultural construct - a name slapped on thought, feeling, or behavior that defies a society's definition of "normal?" This course seeks to answer these questions by exploring the great range of beliefs human societies, ancient to modern and from across the globe, have developed to identify and define mental disorder as well as the methods they have employed to treat or contain it.

**Attributes:** Historical Perspectives(Disc); Honors course**Grade Mode:** Letter Grading**HIST 440A - Martin Luther King, Jr., and the Struggle for Racial Justice****Credits:** 4

This course examines Martin Luther King's life, philosophy, and career on the front lines of the civil rights movement. In our study of King as well as the larger black freedom struggle, we seek an understanding of how certain questions related to racial justice played out in American history. We focus on issues of civil disobedience, just and unjust laws, love and hate, violence and non-violence. Students will read many of King's famous writings such as the Letter from Birmingham Jail, as well as his lesser-known speeches - among them King's 1967 address denouncing the Vietnam War. More generally, this seminar introduces students to the rudiments of historical thinking and asks broader questions about the role of individuals in history and how social change happens. Course meets the History major requirement for Group I.

**Attributes:** Historical Perspectives(Disc); Honors course**Grade Mode:** Letter Grading**HIST 440B - Honors/Medicine, Society, Science, and the Law: Who Makes Your Health Care Decisions?****Credits:** 4

Every person interacts with the health care system - including you. In this class, students will study the interactions between law, society, science, and medicine to gain an understanding about how the American health care system developed and who has and does make decisions about health. Topics covered include vaccination, health care providers, discrimination, and epidemics. Course meets the History major requirement for Group I.

**Attributes:** Historical Perspectives(Disc); Honors course**Equivalent(s):** HIST 604**Grade Mode:** Letter Grading

**HIST 440D - Honors/Citizens and Persons****Credits:** 4

Definitions of citizenship have changed dramatically in the course of history. In this class, we will trace the evolution of expanding (and occasionally contracting) political and civil rights and responsibilities over time, with an emphasis on events in multicultural American nations and emphasizing how laws, social practices, unique historical contexts, and individuals' understanding of self and other have mutually produced each other. The course is part of the Honors Symposium "Being Human" and will engage in an interdisciplinary conversation about personhood, humanity, rights and responsibilities, and dehumanization.

**Attributes:** Historical Perspectives(Disc); Honors course**Grade Mode:** Letter Grading**HIST 440E - Honors/Drugs and Addiction in World History****Credits:** 4

As drug addiction rates in the US are reaching epidemic proportions, new solutions and perspectives are becoming increasingly important. This course teaches students how a variety of cultures, including the Aztecs, Maya, Vedic India, China, and Greco-Roman antiquity, confronted the problems of drug use and addiction in their own societies. By examining these phenomena through the lens of other culture's values, students will gain a valuable perspective by which to address these problems today.

**Attributes:** Honors course; World Cultures(Discovery)**Grade Mode:** Letter Grading**HIST 440F - Honors/Islam, Art, and the Past****Credits:** 4

While the world is all too familiar with images of ISIS using explosives and frills to destroy ancient sites and artifacts in Iraq and Syria, there has been little attention given to the dynamic role of art within past and present Islamic societies. Yet, Islam has a rich and vibrant artistic tradition, one in which ancient civilizations played and continue to play a major role. This course introduces students to Islamic art and cultural heritage through a study of Islam's engagement with past artistic traditions in the fields of architecture and the fine arts. It also addresses how the recent actions of ISIS have changed questions about cultural heritage and stewardship in the Middle East and the West. Finally, the course asks students what they can and should do to preserve cultural heritage.

**Attributes:** FinePerformingArts(Discovery); Honors course**Grade Mode:** Letter Grading**HIST 440G - Honors/Revolutions in Science****Credits:** 4

In this course, we study several examples of scientific revolutions, and consider whether a general model applies to them all. How have ideas about the universe and human beings' place in it changed dramatically at certain points in history? Do scientific revolutions have a common structure? Do they have any connection to political or social revolutions? Are we living through a scientific or technological revolution? These are among the questions we will examine.

**Attributes:** Historical Perspectives(Disc); Honors course; Writing Intensive Course**Grade Mode:** Letter Grading**HIST 444D - Slavery and Society in Pre-Colonial Africa****Credits:** 4

Examines the evolution and practice of the institution of slavery in Africa from the earliest times to the era of European colonialism. Using contemporary personal narratives by the slaves, the course examines specific historical contexts of various slave systems, continuity and change in the ideologies and practices of slavery, religion and slavery, race and slavery, gender and slavery, conditions of slaves, as well as the making and uses of slaves - as domestics, concubines, eunuchs, officials, soldiers, labor and capital. Using films, slide images, and a comparative approach, African slavery will be examined within the context of the early evolution of slavery in the Mediterranean and Islamic worlds as well as its later expressions in the Atlantic world of the Americas. Course meets the History major requirements for Group III.

**Attributes:** Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**HIST #444G - Voices from Modern China****Credits:** 4

Human voices--written or vocal--left records of history. Yet too often we hear only the voice of the statesman, which is too partial to bring to life a colorful history like China's. This seminar explores China's dramatic changes in modern times through revolution, reform, and war as experienced by a wide range of individuals who witnessed or participated in these huge events and left their voices in record. We will read and discuss the lived experiences of some iconic (well-known) political or cultural leaders, as well as working women, male and female revolutionaries, youthful rebels, a leading industrialist, and foreign observers during China's extraordinary transformations over the past two centuries. Writing intensive. Course meets History major requirement for Group III.

**Attributes:** Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**HIST 444H - Honors/From Beijing to Baghdad: Objects along the Silk Road****Credits:** 4

The Silk Road, often characterized as the world's first great superhighway, played a vital role in spreading forms of art and in developing new technologies for their production. The peoples along the Silk Road traded luxury goods such as silk and jade as well as culinary and musical traditions. Through lectures, readings, films, and podcasts we will explore the trade links between East and West and the material objects traded along the way.

**Attributes:** FinePerformingArts(Discovery); Honors course; Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading

**HIST 444J - Honors/Global Citizenship: In Pursuit of Liberty****Credits:** 4

What does it mean to be a global citizen? Are we? What are human rights? Are they universal? This honors discovery course will explore with the men and women who traveled and thought beyond the borders of their locality and their moment of time and who imagined themselves citizens of the world. We will start with early revolutions that traversed oceans and national borders. We'll read utopias that saw their world differently. In the end, we will investigate major global challenges of our own world. We will move backwards, but also forwards in history. We will read novels, and perform plays. We will listen to Beethoven and Berlioz, in class and discuss larger questions of our international community, from sustainability to diversity, as they echo through different disciplines. Course meets History major requirement for Group I or II.

**Attributes:** Historical Perspectives(Disc); Honors course; Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**HIST 483 - History of World Religions****Credits:** 4

Introduces the religions of the world in terms of historical development, relationship to society, belief system, central texts, and ritual practices. Begins with the religions of small and tribal societies (e.g., African, Native American), moves through religions of complex societies (e.g., Hinduism), and then studies the various traditions that emanated from ancient revelations: Zoroastrianism, Buddhism, Judaism, Christianity, Islam, and certain new forms of Christianity. Course meets History major requirement for Group III.

**Attributes:** Historical Perspectives(Disc)

**Equivalent(s):** HIST 483W, RS 483, RS 483W

**Grade Mode:** Letter Grading

**HIST 497 - Explorations in Historical Perspectives****Credits:** 4

In-depth exploration of a particular historical question or topic: for example, the French Revolution, Chaucer's England, or the New Deal. Students should consult with the Department of History for a list of topics and instructors. Course meets the History major requirements for Group I, II, or III, depending on the topic.

**Attributes:** Historical Perspectives(Disc)

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Equivalent(s):** HIST 497H, HIST 497W

**Grade Mode:** Letter Grading

**HIST 498 - Explorations of Historical Perspectives****Credits:** 4

In-depth exploration of a particular historical question or topic: for example, the French Revolution, Chaucer's England, or the New Deal. Students should consult with the Department of History for a list of topics and instructors. Course meets the History major requirements for Group I, II, or III, depending on the topic.

**Attributes:** Historical Perspectives(Disc)

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

**HIST 500 - Introduction to Historical Thinking****Credits:** 4

Basic skills essential to the study of history: critical reading of historical literature, improvement of written and oral analysis of historical material, and use of library resources. Intensive study of books and documents from varying historical fields and periods. Required of history majors; open to other interested students. Writing intensive.

**Attributes:** Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**HIST 501 - Medieval Military History****Credits:** 4

Western societies from the Roman Empire to the emerging nation states of early modern Europe spent an enormous proportion of their surplus wealth on war. This course introduces this crucial aspect of Western history and examines the period extending from the third century AD, to just before the extensive introduction into Europe of gunpowder weapons in the fifteenth century. Discussion of not only battlefield tactics and famous generals but also the effect that war had upon society as a whole and the economic ramifications of war, the Christianization of war, and the effect of war upon literature. Course meets the History major requirements for Group II.

**Grade Mode:** Letter Grading

**HIST 505 - African American History****Credits:** 4

Explores the forced integration of the Atlantic World through the African slave trade and the development of creole cultures in America, and takes the story of Black Americans' "creative survival" and the evolution of African-American culture through the end of the Civil War. Writing intensive. Course meets the History major requirements for Group I.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course

**Grade Mode:** Letter Grading

**HIST #506 - African American History****Credits:** 4

Experiences, aspirations, and contributions of black Americans from their ethnic origins in Africa to the present American crisis in race relations; comparative study of cultures and institutions. Reconstruction to the present. Writing intensive. Course meets the History major requirements for Group I.

**Attributes:** Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**HIST 509 - Law in American Life****Credits:** 4

Investigates the role of law in American social, political, and economic life from the European settlements to the present. Traces the development of legal institutions, but focuses on the various functions of law (e.g., in structuring social relationships, allocating resources, defining governmental authority, expressing social and moral values, and as a mechanism for control). Course meets the History major requirements for Group I.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course

**Grade Mode:** Letter Grading

**HIST 511 - History of New Hampshire****Credits:** 4

This course reconstructs the surprising past of the place we call New Hampshire. Beginning with the 17th-century encounter between English and Native people, it runs to the present. Literature, documents, photos and films provide access to New Hampshire's changing natural environment, its rural life, industrialization, politics and recent struggles. Writing intensive. Course meets the History major requirements for Group I.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course

**Grade Mode:** Letter Grading

**HIST 515 - Game of Thrones: Power and Politics in Medieval and Renaissance Europe****Credits:** 4

George R.R. Martin's popular medieval fantasy series, *A Song of Ice and Fire* better known from HBO's *Game of Thrones* brilliantly portrays the brutal dynastic wars that unfolded between noble houses for control of Westeros. But did you know that pre-modern European history was one of Martin's greatest inspirations? Join us as we explore a real "Game of Thrones", the gripping series of national and international struggles between actual noble European houses for supremacy from the eleventh through the sixteenth centuries that ultimately forged the modern European state system. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**HIST 521 - Origins of Modern Science****Credits:** 4

Development of scientific ideas in Europe from the Renaissance through the Scientific Revolution to the Enlightenment. Topics include themes in the physical and biological sciences and their relations to cultural and social contexts. No special science background is required. Course meets the History major requirements for Group II.

**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading**HIST 522 - Science in the Modern World****Credits:** 4

Development of science, particularly in Europe and North America, from the 18th century to the present. Themes including Darwinism, the growth of modern physical and biological sciences and science in the contemporary world. No special science background is required. Course meets the History major requirements for Group II.

**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading**HIST 532 - Modern Latin America****Credits:** 4

Provides a broad overview of Latin America from the 18th century to the present. It examines the breakdown of colonial rules, the establishment of independent countries, the formation of viable nation states, the importance of geography, the roles of the different elements of society. Social, political, and economic changes and continuities emphasized to give a sense of the ambiguities of the historical process. Cultural differences illustrated with slides and music. The effects of elite rule and of United States interventions studied. Writing intensive. Course meets the History major requirements for Group III.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**HIST 537 - Espionage and History****Credits:** 4

Introduces the history and politics of espionage and intelligence organizations from the 20th century to the present. Special attention to intelligence work among the major powers in World War I, World War II, and the Cold War. Readings include autobiographical accounts and other primary sources as well as novels. Course meets the History major requirements for Group II.

**Grade Mode:** Letter Grading**HIST 538 - Modern European War and Society: The Napoleonic Wars to World War II****Credits:** 4

This course is organized around three conflicts: the Napoleonic Wars, World War I, and World War II. As we study them, we'll discuss the evolution and impact of total war in order to understand how societies work in wartime and how these conflicts have shaped Europe. In our exploration of each war, we examine a range of participants from international alliances to individual soldiers and to civilians involved in the conflict. Total war, by its nature, incorporates most elements of society, so we will spend time looking at the homefronts as well as the battlefronts. We will survey the conflicts as a whole, but also devote time to some special events or elements. For example, we will look at the battle of Somme during the portion of the course dedicated to World War I. We will also study some of the art that arose out of the conflict. The core of the class will be lectures, but we will engage in some discussion almost every day and there are some classes that will be dedicated to discussion. Course meets the History major requirements for Group II.

**Grade Mode:** Letter Grading**HIST 540 - Foundations of Medieval History: 300-1300 CE****Credits:** 4

Introduces the history of Western Europe from the end of the Roman Empire to the late twelfth century. Particular focus on the history of Christianity, social and economic structures, the role of women in medieval culture, and literacy and learning. Writing intensive. Course meets the History major requirements for Group II.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**HIST 560 - Modern Britain****Credits:** 4

This course explores Great Britain from the American Revolution to the reign of Elizabeth II. We examine Britain's unparalleled Imperial power, the vibrancy of Victorian Culture, and the devastating impact of the two World Wars, which initiated Britain's post-war decline. During the Cold War, Britain rebuilt its position through cultural exports like rock-n-roll music, royal pomp, and the mini-skirt, but has never fully recovered its status, despite its vibrant multi-cultural allure. Course meets the History major requirements for Group II.

**Grade Mode:** Letter Grading**HIST 563 - Introduction to Russian Culture and Civilization****Credits:** 4

Interdisciplinary course on the development of Russian culture from its origins through the end of the 19th century. Historical documents, literary works, ethnographic materials, films, slides of Russian art, and music. Course meets the History major requirements for Group II.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** RUSS 525**Grade Mode:** Letter Grading**HIST #564 - Russia and the Soviet Union in World War II****Credits:** 4

This course examines World War II from the perspective of Russia and the Soviet Union. Readings, lectures, and discussions cover the major battles, Stalin's leadership, experiences of the soldiers (both men and women), life on the home front, the Holocaust on Soviet territory under German occupation, and propaganda. Students also read the most important Russian novel set in World War II. Midterm, final, short papers. Writing intensive. Course meets the History major requirements for Group II.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading



**HIST 565 - Women in Modern Europe****Credits:** 4

A social history of women in Europe from 1700 to the present. Examines the development of the "modern nuclear family," transformations in women's work during the industrial revolution, and women's political evolution from bread rioters to hearth tenders to petitioners. Sources include published diaries, historiographical studies, and novels. Course meets the History major requirements for Group II.

**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading**HIST 566 - Comparative Revolutions: How to Make a Revolution in the World before Marx****Credits:** 4

This course in HOW TO MAKE A REVOLUTION (if you lived more than 100 years ago) will ask why the Sea Beggars flooded Holland, the Levellers dug up the Commons, and Black Loyalists fled the independent Americans after their revolution. The class asks how slaves in Haiti defeated Napoleon's troops, utopian socialists built a railway around a cross at the center of Europe, and Marx rallied the workers of the world to unite. Course meets the History major requirements for Group II.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**HIST 575 - Ancient Near East****Credits:** 4

From the Neolithic revolution to the time of Alexander the Great. Rise of civilization; nature of human artistic and intellectual development in the earliest civilizations of Mesopotamia and Egypt; Judaism in its historical setting. Course meets the History major requirements for Group III.

**Equivalent(s):** CLAS 575**Grade Mode:** Letter Grading**HIST 579 - History of China in Modern Times****Credits:** 4

This course introduces students to major historical developments in China from 1600 to the end of the twentieth century. Major themes include: ethnicity, alien rule, political reforms and revolution, industrialization, interactions with the rest of the world (such as cross-cultural relations and military conflict), social and cultural transformation. Readings for the course are a combination of secondary and primary sources in translation, including scholarly articles, memoirs, biography, fictions, and journalist reports, most of which are landmark works indispensable for the study of modern Chinese history. Course meets the History major requirements for Group III.

**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading**HIST 580 - History of Japan in Modern Times****Credits:** 4

Surveys major historical changes in Japan from 1600 to the end of the 20th century. Topics include Tokugawa centralized feudalism, samurai class, Edo culture, foreign relations with Asian countries and the United States, wars, postwar reforms under American Occupation, and the rise of Japanese economic power. Sources include official documents, personal memoirs, literary works, films, as well as slides of ukiyo-e (woodblock paintings). Course meets the History major requirements for Group III.

**Grade Mode:** Letter Grading**HIST 585 - Medieval Islam****Credits:** 4

This course examines the origins and expansion of Islam and the development of the Muslim community from the time of Muhammad until the Islamic empires of the 16th century. We will address the associated geographies, artifacts, and legal formations associated with the medieval and early modern Islamic world. The course focuses on major developments in politics, religion, and the arts. Course meets the History major requirements for Group III.

**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading**HIST 586 - Islam in the Modern Age, 15th Century to present****Credits:** 4

Emergence of modern Middle Eastern states and societies from the time of the Ottoman Empire to the present. A survey of major developments, including the emergence of nationalism, the Islamic resurgence, and social transformations. Course meets the History major requirements for Group III.

**Grade Mode:** Letter Grading**HIST 587 - History of Africa from the Earliest Times to 1870****Credits:** 4

This survey course introduces students to the major landmarks in the making of African history and societies from the earliest times to 1870 AD. Beginning with the dual premises that Africa is the birthplace of both the human species as well as some of the oldest and most varied civilizations in the world, the course examines the early civilizations of both Egypt and the Nile Valley, the development and of the Swahili culture, the Sudanese and forest empires, religious beliefs and the moral order, gender and class, warfare and diplomacy, the advent and impact of Islam and Christianity, migrations and cultural formations in central and southern Africa, commerce, and encounters with Europe, slavery and the Trans-Atlantic slave trade, and the end of formal African independence. Films and other visuals are streamed to supplement the readings. No pre-requisite required. Course meets the History major requirements for Group III.

**Grade Mode:** Letter Grading**HIST 588 - History of Modern Africa: 1870 to the Present****Credits:** 4

This survey course introduces students to the major forces and dynamics of change in the modern history of Africa, from the late 19th century to the present. The primary focus is on European imperialism and its aftermaths in Africa. Issues to be examined include: the scramble for and partition of Africa; resistance to colonization; the rise and fall of apartheid in Southern Africa; religion and society, music and culture, gender and sexuality, art and literature, pan-Africanism, military rule, HIV/AIDS, democratization, and nation building. Emphasis on African initiatives, and on an exploration of contemporary challenges and the major forces reshaping the history of this oldest, most diverse, and most fascinating continent. Feature films, drama skits, literary works, and guest lectures are utilized. No prerequisites required. Course meets the History major requirements for Group III.

**Grade Mode:** Letter Grading**HIST 595 - Explorations****Credits:** 1-4

See department listings for semester topic. Course meets History major requirement for Group I, II, or III depending on the topic.

**Grade Mode:** Letter Grading



**HIST 600 - Explorations****Credits:** 4

Advanced explorations in one of the fields listed below: A) American History, B) European History, C) World History, D) Ancient History. Barring duplication of subject, may be repeated. Course meets History major requirement for Group I, II, or III depending on the topic.

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Letter Grading

**HIST 603 - European Conquest of North America****Credits:** 4

European Conquest of America explores many of the major issues relating to the creation and development of colonial North America. We will focus particularly on the extraordinary heterogeneous mixture of peoples who lived in North America and the Caribbean, and on the complexity and consequences of their interactions. Throughout the semester we will continually evaluate arguments among historians about whether or not it makes sense to understand the colonial period in terms of a conquest, or whether Native Americans retained enough power and resistance throughout the colonial period to make such an interpretation inaccurate. Course meets History major requirement for Group I.

**Grade Mode:** Letter Grading

**HIST 605 - American Revolution, 1750-1800****Credits:** 4

Examines the transformation of thirteen British colonies into the United States through the election of Thomas Jefferson as president in 1801. Topics include the revolution's origins, the social and political impact of war, the changing structure of the family, the role of religion, the drafting and ratification of the Constitution, and the revolution's consequences for Indians and African Americans. Course meets History major requirement for Group I.

**Grade Mode:** Letter Grading

**HIST 606 - History of the Early Republic****Credits:** 4

Explores the histories of the people and institutions that transformed the new United States from a coastal republic of largely independent freeholders to a transcontinental democracy increasingly driven by class. Topics include slavery, the family, reform movements, and the formation of national identity. Course meets History major requirement for Group I.

**Grade Mode:** Letter Grading

**HIST 609 - Special Topics in American Legal History****Credits:** 4

In-depth thematic exploration of law in American life. Topics include race and equality in America; community, pluralism, and American law; property, liberty, and law; gender and law. May be repeated for credit with instructor's permission. Consult department listings of topics. Course meets History major requirement for Group I.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

**HIST #611 - Civil War Era****Credits:** 4

Surveys the period from the presidency of Andrew Jackson to the end of the Reconstruction. Focuses on causes, course, and consequences of the Civil War. Topics include slavery in the Old South, antebellum reform movements, creation and breakdown of the Second Party System, social and economic (as well as military) events during the war and major developments during Reconstruction after the war. Course meets History major requirement for Group I.

**Grade Mode:** Letter Grading

**HIST 612 - Emergence of Industrial America****Credits:** 4

Investigates the economic transformation of 19th-century America from a rural, agricultural society to an urban, industrial one. Explores the sweeping economic changes and focuses on such topics as change in work and leisure, westward expansion and its effects on Native Americans, shifts in gender roles, growth of a consumer culture, rise of the labor unions, Populism, immigration, reform and regulation movements, growth of American imperialism, and intellectual developments. Course meets History major requirement for Group I.

**Grade Mode:** Letter Grading

**HIST 613 - American Ways of War****Credits:** 4

"Is there an American way of war?" This commonly asked question will be the focal point of the course. To answer that we will study the interactions of both war and society in the United States from the Civil War onwards, addressing such issues as the causes, courses, diplomacy, homefront, legacy, and the art of the great and small wars. Course meets the History major requirement for Group I.

**Grade Mode:** Letter Grading

**HIST 615 - The Rise of Modern United States, 1900-1945****Credits:** 4

By 1900, the United States had emerged as the world's leading industrial power and leading destination for millions of immigrants and had begun to become a major player in world affairs. Americans enjoyed unprecedented prosperity and became eager consumers of new inventions and popular culture: cars, radios, jazz records, and the "motion pictures." But they also experienced the worst depression the country had ever known and struggled to make sense of a world that went to war twice within a generation. Women, African Americans, immigrants - all struggled to carve out their place in the new political order. By World War II, the United States assumed many of its "modern" characteristics. Using novels, movies, photographs, sporting events, political speeches and political debates, we will explore both the domestic and the international aspects of the development of modern U.S. Course meets the History requirements for Group I.

**Grade Mode:** Letter Grading

**HIST 616 - United States Since World War II****Credits:** 4

This course presents a framework for understanding American history from 1945 to the present. We explore major events and themes, beginning with the Cold War and the domestic anti-communism crusade, and continuing with the civil rights movement, the Vietnam War, and the women's movement. In our study of national politics, we chart the rise of liberalism – focusing on the presidencies of John F. Kennedy and Lyndon Johnson – as well as the conservative response, punctuated by the "Reagan Revolution." We conclude with a brief study of the 21st century.

**Grade Mode:** Letter Grading

**HIST 618 - American Environmental History****Credits:** 4

Examines how nature has been a factor in American history and how Americans have wrestled with the concepts of nature and culture. Topics include industrialization, evolution, conservationism, environmentalism, and environmental diplomacy. Course meets the History major requirement for Group I.

**Grade Mode:** Letter Grading

**HIST 619 - Foreign Relations of the United States****Credits:** 4

The history of American diplomacy from the colonial era to the present, with the dividing point at 1900. The focus will be on both the foreign and domestic influences that shaped American diplomacy. Course meets the History major requirement for Group I.

**Grade Mode:** Letter Grading**HIST 620 - Foreign Relations of the United States****Credits:** 4

The history of American diplomacy from the colonial era to the present, with the dividing point at 1900. The focus will be on both the foreign and domestic influences that shaped American diplomacy. Course meets the History major requirement for Group I.

**Grade Mode:** Letter Grading**HIST 621 - History of American Thought****Credits:** 4

This course introduces the subfields of American intellectual and cultural history by assessing the ideas of some of the brightest minds that thought about life on the land we know of as the United States of America before the middle of the nineteenth century. This course surveys more than two centuries of thinkers and their connection to America's plural and evolving popular culture. Ultimately, this course seeks to answer the question: What is the history of American thought?

**Grade Mode:** Letter Grading**HIST #622 - History of American Thought****Credits:** 4

Influential thinkers and ideas have shaped American politics, society, economy, and culture since the Civil War. Among the topics explored are American Victorianism, Social Darwinism, Pragmatism, Modernism and its opponents, gender and identity politics and post modernism. Mark Twain, Elizabeth Cady Stanton, Thorstein Veblen, W.E.B. DuBois, John Dewey, F. Scott Fitzgerald, Hannah Arendt, Thomas Kuhn, Malcolm X, Susan Sontag and William F. Buckley Jr. will be among the thinkers explored. Course meets the History major requirement for Group I.

**Grade Mode:** Letter Grading**HIST 624 - Topics in Modern US History****Credits:** 4

Advanced study of topics in U.S. history. Barring duplication of subject, may be repeated. Course meets the History major requirement for Group I.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**HIST 632 - Latin American History: Topics****Credits:** 4

Topics vary (see department listing for current semester). Seminar entails reading, discussion, and research on literature and documents related to the selected topic. Provides students with the opportunity to do research under close direction. Course meets the History major requirement for Group III.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**HIST 633 - Medieval England 800-1300****Credits:** 4

This course provides students with an opportunity to gain an in-depth understanding of the history of medieval England from the beginning of the period of consolidation under the Wessex dynasty in the ninth-century through the end of the thirteenth century. In addition to obtaining a large corpus of information through the reading of a significant monographs dealing with England during this period, students will be challenged to develop the critical analytical skills necessary for the thorough understanding and practice of historical methodologies, with a particular focus on the practice of historical method in writing medieval history. Finally, students will be given the opportunity to improve their communications skills through extensive class discussions dealing with the scholarly works read for this course, and in writing assignments. Course meets the History major requirement for Group II.

**Grade Mode:** Letter Grading**HIST #634 - Medieval Empires****Credits:** 4

This course will explore the intellectual and political foundations of imperial rule in the Middle Ages with a particular focus on the Carolingian, German, and byzantine empires of the early and high Middle Ages. The course will begin with the development of the idea of empire under Alexander the Great and then during the Roman empire. The course will then turn to an examination of how the rulers of the three great empires of the western Middle Ages adapted the classical ideas and practices of empire for their purposes. The course focuses on sources. Background material will be provided in short lectures. Course meets the History major requirement for Group II.

**Grade Mode:** Letter Grading**HIST 640 - Holy War in the Holy Land: The Medieval Crusades****Credits:** 4

Survey of the medieval military expeditions organized by Christians to secure the Holy Land during the 12th and 13th centuries. Topics considered include the formulation of a "just war" theory; political, intellectual, religious, and military interactions between Christians, Jews, and Muslims; the Crusader State of Jerusalem; and the histories of individual crusades. Course meets the History major requirement for Group II.

**Grade Mode:** Letter Grading**HIST 641 - Europe after the Black Death****Credits:** 4

Explores the dramatic changes that characterized Western Europe as it rebounded in the fifteenth through the seventeenth centuries from the ravages of the Black Death of 1348. Examines the social, political, and artistic developments in late medieval and Renaissance Italy before "crossing the Alps" to trace the expansion of Renaissance culture in Northern Europe. Topics include the humanist movement; new patterns of social organization; the revival of classical antiquity in the arts, architecture, religion, and political theory; the effects on European society of the encounter with the "New World"; shifting roles for men and women in early modern European societies; religious war and conflict. Course meets the History major requirement for Group II.

**Grade Mode:** Letter Grading

**HIST 642 - Saints, Sinners, and Heretics: Europe in the Age of Religious Reform****Credits:** 4

Examines the history of Western Christendom from roughly 1400 to 1600, a period of tumultuous religious change throughout Europe. We begin in the Middle Ages where the seeds of religious division were sown. We then tackle Martin Luther's challenge to the Catholic church, trace the diffusion of his message throughout Europe, and address the Catholic response to the evangelizing movements that he inspired. Finally we investigate some of the regional varieties of Protestantism that developed in the latter half of the sixteenth century with a particular focus on Switzerland, Germany, England, Scotland, France, and the Netherlands. Course meets the History major requirement for Group II.

**Grade Mode:** Letter Grading**HIST 654 - Topics in History of Science****Credits:** 4

Advanced study of a selected topic in the history of European science since the Renaissance. Course meets the History major requirement for Group II.

**Grade Mode:** Letter Grading**HIST #656 - Twentieth Century Europe****Credits:** 4

The Twentieth Century began with European nations at the apex of their global power. It ended with their world dominance in ruins. Two World Wars, the rise of Nazism, and communist revolutions had left Europe in the shadow of the United States. Examining European history from the birth of the automobile to the fall of the Berlin Wall, we explore the political, social and cultural forces that made the twentieth century the bloodiest epoch in world history. Course meets the History requirement for Group II.

**Grade Mode:** Letter Grading**HIST 662 - England in the Tudor and Stuart Periods****Credits:** 4

England experienced great upheaval under the Tudor and Stuart dynasties. This course explores many of the key political, religious, social and economic changes that changed the face of England in the 16th and 17th centuries. We will study all of the Tudor and Stuart monarchs, and we will focus particularly on the following topics: Henry VIII, the English Reformation, Elizabeth I, Commons v. Nobility, the English Civil Wars and the execution of Charles I, the Restoration and the Glorious Revolution. Course meets the History requirement for Group II.

**Grade Mode:** Letter Grading**HIST #664 - Russia: Modernization through Soviet Empire****Credits:** 4

The challenges of modernization, experience and legacy of Leninist and Stalinist revolutions. Soviet consolidation and decline through the Gorbachev era. Course meets the History requirement for Group II.

**Grade Mode:** Letter Grading**HIST 665 - Themes in Women's History****Credits:** 4

In-depth examination of a selected topic in women's history. Topics may include Women and Health, Women in Modern European Political Theory, Comparative History of Women and Revolution. See Time and Room Schedule of history department newsletter for the specific topic. May be repeated for credit with permission of instructor. Course meets the History requirement for Group II.

**Grade Mode:** Letter Grading**HIST 675 - History of Ancient Greece****Credits:** 4

Discover the exciting, turbulent, and innovative world of the Greeks through their history, from the emergence of small cities in the archaic period to the empire of Alexander the Great. Special focus will be on the political, economic and social developments in the rise of the polis (city), the Persian and Peloponnesian Wars, the rise of Macedon and Alexander the Great's conquests. CLAS 403/HIST 403 is encouraged but not necessary.

**Equivalent(s):** CLAS 675**Grade Mode:** Letter Grading**HIST 676 - Topics in Ancient Greek History****Credits:** 4

Advanced historical study of a particular period or theme in ancient Greek history. May be repeated barring duplication of subject.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** CLAS 676**Grade Mode:** Letter Grading**HIST 677 - History of Ancient Rome****Credits:** 4

Discover the fascinating and tumultuous history of the ancient Roman world, from its small beginnings in the early Republic to the high Empire, when Rome controlled the whole Mediterranean basin. Special focus will be on the political and economic conflicts between social classes, the Punic Wars, the fall of the Republic, its transformation into a monarchy, and the golden age of imperial rule. CLAS 404/HIST 404 is encouraged but not necessary.

**Equivalent(s):** CLAS 677**Grade Mode:** Letter Grading**HIST 678 - Topics in Ancient Roman History****Credits:** 4

Advanced historical study of a particular period or theme in ancient Roman history. May be repeated barring duplication of subject.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** CLAS 678**Grade Mode:** Letter Grading**HIST 690 - Seminar: Historical Expl****Credits:** 4

Seminar in one of the fields listed below: A) American History, B) Atlantic History, C) Canadian History, D) Latin American History, E) Medieval History, F) European History, G) History of Islam, H) Ancient History, I) East Asian History, J) African History, K) Middle Eastern History, L) Historiography, M) Russian History, N) World History, O) British History, P) New Hampshire History, Q) Historical Methodology, R) Irish History, S) History of Science, T) Maritime History, U) Museum Studies. Course meets the History requirements for Group I, II, or III, depending on the topic. May be repeated barring duplication of subject.

**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** HIST 701**Grade Mode:** Letter Grading**HIST 691 - Internship****Credits:** 1-4

Supervised internship with a governmental agency, private corporation, philanthropic institution, library, archives, museum, historical society, or other institution seeking individuals interested in historical research. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading

**HIST 695 - Independent Study****Credits:** 1-4

A) Early American History, B) American National History, C) Canada, D) Latin America, E) Medieval History, F) Early Modern Europe, G) Modern European History, H) Ancient History, I) East Asia, J) Near East and Africa, K) European Historiography, L) American Historiography, M) Russia, N) World History, O) English History, P) New Hampshire History, Q) Historical Methodology, R) Irish History, S) History of Science, T) Maritime, U) Museum Studies. For students showing a special aptitude in history who desire to study an area or subject for which no appropriate course is offered. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**HIST 698 - Internship in Museum Studies****Credits:** 4

Supervised position with a museum, historical society, archive, or other history related site. Cr/F.

**Grade Mode:** Credit/Fail Grading**HIST 771 - Museum Studies****Credits:** 4

Introduction to theory, methods, and practice of museum studies. Examination of various museum functions, as well as contemporary historical controversies. May be repeated with departmental approval.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**HIST 772 - Studies in Regional Material Culture****Credits:** 4

Introduces the theory and methodology of material culture, that is, the study of history through the analysis of buildings, human-created landscapes, and artifacts made and used in the United States, particularly in New England. May be repeated for credit with permission of undergraduate adviser. Course meets the History major requirements for Group I.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**HIST 774 - Historiography****Credits:** 4

Analysis of ancient and modern historians. Open to undergraduates with permission. (Not offered every year.)

**Grade Mode:** Letter Grading**HIST 775 - Historical Methods****Credits:** 4

Contemporary historical methods. Required of all entering Ph.D. candidates; open to undergraduate with permission. (Not offered every year.)

**Equivalent(s):** HIST 670**Grade Mode:** Letter Grading**HIST 780 - Special Topics in Museum Studies/Material Culture****Credits:** 4

Study of a selected topic related to museum studies or material culture. May be repeated for course credit with permission of the undergraduate adviser. Course meets the History major requirements for Group I.

**Repeat Rule:** May be repeated up to 3 times.**Grade Mode:** Letter Grading**HIST 797 - Colloquium****Credits:** 4

Selected topics in American, European, and non-Western history. Required of history majors. Students must elect section in the department office at the time of registration. Prereq: HIST 500. Course meets the History major requirements for Group I, II, or III, depending on the topic.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**HIST 799 - Senior Thesis****Credits:** 4

Supervised research leading to the presentation of a major research paper. Open only to history majors. Permission of department chairperson required. May not be used as a substitute for the required senior colloquium.

**Grade Mode:** Letter Grading

## Homeland Security (HLS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**HLS 410 - Introduction to Homeland Security****Credits:** 4

The primary focus of HLS 410 is to describe the entirety of the homeland security enterprise in the US and to survey many of the major expressions of it, which can become careers in security. This includes a history of homeland security and emergency management disciplines, and the law and policy underpinnings for homeland security and specific units in emergency management, terrorism, intelligence, law and policy, critical infrastructure and risk analysis, corporate security, environmental/human security and cybersecurity.

**Grade Mode:** Letter Grading**HLS 415 - Fundamentals of Corporate Security****Credits:** 4

HLS 415 will introduce the student to the fundamentals of corporate security including the nature, scope, history, and essential elements of organization (or enterprise) security in the workplace, with emphasis on the private sector. Specific areas include the operational aspects of security strategies for identifying and controlling security exposures, risk management strategies, applicable legal issues, personal protection, property protection, role of intelligence, and concepts of disaster planning and management.

**Grade Mode:** Letter Grading**HLS 455 - Introduction to Cybersecurity****Credits:** 4

The primary focus of HLS 455 is to provide a survey of the broad field of cybersecurity and information security/assurance. Topics will include a definition of information security, the need for information security and cybersecurity in both the public and private sectors, ethical and legal issues revolving around cybersecurity, risk management and planning, and information/cyber security technology. The role of the U.S. Department of Homeland Security (DHS) in securing the cyberspace and the nation's information-related infrastructures will also be explored.

**Grade Mode:** Letter Grading



**HLS 480 - Professional Skills in Homeland Security****Credits:** 4

HLS 480 prepares students to effectively enter the workforce via an internship or co-op experience. Students learn to prepare a resume and cover letter, practice interviewing, learn about how their personality matches job descriptions, search for internships, and develop an e-Portfolio that describes themselves, their professional aspirations, skills, etc. Professional ethics, decision making, organizational power, basic leadership and management principles and professionalism are discussed and illustrated.

**Grade Mode:** Letter Grading**HLS 505 - Political Violence and Terrorism****Credits:** 4

This course provides an interdisciplinary approach to the study of political violence and terrorism. It covers the psychological and sociological roots of terrorism, the organizational patterns of cells, groups and networks, and the role of ideology and identity in shaping goals, targets, and tactics. No credit for students who have previously taken PS 505, or PS #651 Special Topics: Political Violence and Terrorism.

**Attributes:** Social Science (Discovery)**Equivalent(s):** PS 505**Grade Mode:** Letter Grading**HLS 510 - Fundamentals of Emergency Management****Credits:** 4

This course includes a thorough coverage of the historical and statutory background of emergency management (EM) in the USA as well as the significant laws and policies that have defined and shaped the field, including HSPD 5, HSPD 8, the National Flood Insurance Act, and the Stafford Act. Topics include detailed coverage of FEMA's all hazards approach, the EM cycle, integrated EM, the incident command system, the National Incident Management System, emergency support functions, and risk communications and the homeland security exercise evaluation program (HSEEP) where students are introduced to the both discussion and operations-based exercises and strategies for evaluating exercises. This course culminates with each student writing and formally presenting an integrated emergency management plan. Prereq: HLS 410, HLS 415, or consent instructor.

**Grade Mode:** Letter Grading**HLS 515 - Critical Infrastructure Security and Resilience****Credits:** 4

HLS 515 includes an introduction to critical infrastructure security, resilience, and risk analysis as it is conceptualized, regulated and used in the homeland security enterprise. Topics include the history and evolution of critical infrastructure protection including the composition, characteristics and risks to critical infrastructures. Public-private partnerships and sector-specific plans are examined. Resilience in a global context and risk analysis as a means by which resources and assets are allocated to critical infrastructure(s) is presented. Prereq: HLS 410, HLS 415 and HLS 455 or consent of coordinator.

**Grade Mode:** Letter Grading**HLS 520 - Homeland Security Law and Policy****Credits:** 4

This course is an overview of key legal, policy, and ethical issues in the context of Homeland Security policy and practice. Students examine legal concepts regarding constitutional rights of individuals, legal process, access to courts, the law of war, and national security principles as they relate to homeland security legislation and policy initiatives. Legal principles of due process, habeas corpus, search and seizure. Compulsory process, and international agreements are explored in greater depth. The law of war will be examined in the context of preemptive war and the current National Security Strategy, the status of combatants and detention, Elements of national security law, intelligence collection and sharing, the Patriot Act, and military-civilian relations, etc. Prereq: HLS 410 or consent of the instructor.

**Grade Mode:** Letter Grading**HLS 540 - Prevention and Detection of Fraud****Credits:** 4

Fraud detection and prevention are a perpetual concern for organizations, individuals and society. Course topics include fraud causes and behaviors of fraudsters, the fraud triangle, criminal and civil fraud, red flags, financial statement fraud, procurement fraud, bribery, pyramid schemes, money laundering, corporate governance, fraud risk management and responses. Real-world fraud schemes are explored and discussed. Required course for minor in Forensic Accounting. May not be repeated for credit if taken as BUS 460.

**Equivalent(s):** BUS 460**Grade Mode:** Letter Grading**HLS 550 - History and Structure of the U.S. Intelligence Community****Credits:** 4

National security intelligence is a secret nation-state activity to understand or influence an adversarial entity. The United States has a unique Intelligence Community (IC) of 17 organizations that support policymakers. How did the IC develop? How does each component support its mission? This class provides students with an introduction to the history and structure of the United State IC with a focus on the events and policy that shaped its development.

**Grade Mode:** Letter Grading**HLS 555 - Comparative Homeland Security Systems****Credits:** 4

This course will encourage students to become cosmopolitan citizens by gaining knowledge and understanding of cultures other than those of the United States. Students will learn to recognize others' values and, ultimately, accept the many ways in which we all are human. For example, using the Irish struggle for independence from Britain and the Troubles as examples, students will examine Anglo and Irish "culture" and how it is influenced by or how it can influence nation-state security, or conversely, the fight for civil liberties and independence. The main systems and structures in both the US and the UK's domestic security enterprises will be discussed as well as the origins, typologies and goals of several terrorist groups, the basics of the intelligence community in both nations, and how intelligence informs the struggle to contain terrorism. In addition, for homeland security majors, this course can satisfy either the terrorism requirement or the intelligence systems requirement (see instructors). Although a major objective of the course is to prepare students to participate successfully in a managed study abroad program (as a separate course: HLS 656, 1 credit), participation in the study abroad trip is a not required component of this course.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading



**HLS 580 - Environmental and Human Security****Credits:** 4

Students will learn how environmental issues may give rise to socio-political instability around the world which can become threats to US national/homeland security. This course will explore how U.S. domestic and foreign policy, and ultimately, U.S. national security, can be impacted by emergent threats to nations from environmental health issues, climate change, deforestation, infrastructure vulnerabilities, and natural resource shortages caused by rapid industrialization, population growth, and urbanization in less developed countries. In a seminar format, students and faculty will cover a variety of readings and discuss their conclusions and students will have the opportunity to lead class discussions on assigned readings.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**HLS 595 - Independent Study in Homeland Security****Credits:** 1-4

HLS 595 is an independent study in homeland security. Its main function will be to allow students to complete a 500 level homeland security course required in the major, but who are not able to take the required course when it is offered. HLS 595 can substitute for the required core course. In addition, students can also take HLS 595 as a sophomore level independent study as a variable credit course for students wanting to more deeply explore an area of interest. Prereq: Senior standing and permission. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**HLS 610 - Exercise Design and Evaluation in Homeland Security****Credits:** 4

HLS 610 studies the role and structure of exercise design as it is applied in homeland security and emergency management. Students are introduced to the nature and characteristics of discussion and operations-based exercises and the Homeland Security Exercise Evaluation Program. The legislative and policy background of national preparedness is presented. Students complete a project and presentation that demonstrates how exercises are designed, scripted, implemented (conducted) and evaluated. Prereq: HLS 510 and HLS 515 or consent of coordinator.

**Grade Mode:** Letter Grading**HLS 615 - Introduction to Fraud Investigation****Credits:** 4

Fraud Investigation is a specific process including acquisition and verification of information that could lead to the confirmation of fraudulent activity and legal consequences. Course topics include various steps in the fraud investigation process, including identification of fraud, planning an investigation, interviewing, gathering of public and non-public evidence, analysis of data, legal considerations, confidentiality, and writing a fraud examination report. Real-world fraud cases are discussed and analyzed. Required course for minor in Forensic Accounting.

**Grade Mode:** Letter Grading**HLS 630 - Sports and Large Event Security Management****Credits:** 4

This course will address the nature and scope of sport and large event security issues involved in securing the homeland from domestic and international threats to sports and other large events. Motives, methods, and impact of terrorism activity, natural disasters, and crowd management issues in sport and large event venues will be discussed. This course also includes an examination of the basic legislation and operations of the U.S. Department of Homeland Security; risk assessment; security planning options; emergency response and recovery, training and exercises. Prereq: HLS 410.

**Grade Mode:** Letter Grading**HLS 640 - Forensic Accounting****Credits:** 4

Forensic accounting procedures uncover fraudulent schemes and misappropriation of assets. Course topics include review of the basics of financial accounting, Sarbanes-Oxley legislation, the forensic accounting profession, occupational fraud, financial analysis techniques, money laundering, investigative and interviewing processes, evidence gathering, inferential analysis, and documentation and presentation of the case. Real-life fraud cases solved by forensic accounting skills are analyzed. Pre-req: BUS 532 or ADMN 502 or equivalent. Required course for minor in Forensic Accounting.

**Grade Mode:** Letter Grading**HLS 650 - Intelligence Systems and Structures in Homeland Security****Credits:** 4

Intelligence is a systematic process of collection, analysis, and dissemination of information in support of national, state, and/or local policy or strategy. HLS 650 will explore the varied expressions of the intelligence community as it exists in the US. In addition, students will explore the history and development of the IC in the US, major legislative acts that led to the development of intelligence as a major function of US national security strategy. Prereq: HLS 410 or permission of instructor.

**Grade Mode:** Letter Grading**HLS 651 - Issues in Intelligence Collection****Credits:** 4

The primary focus of this course is to develop an understanding of intelligence collection in the US and foreign nations, the issues facing intelligence collection and a survey of the various forms of collection. Students will learn the role collection plays in the intelligence community, how various policies affect collection and how different agencies monitor and collect intelligence. Prereq: HLS 650.

**Grade Mode:** Letter Grading**HLS 652 - Intelligence Analysis and Production****Credits:** 4

National security intelligence analysis is a process of transforming collected data into useable and often actionable products. In this class students will focus on the analysis phase of the intelligence cycle and its relationships with decision maker requirements, intelligence community planning, collection, and dissemination. A primary goal of this class is to increase students' capacity for critical thinking when conducting analytical activities. Prereq: HLS 650.

**Grade Mode:** Letter Grading

**HLS 653 - Counterintelligence****Credits:** 4

Media articles often include depictions of captured spies, criminals, and faceless cyber-attacks. What process is used to identify and defend against these threats? Counterintelligence plays a key role in defending a country or organization from other nation states intelligence services and other nontraditional threats. In this course students will learn about counterintelligence as a phenomenon and critically examine the activities undertaken by counterintelligence organizations.

**Grade Mode:** Letter Grading**HLS 654 - Covert Action****Credits:** 4

On January 3, 2020 the Iranian Revolutionary Guards Corp leader Qasem Soleimani was killed in Iraq by a United States drone strike. Was this event covert action? In this class students will explore covert action and how it is used by nation states to achieve their foreign policy objectives.

**Grade Mode:** Letter Grading**HLS 655 - Open Source Intelligence****Credits:** 4

Open Source Intelligence (OSINT) plays a critical role in national security intelligence. Open sources are defined as those that are publicly available. In this course students will explore and analyze OSINT intelligence from publications, broadcasts, digital media, geographic, and other technical data.

**Grade Mode:** Letter Grading**HLS 656 - Comparative Homeland Security Systems Lab****Credits:** 1

The study abroad component of its prerequisite course, HLS 555. Students go on a 3-week managed study abroad program designed and led by UNH faculty. Prereq: HLS 555 or consent instructor. Special Fee.

**Grade Mode:** Letter Grading**HLS 665 - Bioterrorism, Biosecurity, and Biodefense****Credits:** 4

This course examines biowarfare, including biological, chemical, and radiological weapons. Historical, plausible, and novel weapons will be studied. Mechanisms of action, biological and societal impacts, detection, treatment and governmental strategies for biodefense will be investigated. Discussions will focus on surveillance and preparedness at the state and federal levels. Relevant aspects of the law will be presented and the bioethical challenges of anti-bioterror research will be explored.

Prereq: HLS 410 or BMS 503.

**Equivalent(s):** BSCI 665**Grade Mode:** Letter Grading**HLS 695 - Independent Study in Homeland Security****Credits:** 1-4

HLS 695 is an independent study in homeland security. Its main function will be to allow students to complete a 600 level homeland security course required in the major, but who are not able to take the required course when it is offered. HLS 695 can substitute for the required core course. In addition, students can also take HLS 695 as a junior level independent study as a variable credit course for students wanting to more deeply explore an area of interest. Prereq: Senior standing and permission. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**HLS #722 - International White Collar Crime****Credits:** 4

It was Edwin Sutherland, an American sociologist of the early 20th century who first began to appreciate and understand white collar crime and distinguish it from other criminality. He was also the first to define it, calling it "crime committed by a person of respectability and high social status in the course of his occupation". Today, international white collar crime is a global phenomenon which reaches into the highest levels of transnational business and commercial behavior, government, and politics. It includes, but is not limited to, old-fashioned graft and corruption, tax evasion, money laundering, securities and market manipulation, banking and insurance violations and fraud, influence peddling and even election fixing. This course is intended to provide the ICLJ's advanced students with a thorough understanding of what white collar crime is, where it is, how it is executed, what is being done to combat it, and what dangers it presents to established and emerging nations. The course will examine the approaches to these problems used in countries that have a strong interest dealing with white collar criminal issues. In addition, international best practices and standards will be critically assessed.

**Grade Mode:** Letter Grading**HLS #724 - International Criminal Law Survey****Credits:** 4

This course is a survey of the field of international criminal law. It asks students to consider foundational questions about what counts as an international crime; when an individual country may have jurisdiction over crimes that occur outside the country's boundaries and when and over what crimes an international body may have jurisdiction. It introduces students to the international criminal court; the special tribunals; domestic and international efforts to combat terrorism and an array of transnational crimes like drug trafficking, cybercrimes, white-collar crimes etc.

**Grade Mode:** Letter Grading**HLS #726 - International Criminal Court & The Special Tribunals****Credits:** 4

This course is about a new and exciting area of law, practice and procedure that in many respects is still in its infancy. During the course you will explore how International Criminal Law and the International Criminal Courts and Tribunals evolved. You will examine their jurisprudence, practice and procedure. Specifically, you will discover how the prosecution operates from the investigation of crimes through to their prosecution. You will look at the role of the defense and the common defenses raised in cases before the courts. An understanding of the full ramifications of International Criminal Law can be challenging because it disturbs some of the well-established concepts that you may have become accustomed to, such as sovereignty, military supremacy, and discrimination.

**Grade Mode:** Letter Grading

**HLS #750 - Emergent Topics in Homeland Security/Homeland Defense****Credits:** 4

HLS #750 will investigate the nature of strategic planning as it relates to homeland security and national security in the United States. In addition, students will explore how strategic planning relates to decision making in more stable environments as well as decision making under uncertainty. Relevant legislation and past decisions (such as the Bay of Pigs and the Cuban Missile Crisis) will be explored. In addition, the basic concepts of the techniques for strategic communication will be explored, developed, and related to decision making along with the characteristics of making high quality strategic decisions. Prereq: HLS 510 and HLS 515 or consent of instructor. Special Fee.

**Grade Mode:** Letter Grading**HLS 760 - Strategic Planning and Decision Making****Credits:** 4

HLS 760 investigates the nature of strategic planning as it relates to homeland security and national security in the U.S. Students explore how strategic planning relates to decision making in more stable as well as uncertain environments. Relevant legislation and past decisions (such as the Bay of Pigs and the Cuban Missile Crisis) are explored including concepts and techniques from making high quality decisions. Strategic communication principles and techniques are presented. Prereq: HLS 510 and HLS 515 or consent of coordinator. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**HLS 770 - Internship in Homeland Security****Credits:** 4

HLS 770 represents the professional work experience required in the homeland security major. Students work in a professional setting for a minimum of 180 hours under the supervision of a site supervisor. All internships require students to identify and complete work on a specific project (s) approved by the HLS coordinator. Internships may be taken at any time after students have taken 30 credits of university coursework. Note that students who are academically or otherwise unable to enter into internship must take HLS 799 (thesis in homeland security which requires senior standing and permission from the HLS program coordinator). Prereq: HLS 410, HLS 455 and HLS 480.

**Grade Mode:** Credit/Fail Grading**HLS 790 - Capstone in Homeland Security****Credits:** 4

HLS 790 allows students to work collaboratively with an organization to identify and solve a homeland security, physical security, safety, cybersecurity or emergency management challenges. Each group performs a risk assessment in order to identify their client's primary security or preparedness challenges. Students then use their skill to identify and apply best practices as countermeasures. Students culminate their projects with presentations to their classmates and to their clients. The expectation of this class is to develop a professional example of the student's thinking and writing to solve real world security problems. Prereq: senior standing, HLS 610 and HLS 760 or consent of coordinator.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**HLS 795 - Independent Study in Homeland Security****Credits:** 1-4

HLS 795 is an independent study in homeland security. Its main function will be to allow students to complete a 700 level homeland security course required in the major, but who are not able to take the required course when it is offered. HLS 795 can substitute for the required core course. In addition, students can also take HLS 795 as a senior level independent study as a variable credit course for students wanting to more deeply explore an area of interest. Prereq: Senior standing and permission. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**HLS 799 - Senior Thesis in Homeland Security****Credits:** 4

Students work under the direction of a faculty thesis advisor to plan and carry out independent research resulting in an oral presentation and a major research paper. Research projects should include the development of a research thesis/question, a literature review, analysis, and synthesis of relevant data/sources, discussion and interpretation and presentation of results. Senior Thesis can be used to substitute for Internship in HLS. Permission by HLS program coordinator required, open only to HLS seniors. Prereq: HLS 510 and HLS 515 and HLS 650 and HLS 760.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading

## Horticultural Technology (HT)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

No courses are currently active in the course inventory for this subject prefix.

## Hospitality Management (HMG)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**HMG 401 - Introduction to the Hospitality Industry****Credits:** 4

Review the broad spectrum of the hospitality industry from an historical perspective, in concert with current history, trends, and challenges presented by notable industry executives. Distinguished guests represent all segments of the hospitality industry plus selected allied support businesses. Industry segments include, but are not limited to, hotels and lodging, restaurant and food service, travel and tourism, conferences and conventions, casinos and gaming, clubs and resorts, health care and senior living, franchising and entrepreneurship, and technology support. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**HMG #403 - Introduction to Food Management****Credits:** 0 or 4

Designed to introduce the student to the fundamental components of food production principles, nutrition and menu development, and to some basic management skills. The subject matter is presented through classroom lectures, interactive electronic instruction, guest lectures, and food production labels.

**Grade Mode:** Letter Grading

**HMG T #404 - Professional Development I****Credits:** 1

Development and integration of self-assessment, career planning, and academic work. Students design and produce an individual career action plan in preparation of a required summer internship. Through self-assessment instruments they develop an understanding of their personal values, interests, skills, and personality in relation to their vocational options, academic process, and career projections. Cr/F.

**Grade Mode:** Credit/Fail Grading**HMG T 405 - Introduction to Food and Service Management****Credits:** 0 or 4

This course is designed to build knowledge and experience in food and service management. Basic principles of foodservice management and their application to menu development, food safety, procurement, equipment usage and identification, customer service, marketing, leadership, human resources, and finance are covered during this course. Laboratory experience in both front and back of the house will provide hands-on experience in basic understanding of how a kitchen operates and dining room service. Training in Safe Food Handling, and Alcohol Services leads to Certification.

**Grade Mode:** Letter Grading**HMG T #504 - Professional Development II****Credits:** 2

Development and integration of self-assessment, career planning, and academic work. Students design and produce an individual career action plan in preparation of a required summer internship. Through self-assessment instruments they develop an understanding of their personal values, interests, skills, and personality in relation to their vocational options, academic process, and career projections.

**Grade Mode:** Letter Grading**HMG T 520 - Happy and Healthy at Work: Promoting Wellness, Diversity and Inclusion****Credits:** 4

Offers improved understanding and ability to effectively manage a diverse and healthy workforce. Addresses key diversity, inclusion, and wellness issues in the workplace of a general, technical, and social nature with an emphasis on disability and health promotion.

**Attributes:** Social Science (Discovery); Inquiry (Discovery)**Equivalent(s):** HMG T 598, OT 520**Grade Mode:** Letter Grading**HMG T 554 - Lodging Operations Management****Credits:** 0 or 4

The course is designed to introduce the operational aspects of hotel and resorts as well as discuss current trends of the lodging industry, hotel organization, reservations, registration, guest services and communications, hotel security, front office accounting, housekeeping, night audit, planning for operations, sales techniques, revenue management, and human resources management. To achieve the learning objectives, lectures, labs, e-learning course, guest lectures, and individual assignments are employed. Training in hotel analytics leads to CHIA Certification. Pre- or Co-requisite: HMG T 401.

**Equivalent(s):** HMG T 654**Grade Mode:** Letter Grading**HMG T 570 - International Food and Culture****Credits:** 0 or 4

This course explores multiple world cultures using food, language, religion, geography, communication, politics, among other attributes, and compares/contrasts with our own diverse cultures here in the United States. Learn why we eat what we eat, when, and how. Food is a critical component across the world's many different cultures and this course will investigate how they are viewed by persons of different backgrounds. The course will leave you with an expanded understanding and appreciation of why and how persons from diverse cultures with varying backgrounds approach their food and beverage needs differently. Laboratory experience in cooking international cuisine. Inquiry Attribute, World Culture, Writing intensive.

**Attributes:** World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** HMG T 670**Grade Mode:** Letter Grading**HMG T #600 - Hospitality Marketing Management****Credits:** 4

Students apply basic marketing principles to the competitive environment of service businesses, such as hotels, restaurants, and other hospitality firms. Strong emphasis on consumer behavior, services management theory, and the hospitality marketing mix as they relate to service firms of all types. Course material is presented through a variety of techniques: case studies, lectures, guest speakers, team projects, and written assignments. Prereq: HMG T 401. Pre- or Coreq: HMG T 554. Writing intensive.

**Attributes:** Writing Intensive Course**Mutual Exclusion:** No credit for students who have taken ADMN 585, MKTG 530, MKTG 550.**Grade Mode:** Letter Grading**HMG T #604 - Professional Development III****Credits:** 2

Students design and produce an individual career action plan. Emphasis on identifying each individual's marketable skills, locating job possibilities, writing resumes and correspondence, and interviewing for jobs. Career development workshops are used to enhance the learning experience. Pre- or Coreq: HMG T #504.

**Grade Mode:** Letter Grading**HMG T 618 - Uniform Systems for the Hospitality Industry****Credits:** 4

Following a review of financial statements and an introduction to the Uniform System of Accounts for Hotels and Restaurants, students learn specific applications of managerial accounting and decision support systems for the hospitality industry. Topics include cash flow analysis, cost management, cost-volume-profit analysis, pricing models, budgeting, and forecasting. Students develop an understanding of computer software and back-and front-office computer systems as they relate specifically to the hospitality industry. Lectures, computer exercises, and papers. Prereq: ADMN 502.

**Grade Mode:** Letter Grading

**HMG 625 - Hospitality and Employment Law****Credits:** 4

Tort and contract liability in the hospitality industry. Emphasizes a managerial approach to solving or avoiding potential problems including employment law issues that arise in any business environment: wrongful termination, compensation rules, affirmative action, employment discrimination, sexual harassment, and issues involving privacy in the workplace. Looks at numerous State and Federal Agencies with which Hospitality business must work. Examines key forms of ownership in terms of taxes, risks and rewards. Prereq: junior standing.

**Grade Mode:** Letter Grading**HMG 635 - Hospitality Human Resource Management****Credits:** 4

Addresses key hospitality resource management issues of a general, technical, and social nature including communication, motivation and leadership, job stress and safety, security, government regulations, discrimination, and substance abuse. Covers technical areas such as recruiting and selecting, placement, employment, training, performance appraisal, disciplining, and termination. Prereq: junior standing. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** MGT 770**Grade Mode:** Letter Grading**HMG 655 - Hospitality Finance and Development****Credits:** 4

Provides the advanced student with a familiarity of the principles and practices of development and acquisition of hotel, restaurant, and other hospitality businesses, and the real estate development process. Emphasizes market and financial evaluation and decision making relative to economic, ethical, legal, and social aspects of the organization's environment. Group projects involving the preparation of a complete economic feasibility study for hotel or restaurant development or acquisition or repositioning are required. Prereq: HMG 618.

**Grade Mode:** Letter Grading**HMG 661 - Event Design, Planning, and Management****Credits:** 4

Strategic and logistical considerations in managing the planning, development, marketing, and implementation of meetings, conventions, and events. Prereq: junior standing.

**Grade Mode:** Letter Grading**HMG #662 - Convention Sales and Service Management****Credits:** 4

Provides students with an understanding of the sales and service management aspects of the international and domestic convention, exhibition and meeting industries. Analyze the market potential of convention centers, resort hotels, convention hotels and independent venues. Consider the strategic and logistic aspects of the planning, development, coordination and execution of conventions, exhibitions and meetings. Introduction to and certification in numerous aspects of the DELPHI software system.

**Grade Mode:** Letter Grading**HMG 667 - Advanced Food & Beverage Operations & Event Management****Credits:** 0 or 4

A project management course integrating advanced management principles and techniques in the presentation of a large-scale gourmet dining event. This class examines services & operational management protocols: planning, forecasting and budgeting, marketing and sales, meal plan preparation, production, execution and delivery systems, service encounters, technology, purchasing and inventory management, human resources, scheduling, productivity and quality issues, HR and risk management.

**Grade Mode:** Letter Grading**HMG 681 - Contemporary Resort Development and Management****Credits:** 4

Looks at the elements of developing and maintaining Resort properties including Spas, Ski Areas, Waterparks, Time Shares, Beach Resorts and Full service resorts with private home development. Examines the key roles real estate and financing play in all resort development and sustainability. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** HMG 681W**Grade Mode:** Letter Grading**HMG #682 - Private Club Management****Credits:** 4

Examines the effective operation and management of private clubs including city clubs, country clubs and yacht clubs. Major topics include: the unique niche that clubs represent in the hospitality industry, organizational structure of clubs, role of the board of directors, membership requirements, differences between tax-exempt clubs and non-exempt clubs, government regulation, preparing for a career in the club field, trends in club management and the future of clubs.

**Grade Mode:** Letter Grading**HMG 695 - Independent Analysis****Credits:** 2-12

Study and research project for honor students to advance knowledge in lodging and food services fields. Prereq: junior standing and permission.

**Equivalent(s):** HMG 695W**Grade Mode:** Letter Grading**HMG 695W - Independent Analysis****Credits:** 2-12

Study and research project for honor students to advance knowledge in lodging and food services fields. Prereq: junior standing and permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** HMG 695**Grade Mode:** Letter Grading**HMG 696 - Supervised Student Teaching Experience****Credits:** 1-8

Participants are expected to perform such functions as attending classes, leading discussion groups, assisting faculty, presenting information in undergraduate courses that they have successfully completed, holding office hours, grading papers and exams. Enrollment is limited to juniors and seniors who have had above average GPAs. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading



**HMG T #698 - Topics****Credits:** 1-4

Special topics and developments in lodging, food services, and other hospitality industries. Prereq: junior standing. Course may be repeated when topics change.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**HMG T 700 - PAUL Assessment of Core Knowledge****Credits:** 0

One of the learning objectives in the Hospitality Management Program is that all students will graduate with an understanding of these core knowledge assembled from various disciplines that contribute courses to the program. We assess this learning as part of our Assurance of Learning Program. This zero credit course provides an administrative mechanism for accomplishing this goal.

**Co-requisite:** HMG T 703**Grade Mode:** Credit/Fail Grading**HMG T 703 - Strategic Management in the Hospitality Industry****Credits:** 4

Capstone course, interrelating and applying strategic management concepts to hospitality organizations. Cases from hotel companies, restaurant chains, and other hospitality-related businesses, supplemented by economic and other published information from the industry, are used as departure points for class discussion. Prereq: senior standing. Writing intensive.

**Co-requisite:** HMG T 700**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**HMG T 750 - Advanced Operations Management****Credits:** 4

Students travel to a major hotel or resort weekly to spend a day working in various departments. The course gives students an in depth-look at the operation of the individual departments, as well as learning how departments must function in an integral way for a successful hotel/resort to operate. Students also experience areas not covered in the on-campus curriculum including a day with a General Manager. Prereq: HMG T major or minor and junior or senior status.

**Grade Mode:** Letter Grading**HMG T 756 - International Franchising****Credits:** 4

Designed to help the student acquire an understanding of franchising as a system of distribution and business expansion. Franchising is studied from both the perspectives of the franchisee and the franchiser. In addition, economic, financial, and legal issues associated with franchising are covered. By the end of the course, students acquire the skills and sources of information that would permit sound assessment of the business opportunities available in franchising. Prereq: ADMN 585 or HMG T #600. (Also offered as MKTG 756.)

**Grade Mode:** Letter Grading**HMG T 758 - Revenue Management and Pricing****Credits:** 4

This course covers two topics critical to today's hotel industry; the actual techniques of selling, converting inquiries from individuals and conventions into business. Revenue Management is the technique of evaluating a piece of business and determining its profitability over all departments. The course looks intently at past history as well as forecasting in order to determine the price to be charged based on demand and profitability sought.

**Grade Mode:** Letter Grading**HMG T 771 - International Wine and Beverage****Credits:** 4

Explore the wide world of wine, beer and spirits, through lectures, sensory evaluations, and in-class tasting exercises. Also learn about how to purchase, store, and serve different beverages. Enrolled students must be at least 21 years old.

**Grade Mode:** Letter Grading**HMG T 777 - Casino Management****Credits:** 4

Examines the history of the gaming industry and the development, organization and management of casinos. Investigates economics, moral and social issues of gaming including problem gambling. Covers gaming regulations, accounting and taxation of casinos, casino marketing, national and international gaming destinations, game probabilities and the interaction of the casino department with other divisions of mega casino resorts including lodging, food and beverage and meetings and conventions. A central focus will be on current trends and events. A field trip to a casino resort is required for those enrolled students at least 21 years old on the day the trip is scheduled.

**Mutual Exclusion:** No credit for students who have taken HMG T 777J.**Grade Mode:** Letter Grading**HMG T 795 - Internship II****Credits:** 1-4

Off-campus work in the hospitality industry for on-the-job skill development. Normally supervision is provided by a qualified individual in the organization with frequent consultation by the faculty sponsor. Initial sponsorship of an Hospitality Management faculty member must be obtained followed by approval of Paul advisor and Dean's Office. Special permission required to earn more than 4 credits in one semester. For Paul College juniors and seniors with 3.0 or better cumulative GPA.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Credit/Fail Grading**HMG T 798 - Topics****Credits:** 4

Special Topics.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**HMG T #799 - Honors Thesis/Project****Credits:** 4-8

Supervised research leading to the completion of an honors thesis or project; required for graduation from the honors program in hospitality management. Prereq: permission of director of undergraduate programs and department chair. Writing intensive.

**Attributes:** Honors course; Writing Intensive Course**Grade Mode:** Letter Grading

## Human Development & Family Studies (HDFS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**HDFS 444A - Children at Risk****Credits:** 4

This course focuses on childhood risks such as poverty, family stress and dysfunction, social and emotional problems, and bullying, as well as how children cope with risk and demonstrate resilience. Students will learn about and visit a number of community programs in New Hampshire that support children and their families in times of stress. Site-visits will include introduction to a range of providers such as child advocates, counselors, social workers, juvenile detention workers, and teachers.

**Attributes:** Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course

**Equivalent(s):** FS 444A

**Grade Mode:** Letter Grading

**HDFS 525 - Human Development****Credits:** 0 or 4

This course provides an overview of human development from conception through death with an emphasis on the contexts in which development occurs, and a focus on thinking about ways to enhance the lives of individuals and families across the lifespan. The knowledge gained in this course will allow students to understand the needs of individuals across all life stages, and critically reflect on their own development.

**Attributes:** Social Science (Discovery)

**Equivalent(s):** FS 525, FS 525H, HDFS 525H

**Grade Mode:** Letter Grading

**HDFS 545 - Intimate Relationships and Families****Credits:** 4

This course provides students with an overview of contemporary research and theory on intimate and family relationships. An historical overview of marriage, intimate partnering, and the family will be covered while also exploring diverse experiences. Emphasis will be placed on the cultural, societal, and political norms and tensions surrounding intimate and family relationships and related public policy. Students will also have an opportunity to reflect on their own attitudes, thoughts, and values.

**Attributes:** Social Science (Discovery)

**Equivalent(s):** FS 545, FS 645, HDFS 645

**Grade Mode:** Letter Grading

**HDFS 553 - Personal and Family Finance for Family Life Professionals****Credits:** 4

This course focuses on applied financial management emphasizing teaching financial issues to a variety of audiences. Topics include savings, credit, insurance and retirement, and programs and resources available to facilitate financial education.

**Equivalent(s):** FS 553

**Grade Mode:** Letter Grading

**HDFS 565 - Introduction to Child Life****Credits:** 4

This course provides an introduction to the theory and practice of the child life profession and family centered care. Child life professionals work with children and adolescents facing acute, chronic, or life-threatening illness and traumatic injuries, and their families. Topics include children's emotional reactions to hospitalization, use of play, preparation for medical procedures, family support, and designing healing environments.

**Equivalent(s):** SW 565

**Grade Mode:** Letter Grading

**HDFS 586 - Families at Risk****Credits:** 4

This course is designed to look at the challenging biological, cultural and situational factors that affect the contemporary family. Concerns such as immigration, terrorism, disease, and media influences will be discussed, along with global problems of climate change, war, violence, alcohol and drug abuse, and economic change. This class is about how families cope with the stress associated with these challenges, but also how they adapt, how to promote resilience, and how families can thrive in the face of adversity. Students will explore remedies, solutions and support networks that help families in crisis. Prereq: HDFS 545 or permission.

**Equivalent(s):** FS 586

**Grade Mode:** Letter Grading

**HDFS 623 - Developmental Perspectives on Infancy and Early Childhood****Credits:** 4

This course provides an overview of the physical, cognitive, language, and social-emotional development of children from the prenatal period through early and middle childhood. Theories of development are discussed as well as research methodologies used in the study of child development. Special attention is given to landmark and current research findings regarding development during this period of the lifespan. Prereq: HDFS 525.

**Equivalent(s):** FS 623

**Grade Mode:** Letter Grading

**HDFS 624 - Developmental Perspectives on Adolescence and Early Adulthood****Credits:** 4

This course examines the normative changes adolescents experience in biological, social, emotional, and cognitive domains. Emphasis is on the contexts of adolescent development including family and peer relationships, school, work, leisure, and broader cultural influences. Students will learn about problematic and risky behaviors as well as the positive development outcomes associated with this period of the lifespan.

**Equivalent(s):** FS 624

**Grade Mode:** Letter Grading

**HDFS 625 - Adult Development and Aging****Credits:** 4

This course covers the general biological, psychological, and cultural theories and issues related to adult development and aging from emerging adulthood to the oldest old. The course emphasizes diversity in the process of aging and the influence of various contexts on that process. Designed for students who want to become more knowledgeable about successful aging as well as those who plan to work in adult and gerontological research or social services settings.

**Equivalent(s):** FS 625

**Grade Mode:** Letter Grading

**HDFS 635 - Teaching and Learning in Early Childhood Settings****Credits:** 4

This course covers the theoretical and developmentally-appropriate approaches to supporting young children's physical, social, emotional, and cognitive development in early childhood settings. Weekly four-hour practicum experience working with preschool children at the UNH Child Study and Development Center is required. Prereq: HDFS 525, HDFS 623, or permission.

**Equivalent(s):** FS 635

**Grade Mode:** Letter Grading

**HDFS 641 - Parenting Across the Life Span****Credits:** 4

This course provides an overview of theory and current research on parenting in contemporary society. The course explores the challenges and changing nature of parenting across development, current parenting issues, and parenting in diverse family types. Students will also have an opportunity to reflect on their own attitudes, thoughts, and values in regards to parenting. Prereq: HDFS 525, HDFS 545, or permission.

**Equivalent(s):** FS 641**Grade Mode:** Letter Grading**HDFS 695 - Independent Study****Credits:** 1-6

Supervised in-depth scholarly experience relevant to any of the HDFS specializations: Child Development, Family Support, and Lifespan Development. Student must work directly with a supervising faculty member to develop and complete the project. Prereq: permission.

**Equivalent(s):** FS 695**Grade Mode:** Letter Grading**HDFS 697 - Special Topics****Credits:** 1-6

Focused examination of a particular theoretical, methodological, or policy issue. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** FS 697, FS 697W, HDFS 697W**Grade Mode:** Letter Grading**HDFS 697W - Special Topics****Credits:** 1-6

Focused examination of a particular theoretical, methodological, or policy issue. Prereq: permission.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** HDFS 697**Grade Mode:** Letter Grading**HDFS 707 - Practicum****Credits:** 1-6

Supervised in-depth experience in professional setting designed to increase the student's understanding of and experience working with children, adolescents, or families. Students must work with a supervising faculty member to identify a practicum site. 01) Child, 02) Family, 03) Adolescent. Prereq: permission. Cr/F.

**Equivalent(s):** FS 707**Grade Mode:** Credit/Fail Grading**HDFS 709 - Child Development Internship****Credits:** 4

Supervised teaching internship at the UNH Child Study and Development Center with children 6 wks-6 years old age for 9 hours each week.

Internship experiences include teaching, documentation, and assessment. In addition students attend a weekly one-hour seminar for an in-depth reflection and analysis of the internship experience. Prereq: HDFS 525; HDFS 623; HDFS 635; and permission. Materials fees.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** FS 709, FS 790A, FS 790B**Grade Mode:** Letter Grading**HDFS 734 - Curriculum for Young Children****Credits:** 4

This course focuses on the design, implementation, and evaluation of developmentally-appropriate activities in a classroom of young children.

This course takes the stance that curriculum is not simply activities or plans, but a product of societal, school, and classroom culture as influenced by particular views of development. Special Fee. Prereq: HDFS 525; HDFS 623; HDFS 635. Only open to HDFS majors.

**Attributes:** Writing Intensive Course**Equivalent(s):** FS 734**Grade Mode:** Letter Grading**HDFS 743 - Families, Schools, and Community****Credits:** 4

This course takes an ecological approach to emphasize the critical value of effective family-school-community partnerships in enhancing the education of young children. Models of family-school-community partnerships are explored. Practical knowledge regarding the experiences of those from diverse backgrounds to best prepare students to interact with, and support, all children and families is highlighted. Students actively engage within the community to build bridges between families, schools, and the greater community.

**Attributes:** Writing Intensive Course**Equivalent(s):** HS 743**Grade Mode:** Letter Grading**HDFS 746 - Human Sexuality****Credits:** 4

This course addresses the biological, psychological, and cultural aspects of human sexuality and gender across the lifespan. Opinions, attitudes, and values affecting societal responses to sexual issues are explored in relation to scientific research and theory. Students will be better prepared to deal with sexual issues in their personal and professional lives.

**Equivalent(s):** FS 746**Grade Mode:** Letter Grading**HDFS 757 - Race, Class, Gender, and Families****Credits:** 4

This course explores the intersection of race, class, and gender in family life in the US. Theory, research, and other relevant literature is used to examine the variety of family configurations in our society today and the diverse experiences that individuals and families have as a result of existing social, political, and economic institutions.

**Attributes:** Writing Intensive Course**Equivalent(s):** FS 757**Grade Mode:** Letter Grading**HDFS 760 - Family Programs and Policies****Credits:** 4

This course explores the relationship between family policy and legislation with programs, services, and family experiences at the local, state and national level. Course content includes concepts associated with planning for, implementing, and evaluating family policies and programs; as well as exploring the complexities of family policy and the policy-making process. Course assignments will challenge students to understand and evaluate family policies and programs that are compatible with their professional interests. Prereq: HDFS 545 or permission.

**Attributes:** Writing Intensive Course**Equivalent(s):** FS 760, HDFS 760W**Grade Mode:** Letter Grading

**HDFS 771 - Observation and Assessment of Young Children****Credits:** 4

Comprehensive view of various observation techniques for determining children's strengths and emerging skills. Exploration of issues regarding the use of formal assessments and testing with young children, retention and transitional placements, and the parent's role in testing. Prereq: HDFS 525; HDFS 623; HDFS 635. (Fall semester only.)

**Equivalent(s):** FS 771**Grade Mode:** Letter Grading**HDFS 776 - Children, Adolescents and the Law****Credits:** 4

This course is designed to familiarize students with the specialized laws and legal systems that govern children and adolescents. Discussion will focus on society's efforts to balance competing interests and goals. The course provides the chance to explore laws and processes that affect children and adolescents as they interact with the court system, their caregivers, families and society at large.

**Attributes:** Writing Intensive Course**Equivalent(s):** FS 776**Grade Mode:** Letter Grading**HDFS 782 - Family Internship****Credits:** 6

Supervised experience working in human services agencies. Students spend a minimum of 16 hours per week in a selected community program. Admission by application only. A senior-level course with 6 credits being taken both fall and spring of the senior year. Prereq: HDFS major; senior status; HDFS 525; HDFS 545; 20 credit hours of HDFS course work; permission. Pre- or Coreq: HDFS 760. IA (continuous grading). Cr/F.

**Co-requisite:** HDFS 792**Repeat Rule:** May be repeated up to 2 times.**Equivalent(s):** FS 782**Grade Mode:** Credit/Fail Grading**HDFS 785 - Seminar for Student Teachers****Credits:** 2

This seminar supplements the student teaching experience and provides a transition to the profession of teaching for those students admitted to the early childhood certification option. Students must apply during the spring semester of their junior year to be considered for the early childhood certification option. Prereq: HDFS major; senior status; HDFS 525; HDFS 545; HDFS 623; HDFS 635; permission. (Fall semester only).

**Equivalent(s):** FS 786**Grade Mode:** Letter Grading**HDFS 786 - Seminar for Student Teachers****Credits:** 2

This seminar supplements the student teaching experience and provides a transition to the profession of teaching for those students admitted to the early childhood certification option. Students must apply during the spring semester of their junior year to be considered for the early childhood certification option. Prereq: HDFS major; senior status; HDFS 525; HDFS 545; HDFS 623; HDFS 635; permission. Coreq: HDFS 788. (Spring semester only).

**Co-requisite:** HDFS 788**Equivalent(s):** FS 786**Grade Mode:** Letter Grading**HDFS 788 - Student Teaching Young Children****Credits:** 8

Supervised teaching experience. Students spend a minimum of 20 hours per week in a selected program for young children working with a cooperating teacher. Students must apply during the spring semester of their junior year to be considered for the early childhood certification option. Prereq: HDFS major; senior status; HDFS 525; HDFS 545; HDFS 623; HDFS 635; HDFS 785; permission. Coreq: HDFS 786. (Spring semester only). Special fee. Cr/F.

**Co-requisite:** HDFS 786**Equivalent(s):** FS 788**Grade Mode:** Credit/Fail Grading**HDFS 792 - Family Internship Seminar****Credits:** 2

This biweekly seminar focuses on issues of concern to family internship students, provides advanced training in educational strategies for working with families, and develops students' professional skills. This is a two-semester course with 2 credits being taken each semester. Prereq: HDFS major; admission to family internship program; permission. (Fall and spring semester.) IA (continuous grading).

**Co-requisite:** HDFS 782**Repeat Rule:** May be repeated up to 2 times.**Equivalent(s):** FS 792, FS 792W**Grade Mode:** Letter Grading**HDFS 794 - Families and the Law****Credits:** 4

This course explores statutory law, case law and the judicial processes that affect families as members interact with each other and with society. Students will become familiarized with the family court system and its role in regulating the family.

**Attributes:** Writing Intensive Course**Equivalent(s):** FS 794**Grade Mode:** Letter Grading**HDFS #795 - Advanced Independent Study****Credits:** 1-6

Students in the major may undertake advanced study in child development, lifespan development or family support in consultation with a HDFS faculty member. The result of the study is to be a significant written product of a quality comparable to a 700 level course. A learner/sponsor contract will be required. Prereq: permission.

**Grade Mode:** Credit/Fail Grading**HDFS 797 - Advanced Special Topics****Credits:** 1-6

Focused examination of a particular theoretical, methodological, or policy issue. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** FS 797**Grade Mode:** Letter Grading**HDFS 799 - Honors Senior Thesis****Credits:** 2-4

Under direction of a faculty sponsor, students plan and carry out an independent investigative effort in an area of family, child, and/or consumer studies, resulting in a written thesis and an oral presentation before students and faculty. Prereq: majors only; senior standing; permission. Two-semester sequence as continuing course.

**Attributes:** Honors course**Equivalent(s):** FS 799**Grade Mode:** Letter Grading

# Humanities (HUMA)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

## HUMA 401 - Introduction to the Humanities

**Credits:** 4

Introduction to the interdisciplinary study of the humanities. Taking as its entry point a significant work, the course is organized by topics related to that work, selected and arranged to invoke lively intellectual debate among faculty and students alike. Group lectures by the four core humanities faculty members. The instructors teaching the course will provide material for smaller weekly discussion sections led by each of those faculty members. Requirements include lively discussions, papers, and examinations. Not repeatable.

**Attributes:** Humanities(Disc)

**Equivalent(s):** HUMA 401W

**Grade Mode:** Letter Grading

## HUMA 401W - Introduction to Humanities

**Credits:** 4

Introduction to the interdisciplinary study of the humanities. Taking as its entry point a significant work, the course is organized by topics related to that work, selected and arranged to invoke lively intellectual debate among faculty and students alike. Group lectures by the three core humanities faculty members. The instructors teaching the course will provide material for smaller weekly discussion sections led by each of those faculty members. Requirements include lively discussions, papers, and examinations. Writing intensive. Not repeatable.

**Attributes:** Humanities(Disc); Writing Intensive Course

**Equivalent(s):** HUMA 401

**Grade Mode:** Letter Grading

## HUMA 411 - Humanities I

**Credits:** 4

Introduction to the humanities and Western culture through literature, history, philosophy, music, art, and architecture. Examination of selected historical periods from classical Greece through the Renaissance through readings, films, slides, and field trips. Special fee. Writing intensive.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

## HUMA 412 - Humanities II

**Credits:** 4

Introduction to the humanities and Western culture through literature, history, philosophy, music, art, and architecture. Examination of selected historical periods from the Enlightenment to the present through the use of readings, films, slides, and field trips. Writing intensive.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

## HUMA 413 - Dramatic Art and Social Reality: The Many Meanings of Performance

**Credits:** 4

This course illuminates connections between the performed stories of drama and real aspects of our lives. It considers performances on stages, screen, and in everyday life—like social rituals, “scripted” because performers are expected to follow certain social roles. It examines those rituals, investigating how they were authored and whether participants have been appropriately cast. No credit if student has taken HUMA 412: Humanities II: Dramatic Art & Social Reality: The Many Meanings of Performance. Writing intensive.

**Attributes:** FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

## HUMA 440A - Honors/Hooked: Narratives of Addiction, Recovery, and Redemption

**Credits:** 4

This course explores literature about addiction through both literary and psychological lenses. It focuses on the redemption narrative that structures the understanding of addiction for writers and readers alike. Readings include stories of religious redemption, short fiction, memoirs, self-help texts, and narrative and psychological theory. This course is part of the Honors Symposium “Engaging Addiction”. The courses in the Symposium join several times during the semester for common meetings where perspectives can be compared and explored.

**Attributes:** Honors course; Humanities(Disc)

**Grade Mode:** Letter Grading

## HUMA 440B - Honors/That Belongs in a Museum! Museums and the Ownership of Antiquities

**Credits:** 4

Suppose you stumbled upon an artifact from an Indigenous Native American people in your backyard. Do you own it? Or do the heirs of those who produced it? Or does it belong in a museum for all to see? In a series of controversial case studies we will examine what it means to “own” the past, how it should be protected and preserved, and what role museums have had—and should have—in safeguarding that past.

**Attributes:** Honors course; Humanities(Disc)

**Grade Mode:** Letter Grading

## HUMA 444D - Plague/Literary Histories of Epidemics

**Credits:** 4

Explores the meanings of epidemics as represented in literature. Topics include mysterious ancient disasters, the Black Death, AIDS, and hypothetical diseases used as thought experiments, as well as current controversies about the spread and prevention of disease. How do disease and its control shape state and social structures? How have the meanings of disease, health, medicine, and the body changed over time? What kind of art does disease give rise to?

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading



**HUMA 444E - What is a Criminal?****Credits:** 4

Criminals are people who break the law – In theory. How do people become criminals (with regard to biological, cultural, and economic influences)? What happens to them in the criminal justice system, and how does the system shape the definition of "criminal"? We will also discuss "criminals of conscience" from Thoreau and Gandhi to Edward Snowden. The course will emphasize reading but will also engage with other media, including films, podcasts, and visual art.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**HUMA 444F - Travelers in the Premodern World****Credits:** 4

Travel is a fundamental aspect of the human experience. This course explores the human experience of travel using materials originating from across premodern world. Students investigate materials ranging from maps and pilgrimage accounts, to poetry and stories to understand what has compelled people to undertake the often perilous road.

In the process, they consider the role of travel in cultural contact, communication, exchange, and the generation and spread of knowledge. Writing intensive.

**Attributes:** World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**HUMA 500 - Critical Methods in the Humanities****Credits:** 4

Critical analysis of works in the humanities. Focuses on major texts, evaluation of secondary literature, research writing, criticism. Required of all HUMA majors. Writing intensive.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

**Equivalent(s):** ECS 550

**Grade Mode:** Letter Grading

**HUMA 505 - Introduction to Religion****Credits:** 4

This course provides an introduction to religion, exploring the various ways that this phenomenon has been understood, approached, practiced, and studied across human history. The course will examine the different ways that religion can be defined, drawing from a variety of humanities and other disciplines. Foundational theories explaining the origins, persistence, and continued relevance of religion will be compared and applied to different traditions. Topics include concepts of divinity, rituals, myth, mysticism and spirituality, pilgrimage, death and the afterlife, and ultimate reality.

**Attributes:** Humanities(Disc)

**Equivalent(s):** RS 505

**Grade Mode:** Letter Grading

**HUMA 510A - Ancient Humanities: Cultures and Empires****Credits:** 4

Humans are social animals and, from an early period, they organized into cities and empires. How did peoples like the ancient Mesopotamians, Egyptians, Indians, Greeks, Chinese, or Romans view themselves? How did they conceive of the world? Why was power distributed to some and not others? This co-taught course examines art, philosophy, history, and cultures from the ancient world to offer an introduction to the human experience from approximately 3000 BCE to 700 CE.

**Attributes:** FinePerformingArts(Discovery); Writing Intensive Course

**Equivalent(s):** HUMA 510B, HUMA 510C, HUMA 510D

**Grade Mode:** Letter Grading

**HUMA 510B - Ancient Humanities: Cultures and Empires****Credits:** 4

Humans are social animals and, from an early period, they organized into cities and empires. How did peoples like the ancient Mesopotamians, Egyptians, Indians, Greeks, Chinese, or Romans view themselves? How did they conceive of the world? Why was power distributed to some and not others? This co-taught course examines art, philosophy, history, and cultures from the ancient world to offer an introduction to the human experience from approximately 3000 BCE to 700 CE.

**Attributes:** World Cultures(Discovery); Writing Intensive Course

**Equivalent(s):** HUMA 510A, HUMA 510C, HUMA 510D

**Grade Mode:** Letter Grading

**HUMA 510C - Ancient Humanities: Cultures and Empires****Credits:** 4

Humans are social animals and, from an early period, they organized into cities and empires. How did peoples like the ancient Mesopotamians, Egyptians, Indians, Greeks, Chinese, or Romans view themselves? How did they conceive of the world? Why was power distributed to some and not others? This co-taught course examines art, philosophy, history, and cultures from the ancient world to offer an introduction to the human experience from approximately 3000 BCE to 700 CE.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course

**Equivalent(s):** HUMA 510A, HUMA 510B, HUMA 510D

**Grade Mode:** Letter Grading

**HUMA 510D - Ancient Humanities: Cultures and Empires****Credits:** 4

Humans are social animals and, from an early period, they organized into cities and empires. How did peoples like the ancient Mesopotamians, Egyptians, Indians, Greeks, Chinese, or Romans view themselves? How did they conceive of the world? Why was power distributed to some and not others? This co-taught course examines art, philosophy, history, and cultures from the ancient world to offer an introduction to the human experience from approximately 3000 BCE to 700 CE.

**Attributes:** Humanities(Disc); Writing Intensive Course

**Equivalent(s):** HUMA 510A, HUMA 510B, HUMA 510C

**Grade Mode:** Letter Grading

**HUMA 511A - Medieval Humanities: Rise of Global Empires****Credits:** 4

The medieval period saw a dynamic explosion in cultural connections. From the Islamic caliphates to the Mongols to the European empires in the Americas and Asia, the origins of global interconnectivity can be found in the period between 700 and 1700 CE. In this co-taught course, we explore the art, philosophy, history, and cultures of the medieval world to see how global connectivity shaped the human experience.

**Attributes:** FinePerformingArts(Discovery); Writing Intensive Course

**Equivalent(s):** HUMA 511B, HUMA 511C, HUMA 511D

**Grade Mode:** Letter Grading

**HUMA 511B - Medieval Humanities: Rise of Global Empires****Credits:** 4

The medieval period saw a dynamic explosion in cultural connections. From the Islamic caliphates to the Mongols to the European empires in the Americas and Asia, the origins of global interconnectivity can be found in the period between 700 and 1700 CE. In this co-taught course, we explore the art, philosophy, history, and cultures of the medieval world to see how global connectivity shaped the human experience.

**Attributes:** World Cultures(Discovery); Writing Intensive Course

**Equivalent(s):** HUMA 511A, HUMA 511C, HUMA 511D

**Grade Mode:** Letter Grading

**HUMA 511C - Medieval Humanities: Rise of Global Empires****Credits:** 4

The medieval period saw a dynamic explosion in cultural connections. From the Islamic caliphates to the Mongols to the European empires in the Americas and Asia, the origins of global interconnectivity can be found in the period between 700 and 1700 CE. In this co-taught course, we explore the art, philosophy, history, and cultures of the medieval world to see how global connectivity shaped the human experience.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course**Equivalent(s):** HUMA 511A, HUMA 511B, HUMA 511D**Grade Mode:** Letter Grading**HUMA 512A - Modern Humanities: Colonies, Constitutions, and Capital**  
**Credits:** 4

The world we know took shape since the 1600s as European empires conquered much of the world; industrialization and capitalism expanded and redistributed power and wealth; and science opened new ways of viewing and changing the world. Humans forged new ideas to justify or challenge these changes. This co-taught course explores the art, philosophy, history, and cultures of the modern world to understand how it came to be.

**Attributes:** FinePerformingArts(Discovery); Writing Intensive Course**Equivalent(s):** HUMA 512B, HUMA 512C, HUMA 512D**Grade Mode:** Letter Grading**HUMA 512B - Modern Humanities: Colonies, Constitutions, and Capital**  
**Credits:** 4

The world we know took shape since the 1600s as European empires conquered much of the world; industrialization and capitalism expanded and redistributed power and wealth; and science opened new ways of viewing and changing the world. Humans forged new ideas to justify or challenge these changes. This co-taught course explores the art, philosophy, history, and cultures of the modern world to understand how it came to be.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Equivalent(s):** HUMA 512A, HUMA 512C, HUMA 512D**Grade Mode:** Letter Grading**HUMA 512C - Modern Humanities: Colonies, Constitutions, and Capital**  
**Credits:** 4

The world we know took shape since the 1600s as European empires conquered much of the world; industrialization and capitalism expanded and redistributed power and wealth; and science opened new ways of viewing and changing the world. Humans forged new ideas to justify or challenge these changes. This co-taught course explores the art, philosophy, history, and cultures of the modern world to understand how it came to be.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course**Equivalent(s):** HUMA 512A, HUMA 512B, HUMA 512D**Grade Mode:** Letter Grading**HUMA 512D - Modern Humanities: Colonies, Constitutions, and Capital**  
**Credits:** 4

The world we know took shape since the 1600s as European empires conquered much of the world; industrialization and capitalism expanded and redistributed power and wealth; and science opened new ways of viewing and changing the world. Humans forged new ideas to justify or challenge these changes. This co-taught course explores the art, philosophy, history, and cultures of the modern world to understand how it came to be.

**Attributes:** Humanities(Disc); Writing Intensive Course**Equivalent(s):** HUMA 512A, HUMA 512B, HUMA 512C**Grade Mode:** Letter Grading**HUMA 513A - Global Humanities****Credits:** 4

In this co-taught topics course, students will study art, philosophy, history, and cultures of a particular region of the globe, most often one underrepresented in the traditional study of Western Humanities. Students will consider internal diversity, change over time, and interactions with other regions. Topics may include Africa, the Indian Ocean, Latin America, the Mediterranean, the Middle East, South or East Asia, or associated diasporas. May be repeated if specific topic is different.

**Attributes:** FinePerformingArts(Discovery); Writing Intensive Course**Repeat Rule:** May be repeated up to 1 time.**Equivalent(s):** HUMA 513B, HUMA 513C, HUMA 513D**Grade Mode:** Letter Grading**HUMA 513B - Global Humanities****Credits:** 4

In this co-taught topics course, students will study art, philosophy, history, and cultures of a particular region of the globe, most often one underrepresented in the traditional study of Western Humanities. Students will consider internal diversity, change over time, and interactions with other regions. Topics may include Africa, the Indian Ocean, Latin America, the Mediterranean, the Middle East, South or East Asia, or associated diasporas. May be repeated if specific topic is different.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Repeat Rule:** May be repeated up to 1 time.**Equivalent(s):** HUMA 513A, HUMA 513C, HUMA 513D**Grade Mode:** Letter Grading**HUMA 513C - Global Humanities****Credits:** 4

In this co-taught topics course, students will study art, philosophy, history, and cultures of a particular region of the globe, most often one underrepresented in the traditional study of Western Humanities. Students will consider internal diversity, change over time, and interactions with other regions. Topics may include Africa, the Indian Ocean, Latin America, the Mediterranean, the Middle East, South or East Asia, or associated diasporas. May be repeated if specific topic is different.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course**Repeat Rule:** May be repeated up to 1 time.**Equivalent(s):** HUMA 513A, HUMA 513B, HUMA 513D**Grade Mode:** Letter Grading**HUMA 513D - Global Humanities****Credits:** 4

In this co-taught topics course, students will study art, philosophy, history, and cultures of a particular region of the globe, most often one underrepresented in the traditional study of Western Humanities. Students will consider internal diversity, change over time, and interactions with other regions. Topics may include Africa, the Indian Ocean, Latin America, the Mediterranean, the Middle East, South or East Asia, or associated diasporas. May be repeated if specific topic is different.

**Attributes:** Humanities(Disc); Writing Intensive Course**Repeat Rule:** May be repeated up to 1 time.**Equivalent(s):** HUMA 513A, HUMA 513B, HUMA 513C**Grade Mode:** Letter Grading

**HUMA 514A - Space, Place, & the Environment****Credits:** 4

In this co-taught topics course, students will explore the relationship between people and the spaces they inhabit. How do ideas shape environments, and how do environments shape ideas? How does "place" differ from "space"? Studied through an interdisciplinary lens, topics may include sustainability, environmental humanities, the built environment, and urbanism. Topics may also cover how communities shape and interact with their environments. May be repeated if specific topic is different.

**Attributes:** FinePerformingArts(Discovery); Writing Intensive Course**Repeat Rule:** May be repeated up to 1 time.**Grade Mode:** Letter Grading**HUMA 514B - Space, Place, & the Environment****Credits:** 4

In this co-taught topics course, students will explore the relationship between people and the spaces they inhabit. How do ideas shape environments, and how do environments shape ideas? How does "place" differ from "space"? Studied through an interdisciplinary lens, topics may include sustainability, environmental humanities, the built environment, and urbanism. Topics may also cover how communities shape and interact with their environments. May be repeated if specific topic is different.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Repeat Rule:** May be repeated up to 1 time.**Grade Mode:** Letter Grading**HUMA 514C - Space, Place, & the Environment****Credits:** 4

In this co-taught topics course, students will explore the relationship between people and the spaces they inhabit. How do ideas shape environments, and how do environments shape ideas? How does "place" differ from "space"? Studied through an interdisciplinary lens, topics may include sustainability, environmental humanities, the built environment, and urbanism. Topics may also cover how communities shape and interact with their environments. May be repeated if specific topic is different.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course**Repeat Rule:** May be repeated up to 1 time.**Grade Mode:** Letter Grading**HUMA 514D - Space, Place, & the Environment****Credits:** 4

In this co-taught topics course, students will explore the relationship between people and the spaces they inhabit. How do ideas shape environments, and how do environments shape ideas? How does "place" differ from "space"? Studied through an interdisciplinary lens, topics may include sustainability, environmental humanities, the built environment, and urbanism. Topics may also cover how communities shape and interact with their environments. May be repeated if specific topic is different.

**Attributes:** Humanities(Disc); Writing Intensive Course**Repeat Rule:** May be repeated up to 1 time.**Grade Mode:** Letter Grading**HUMA 519 - Classical Greece****Credits:** 4

Examination of the culture of classical Greece through the history, drama, philosophy, and art of the period. Open to all students. Recommended for students in the humanities major.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**HUMA 525 - Humanities and the Law****Credits:** 4

This multidisciplinary course examines the nature of justice, legal systems and law in various historical contexts, including how these have been conceived, how they originated and the role of the professional judiciary, as well as the relationship between law and ethics. Consideration of how legal ideas have changed over time and built upon each other. May be repeated once if specific topic is different.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**HUMA 526 - Humanities and Science****Credits:** 4

In this interdisciplinary course, students examine the ways in which scientific and technological understanding affects the development of cultural expression. Scientific, technological and environmental factors are sometimes discussed as if they are separate from human beings, but in this course we will consider the myriad direct, complex, and surprising ways that they drive cultural shifts and are then understood in evolving ways by cultures. Topics vary with instructor. May be repeated once if topics is different.

**Attributes:** Humanities(Disc); Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** HUMA 651**Grade Mode:** Letter Grading**HUMA 527 - Humanities and Religion****Credits:** 4

This course examines the role of religion, religious ideas and religious practice in world cultures using a combination of methodologies drawn from different humanities disciplines, with a particular emphasis on comparative approaches and investigating how religion is used to create and express cultural identity around the globe.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**HUMA 550 - Budapest Spring Semester: Special Studies in Comparative Ideas****Credits:** 4

This course involves periodic offerings in literature, art, history, philosophy and political science designed to stimulate reflection on ideas and issues in Hungarian and Central European history and culture in a larger global context. Topics vary depending upon the expertise of the resident faculty. Special fee.

**Co-requisite:** INCO 588**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**HUMA 551 - Budapest Spring Semester: Field Studies in Art and Culture****Credits:** 6

This course is designed to provide students with first-hand experience of art, history, culture, folklore, and traditions of Hungary and Central Europe. The course combines preparatory readings with guided field trips to museums, historical sites, and culturally significant events and locations. Students maintain a weekly blog reflecting on field trip experiences.

**Co-requisite:** INCO 588**Attributes:** FinePerformingArts(Discovery)**Grade Mode:** Letter Grading

**HUMA 563 - Introduction to Russian Culture and Civilization****Credits:** 4

Interdisciplinary course on the development of Russian culture from its origins through the end of the 19th century. Historical documents, literary works, ethnographic materials, films, slides of Russian art, and music.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** HIST 563**Grade Mode:** Letter Grading**HUMA #592 - Special Topics in the Humanities****Credits:** 2-8

Special topics; offered occasionally.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Equivalent(s):** HUMA 592W**Grade Mode:** Letter Grading**HUMA 698 - Independent Study****Credits:** 4

Independent study open only to highly qualified juniors and seniors who have completed at least four humanities courses above the 400 level.

Requires original research and substantial writing projects under the direction of a member of the core faculty of the humanities. Prereq: HUMA junior or senior majors; four HUMA courses above the 400 level.

**Grade Mode:** Letter Grading**HUMA 700 - Seminar****Credits:** 4

Provides an opportunity for in-depth reading, viewing, and/or listening to texts and artifacts. Emphasis on the multiple perspectives and methodologies that can be brought to bear upon these works from several humanistic disciplines.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**HUMA 730 - Special Studies****Credits:** 4

Selected topics not covered by existing courses, with subjects to vary.

Prereq: one 400- or 500-level HUMA course or junior standing.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** HIST 679, HUMA 690, HUMA 695, JUST 695**Grade Mode:** Letter Grading**HUMA 795 - Study of Creativity****Credits:** 4

A study of human creativity through representative lives and works of such figures as daVinci, Einstein, Kathe Kollwitz, Bach, Dickens, and Freud. Lectures, class discussions, films, and slides supplemented by gallery tours plays, and concerts. Open to students with a background in humanities or by permission of the instructor. Special fee. (Normally offered every other year.) Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** HUMA 690, HUMA 695**Grade Mode:** Letter Grading**HUMA 796 - Study of Contemporary Issues****Credits:** 4

Current social and political issues with focus on recent developments in public policy, science, and business, and their impact of social values.

Prereq: junior status or permission. (Normally offered every other year.) Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**HUMA 798 - Research Seminar****Credits:** 1-2

Provides a context within which students may discuss and receive direction in the course of completing a major research paper. At the end of the seminar, students present their research to the faculty and their fellow students. Prereq: HUMA 500; senior standing; permission. HUMA majors only. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**HUMA 799 - Research Seminar****Credits:** 3-4

Provides a context within which students may discuss and receive direction in the course of completing a major research paper. At the end of the seminar, students present their research to the faculty and their fellow students. Restricted to majors. Prereq: HUMA 500; HUMA 798; senior standing; permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

## Information Technology (IT)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**IT 403 - Introduction to Internet Technologies****Credits:** 4

Introductory course exploring the fundamentals of Internet communications with an emphasis on the World Wide Web. Students develop an understanding of the Internet's underlying technologies and learn how to utilize them as contributing members of the Web community. Students become proficient with creating and publishing Web pages using HTML and CSS. No prior knowledge or experience is assumed. No credit if credit earned for CIS 405. (Note CIS 405 is offered at UNH Manchester, and is not related to CS 405 at UNH Durham.)

**Equivalent(s):** CIS 405, CIS 410F, CIS 495, CS 403**Grade Mode:** Letter Grading**IT 502 - Intermediate Web Design****Credits:** 4

An intermediate level exploration of the theory and practice of Web design. Students learn the fundamentals of design theory applicable to the World Wide Web and examine tools and techniques for applying that knowledge to their projects. Additional topics include information architecture, usability, accessibility, optimization, typography, and market visibility. Working knowledge of XHTML and CSS required. Prereq: CS 403.

**Equivalent(s):** CS 502**Grade Mode:** Letter Grading**IT 505 - Integrative Programming****Credits:** 4

Expands prior programming knowledge through the introduction of another programming language, with a particular emphasis on integrative programming techniques common within IT. Topics include data access and exchange; database concepts; effective interfaces; and leveraging third-party APIs, libraries, and frameworks. Computer Science majors not allowed. Prereq: (CS 416 or CS 417).

**Grade Mode:** Letter Grading



**IT 520 - Computer Architecture****Credits:** 4

Fundamentals of computer organization, including binary systems, data representation (and compression), machine language, program execution, memory and process issues. Operating systems and networking basics. Not open to CS majors. Prereq: a programming course.

**Grade Mode:** Letter Grading**IT 604 - Server-side Web Development****Credits:** 4

An intermediate-level examination of the theory and practice of developing server-side applications for the World Wide Web. Students will learn practical techniques for designing and implementing data-driven Web sites through the use of server-side processing. Working knowledge of HTML, CSS, and some programming language is required. Prereq: IT 403 and a programming course.

**Equivalent(s):** CS 504**Grade Mode:** Letter Grading**IT 605 - Client-side Web Development****Credits:** 4

An intermediate-level examination of the theory and practice of developing client-side applications for the World Wide Web. Students will learn practical techniques for designing and implementing dynamic Web sites through the use of client-side processing. Working knowledge of HTML, CSS, and some programming language is required. Prereq: IT 403 and a programming course.

**Grade Mode:** Letter Grading**IT 609 - Network/Systems Administration****Credits:** 4

Introduces the central issues in administration of a networked computer system. Topics include the client-server model (including support of mail, FTP, Telnet, the Web), disk and file systems, backup and recovery, and security. Privacy and other legal/social issues will be discussed. Prereq: IT 520 and a programming course, or permission of the instructor.

**Equivalent(s):** CS 509**Grade Mode:** Letter Grading**IT 612 - Scripting Languages****Credits:** 4

This course is a study of the class of programming languages and tools known as scripting languages. Topics include: a general discussion of language design and its relationship to the intended computing environment, introduction to the command-line environment, the role of scripts in controlling and connecting other programs and components, basic functionality of at least two scripting languages, and the syntax use of regular expressions. Programming projects in multiple languages will be required. Prereq: IT 505 or CS 515.

**Grade Mode:** Letter Grading**IT 630 - Data Science and Analytics****Credits:** 4

An introduction to various disciplines that contribute to what is commonly known as Data Science. Students will learn how to gather, analyze, classify data utilizing various techniques. Study of tools and programming techniques to analyze data. Pre-requisite: CS 416 or CS 417 or Permission of Instructor.

**Mutual Exclusion:** No credit for students who have taken MATH 738.**Grade Mode:** Letter Grading**IT 666 - Cybersecurity Practices****Credits:** 4

Through readings, exercises, research papers, and exams students will acquire the skills needed to implement solutions for security-related issues. Students will discuss security policies, legislation, system procedures, tools, and techniques. Students will analyze the patterns that attackers use to gain access to systems and understand what is required to defeat those attack patterns. At the conclusion of the course, students will have a heightened sense of security in the actions they take when using and maintaining computer systems. Prereq: CS 527.

**Grade Mode:** Letter Grading**IT 696 - Independent Study****Credits:** 1-6

Individual projects developed and conducted under the supervision of a faculty member. Prereq: permission of faculty supervisor and department chairperson. Only open to Information Technology majors.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**IT 699 - Internship****Credits:** 1

Provides the opportunity to apply academic experience in settings associated with future professional employment. Proposals for the internship must be approved by the instructor prior to registration. Students may receive compensation for their internship work. Prereq: permission. Information Technology majors only.

**Repeat Rule:** May be repeated for a maximum of 4 credits. May be repeated up to 3 times.**Equivalent(s):** IT 600**Grade Mode:** Credit/Fail Grading**IT #704 - Advanced Web Development****Credits:** 4

An advanced exploration of various topics in Web development. Topics covered each semester will be chosen to reflect the current state of stable and accepted Web technologies, with a decided emphasis on open-source solutions. Both client-side and server-side technologies are likely to be included, with particular attention given to concepts and techniques used to facilitate efficient Web development. Prereq: IT 604.

**Grade Mode:** Letter Grading**IT 705 - Project Management for Information Technology****Credits:** 4

This course focuses on a core set of project management essentials that can affect the bottom line of project technical and business performance. These are termed "best practices," and those addressed are: formal risk management, agreement on interfaces, metrics based scheduling/tracking, frequent binary completion milestones, incremental development, people aware management style, and change management. The emphasis is on information technology projects; however, the basic principles are pertinent to a wider class of project domains. Prereq: Senior standing in IT or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading



**IT 718 - Cloud Computing Principles****Credits:** 4

Students will learn fundamental cloud architectural principles of: operational excellence, security, reliability, performance efficiency, and cost optimization through readings, labs, and a hands-on project. Course material will cover cloud offerings from Amazon's AWS, Microsoft's Azure, and Google's Cloud Platform. Students complete a semester-long project in which they are required to implement a complete Cloud solution. Prereq: CS 527 or equivalent with Instructor's permission.

**Grade Mode:** Letter Grading**IT 725 - Network Technology****Credits:** 4

Introduction to fundamental concepts of computer networks and exploration of widely-used networking technologies. Topics include principles of congestion and error control; network routing; local, wireless and access networks; application protocol design; and network programming. In-depth discussion of the Internet suite of protocols. Prereq: IT 520.

**Equivalent(s):** CS 725**Grade Mode:** Letter Grading**IT 775 - Database Technology****Credits:** 4

Topics include database architecture, schema design and definition, entity-relationship diagrams, data retrieval and update, and indexing performance. Architectures for single-user, multi-user, client-server, and web access are introduced. The relational data model is emphasized but alternative database models, such as semi-structured and object models, are introduced. Database administration topics include examination of metadata information, data integrity, and management of users and privileges, performance tuning, transactions, isolation levels, and security. Ethics of data protection are introduced. Students develop skill in SQL. Not open to CS majors. Prereq: IT 505.

**Mutual Exclusion:** No credit for students who have taken CS 775.**Grade Mode:** Letter Grading**IT 780 - Topics in Information Technology****Credits:** 4

Material not normally covered in course offerings.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**IT 791 - Senior Project I****Credits:** 2

First semester of the capstone design experience. Industry best practices and tools are surveyed and applied in team projects. Students begin development on software projects proposed by faculty or external sponsors, including initial stages of design, implementation, and documentation, with an interim presentation of progress expected toward the end of the semester. Principles of security, testability, and maintainability are stressed. Pre- or Coreq: IT 705. Information Technology majors only.

**Grade Mode:** Letter Grading**IT 792 - Senior Project II****Credits:** 2

Continuation of IT 791: Senior Project I. Students complete the project, a final presentation of results is expected toward the end of the semester. Successful completion of this course fulfills the Capstone Experience requirement for Information Technology majors. Prereq: IT 791.

**Attributes:** Writing Intensive Course**Equivalent(s):** IT 710**Grade Mode:** Letter Grading

## Integrated Agriculture Management (IAG)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

No courses are currently active in the course inventory for this subject prefix.

## Integrated Applied Mathematics (IAM)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**IAM 550 - Introduction to Engineering Computing****Credits:** 4

An application driven introduction to computer-aided problem solving leveraging foundational knowledge in engineering and the physical sciences. Engineering applications are used to motivate the computational methods needed in scientific and engineering disciplines. Numerical methods, including the basic LU algorithm, one-dimensional root finding methods, and numerical differentiation and integration, are introduced as useful computational tools for tackling a broad range of engineering and scientific and engineering disciplines. Numerical methods, including the basic LU algorithm, one-dimensional root finding methods, the numerical differentiation and integration, are introduced as useful computational tools for tackling a broad range of engineering and scientific applications and to provide concrete and contextual programming experiences. MATLAB is used, with topics including scripts, functions, logical expressions, conditional statements, looping, data visualization, plotting, and recursion presented within the framework provided by both the numerical methods and the scientific or engineering problems. Laboratory included. Pre- or Coreq: MATH 426.

**Mutual Exclusion:** No credit for students who have taken MATH 445.**Grade Mode:** Letter Grading**IAM 751 - Introduction to High-Performance Computing****Credits:** 4

Course gives an introduction to select areas of high-performance computing, providing a basis for writing and working with high-performance simulation codes. The three main topics are: 1) basic software engineering, 2) high-performance and parallel programming, and 3) performance analysis and modeling. Additional topics may include heterogeneous architectures like GPUs and data analysis/visualization. Prereq: MATH 753 and working knowledge of a programming language (C or Fortran), or by permission of instructor.

**Grade Mode:** Letter Grading

## Intercollege (INCO)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**INCO 400 - Graduate Preparation Seminar****Credits:** 1

A survey seminar that explores issues related to graduate school preparation. Topics include graduate school culture, academic research, the role of multicultural scholars, faculty relations, the graduate record exam, resume/vita development, and financing graduate education.

Prereq: Enrollment in McNair Scholars Program. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 2 credits.

**Grade Mode:** Credit/Fail Grading

**INCO 401 - University Exploratory Experience Advising Seminar and Workshop****Credits:** 2

This course is the Advising Program foundation for undeclared students who wish to explore the many major options offered in UNH's five Colleges. This course focuses on exploring career possibilities, identifying students' aptitudes and interests, and choosing a major that will help students achieve their goals and lead to academic success at UNH. This course is required of first-year students who do not yet know what college or major they wish to pursue. In addition to helping students find an academic home, the course will introduce First Year students to Campus Support Offices, Career and Internship resources, Study Abroad opportunities, academic expectations, and academic management skills essential for success in the University. Cr/F.

**Grade Mode:** Credit/Fail Grading

**INCO 403 - Healthcare Professions Seminar****Credits:** 2

This seminar is designed for students (primarily for sophomores; juniors and seniors may also take the course) who are in the initial phase of preparation to a career in allopathic or osteopathic medicine, dentistry, podiatry, optometry, physicians assistant, chiropractics, physical therapy, pharmacy, or naturopathic medicine. Through readings and discussion students will become informed about current topics in healthcare, and specifically about these professions, requirements for admission to degree programs, and about how to become a competitive applicant. Cr/F.

**Grade Mode:** Credit/Fail Grading

**INCO 412 - TRIO Scholar Success Seminar****Credits:** 0

An orientation and exploration of UNH culture, resources, personal values and goals to aid TRIO Scholars in their transition to the University of New Hampshire and to develop their personal four-year plan for educational, co-curricular, and high impact experiences. While building a sense of community through shared readings and interactive activities, the seminar also addresses financial aid, FAFSA, financial literacy and scholarship search, major and career exploration, and effective deep learning strategies. Open only to TRIO Scholars.

**Grade Mode:** Credit/Fail Grading

**INCO #430 - Interdisciplinary Science****Credits:** 4

Advanced topics in selected areas of science through interdisciplinary lectures, demonstrations, hands-on laboratory experience, and field trips; the use of mathematical and computer skills in science; social, economic, environmental, and ethical applications and implications of recent advances in the selected area of science; the process of research. Restricted to high school juniors and seniors by permission only.

**Grade Mode:** Credit/Fail Grading

**INCO #440A - Asking for It: The History and Law of Sexual Violence in the United States****Credits:** 4

Sexual violence has been perpetrated since ancient times. The #MeToo movement is just one example of the multi-layered and complex prevalence of sexual assault in today's culture. This course addresses sexual assault, its history, and the laws that criminalize it. Through readings, small group discussion, practical applications including a mock trial, and speakers, students will gain insight into how the law shapes rape culture and how, in turn, rape culture affects law.

**Attributes:** Honors course; Social Science (Discovery)

**Grade Mode:** Letter Grading

**INCO 490A - Fundamentals of Research Integrity****Credits:** 2

Undergraduate students interested in conducting research or those already conducting research will explore individual, professional, institutional and social issues related to the ethical conduct of research and scholarship. Students will use case studies as well as share their research interests and experience to investigate topics of data management, authorship, mentorship, human subjects, use of vertebrate animals, and scientific integrity. Completion of this course and accompanying modules fulfill part of the NSF RCR training mandate and/or the USDA NIFA RCR training mandate. Cr/F.

**Grade Mode:** Credit/Fail Grading

**INCO 505A - Semester in the City Becoming a Problem Solver****Credits:** 4

This course will expose students to the concepts and practices associated with social innovation and social entrepreneurship – i.e., the development and growth of new, sustainable, and scalable approaches to the major social, economic, and environmental challenges facing society. Students will learn a variety of tools and methods used for the development, implementation, management, and assessment of social solutions that they will be able to use over the course of their careers. Taken concurrently with: INCO 505B and INCO 505I, for a total of 16 UNH credits.

**Co-requisite:** INCO 505B, INCO 505I

**Grade Mode:** Letter Grading

**INCO 505B - Social Innovator's Toolbox****Credits:** 4

This course will expose students to the concepts and practices associated with social innovation and social entrepreneurship – i.e., the development and growth of new, sustainable, and scalable approaches to the major social, economic, and environmental challenges facing society. Students will learn a variety of tools and methods used for the development, implementation, management, and assessment of social solutions that they will be able to use over the course of their careers. Taken with INCO 505A & INCO 505I.

**Co-requisite:** INCO 505A, INCO 505I

**Attributes:** Social Science (Discovery)

**Grade Mode:** Letter Grading

**INCO 505I - Semester in the City: Boston and SITC @ UNH Internship****Credits:** 8

Fellows spend 30 hrs/week (Mon-Thurs) for 14 weeks interning at a Boston nonprofit, government agency or social mission for-profit (Semester in the City) OR with a UNH Department (SITC @ UNH). Fellows are placed based on applications/interviews, with prioritization of issue and/or skill/knowledge alignment. The internship experience is intimately intertwined with coursework and reflection. Thus, the course is taken concurrently with INCO 505A and INCO 505B, a total of 16 UNH credits.

**Co-requisite:** INCO 505A, INCO 505B**Grade Mode:** Letter Grading**INCO 529 - Writing Consultation****Credits:** 2

Includes instruction in philosophy and techniques of tutoring, theoretical and practical issues in collaborative learning and complex-skill formation, and cross disciplinary conventions of writing. In addition to the classroom portion of course, each student undertakes a supervised practicum experience in the University Writing Center. Permission required. Cr/F.

**Grade Mode:** Credit/Fail Grading**INCO 585 - Foreign Exchange****Credits:** 0-16

Undergraduates who meet UNH Study Away Eligibility Requirements and the requirements set by the host institution, may participate in an international exchange program at one of UNH's partner institutions for a semester or academic year. Students must achieve the equivalent of a 'C' or above to receive international transfer credit. For more information contact the Coordinator of Student Programs at the Center for International Education. Special fee.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Credit/Fail Grading**INCO 586 - Foreign Exchange****Credits:** 0-16

Undergraduates who meet UNH Study Away Eligibility Requirements and the requirements set by the host institution, may participate in an international exchange program at one of UNH's partner institutions for a semester or academic year. Students must achieve the equivalent of a 'C' or above to receive international transfer credit. For more information contact the Coordinator of Student Programs at the Center for International Education. Special fee. Cr/F.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Credit/Fail Grading**INCO #587 - International Exchange****Credits:** 0-9

Undergraduates who meet UNH Study Away Eligibility Requirements and the requirements set by the host institution, may participate in an international exchange program at either Saitama University, Japan or Pusan National University, South Korea. Students must achieve the equivalent of a 'C' or above to receive international transfer credit. For more information contact the International Exchange Program Manager.

**Repeat Rule:** May be repeated for a maximum of 9 credits.**Grade Mode:** Credit/Fail Grading**INCO 588 - Study Abroad Experience - Semester****Credits:** 0

A Study Abroad Program co-requisite to enroll students in travel insurance and capture the mandatory study abroad fee.

**Grade Mode:** Not graded**INCO 589 - Study Abroad Experience Short****Credits:** 0

For students enrolling in short term study abroad experiences in Fall and Spring semesters. Also for students enrolling in January term and Summer Session study abroad experiences.

**Grade Mode:** Not graded**INCO 590 - Student Research Experience****Credits:** 1-4

Provides hands-on research experience to develop critical thinking, problem solving, and analytical skills. An entry-level research experience that introduces students to research theories, tools, and ethical issues. Each student completes a contract with a faculty mentor identifying the research activities the student will undertake.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**INCO 610 - Research Inquiry Seminar****Credits:** 2-6

With the notion of understanding self as the basis for investigating the world, this seminar focuses on exploring elementary concepts of academic research. Students are engaged in identifying strengths, discovering their passions, discerning the joys and frustrations of research, and developing a sketch of a research project. Prereq: Enrollment in McNair Scholars Program and permission. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**INCO 620 - Talk to Action: Facilitating Deliberative Democracy****Credits:** 2-4

A theory-to-practice seminar that explores democratic theory from a deliberative perspective, dialogue and small group facilitation, civic engagement and social justice. Topics include moral disagreement, skills in public engagement and facilitation, creating social change, and moving from talk to action in the public sphere. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 6 credits.**Grade Mode:** Credit/Fail Grading**INCO #682 - Washington Internship****Credits:** 0-12

Internship placements in Washington, D.C., through the Washington Center. Individual internships arranged with legislative and judicial offices, law firms, public interest organizations; in the arts, the media, labor, international affairs, business, consumer affairs. Supervision by agency personnel and faculty sponsor. Students should have above-average academic records before applying. Open to all majors. Applications available in the National Student Exchange Office, Hood House. Prereq: junior or senior. Student must also register for a graded, 4-credit independent study in the student's major. credit variable to 12 credits. Special fee. Cr/F.

**Equivalent(s):** SCSC 682**Grade Mode:** Credit/Fail Grading**INCO 682A - The Washington Center Career Readiness Seminar****Credits:** 4

This seminar course (co-requisite to internship) provides internship participants with professional development and career coaching necessary to guide students through transition from academic to professional. Assignments will be collected into final portfolio which will demonstrate integrative learning.

**Co-requisite:** INCO 682I**Grade Mode:** Letter Grading

**INCO 682I - Washington DC Internship****Credits:** 4 or 8

Internship Placement in Washington DC through The Washington Center program. 32 hours per week, sites vary based on student major and interest.

**Co-requisite:** INCO 682A**Grade Mode:** Letter Grading**INCO 685 - Study Abroad****Credits:** 0-16

Enables students to pursue a semester, summer, or an academic year of foreign study in programs other than those offered by UNH. Students must provide the University Committee on Study Abroad with detailed information about the curriculum and must receive approval from that committee before registration. Credit awarded only upon successful completion of the course of study and after receipt by the committee of an official transcript. Interested students should consult the Center for International Education. Prereq: permission. Special fee. (Financial aid requires a minimum of 6 credits.) Cr/F.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Credit/Fail Grading**INCO 686 - Study Abroad****Credits:** 0-16

Enables students to pursue a semester, summer, or an academic year of foreign study in programs other than those offered by UNH. Students must provide the University Committee on Study Abroad with detailed information about the curriculum and must receive approval from that committee before registration. Credit awarded only upon successful completion of the course of study and after receipt by the committee of an official transcript. Interested students should consult the Center for International Education. Prereq: permission. Special fee. (Financial aid requires a minimum of 6 credits.) Cr/F.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Credit/Fail Grading**INCO 687 - Study Abroad Experience****Credits:** 0-16

Enables students to pursue a term of foreign study in programs other than those offered by UNH. Students must meet all university requirements and complete required forms. Credit awarded only upon successful completion of the course of study abroad and after receipt and processing of an official transcript. Interested students should consult the Center for International Education. Prereq: permission. Special fee. (Financial aid requires a minimum of 6 credits.) Cr/F.

**Grade Mode:** Credit/Fail Grading**INCO 688 - Study Abroad Insurance Program****Credits:** 0**Grade Mode:** Not graded**INCO 699 - McNair Summer Internship****Credits:** 0

McNair Fellows; not graded; Summer only.

**Grade Mode:** Non-credit/non-CEU course**INCO 710 - Introduction to McNair Research****Credits:** 2-4

An Introduction to methods and techniques of research design within the social sciences, mathematics and natural sciences, and the humanities. Concepts are tailored to students' research thesis. Students design and construct a research project (execution of project may be allowed for additional credit). A comprehensive written proposal is required. Prereq: Enrollment in McNair Scholars Program. Special fee on Study Abroad sections.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**INCO #720 - McNair Research Experience****Credits:** 0-4

This independent study course allows students to work one-on-one with a faculty scholar to execute the research project. The course also provides a forum for faculty mentors and research supervisors to troubleshoot challenges and assist in the completion of the project. Prereq: Enrollment in McNair Scholars Program. Permission required.

**Grade Mode:** Letter Grading**INCO 790 - Advanced Research Experience****Credits:** 1-4

Advanced research, scholarly or creative projects developed and conducted under the supervision of a faculty member. Provides students with the opportunity to apply advanced knowledge and techniques of their major to a specific problem or question. Prereq: INCO 590, significant preparatory course work for research, or other research experience approved by the INCO 790 faculty mentor. INCO 790 may be repeated alone or in combination with INCO 590 for a maximum of 8 credits. Graded.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**INCO 791 - National Science Foundation Graduate Research Fellowship Preparation****Credits:** 0

This course is designed to enable students to receive information, guidance, and support in applying for the National Science Foundation (NSF) Graduate Research Fellowship program (GRFP). Students will become familiar with the NSF, its mission, and the selection criteria for this fellowship. Through independent work and collaborative exercises, students will strengthen writing skills and develop a strong application.

**Grade Mode:** Credit/Fail Grading**INCO 795 - Washington Center Course****Credits:** 4

Four-credit independent study in conjunction with The Washington Center program in Washington DC. May be offered as co-requisite with INCO #682 or as short term seminar class.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** SCSC 795**Grade Mode:** Letter Grading

## International Affairs (IA)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**IA 401 - International Perspectives****Credits:** 4

Provides students with a broad, interdisciplinary overview of international affairs in a dynamic and interconnected world. The course is team-taught in two modules, each of which highlights perspectives from anthropology, geography, political science, or a related discipline. These modules address global issues such as poverty, conflict, human rights, development, environment, migration, and health. Required for the IA dual major and minor. Must complete IA 401 before the international experience, preferably during the 1st or 2nd year.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** PIP 401**Grade Mode:** Letter Grading**IA 501 - Global Issues in International Affairs****Credits:** 4

Students analyze the theory and practice of international affairs and acquire practice in designing an independent research project. Topics vary with faculty expertise, and have included war and political violence; global environmental issues, social mobilization and protest, and development, race, and gender. IA 501 further prepares students for their international experience and helps them design individualized research topics for their capstone project in IA 701. This course must be taken before IA 701 and in most cases, before the student undertakes an international experience. Prereq: IA 401. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** PIP 501**Grade Mode:** Letter Grading**IA 695 - Independent Study in IA****Credits:** 2-4

Faculty supervised independent Study in International Affairs. Prereq: permission from the IA Program Chair. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**IA 701 - Exploring International Challenges and Opportunities****Credits:** 4

Around the world, policymakers, businesses, and communities face wide-ranging challenges and opportunities that are place-specific, yet global in scope. In this IA capstone seminar, students will learn how to investigate global issues, analyze their manifestations in different social, cultural, and political contexts, and formulate data-driven recommendations. Drawing upon their international experience, second language skills, and IA course work, students will complete individual capstone research projects and present their findings at the annual Undergraduate Research Conference. Prereq: IA 401, IA 501, International Experience, IA Dual Major.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

## Italian (ITAL)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ITAL 401 - Elementary Italian I****Credits:** 4

For students without previous training in Italian. Aural comprehension, speaking, writing, reading, (No credit for students who have had two or more years of Italian in secondary school; however, any such students whose studies of Italian have been interrupted for seven years should consult the Program Coordinator about possibly receiving credit).

**Grade Mode:** Letter Grading**ITAL 402 - Elementary Italian II****Credits:** 4

For students who have completed ITAL 401 or an equivalent. Aural comprehension, speaking, writing, reading. (No credit for students who have had two or more years of Italian in secondary school; however, any such students whose studies of Italian have been interrupted for seven years should consult the Program Coordinator about possibly receiving credit).

**Attributes:** Foreign Language Requirement**Grade Mode:** Letter Grading**ITAL 425 - Introduction to Italian Studies****Credits:** 4

This course explores Italian culture and society and examines the role of Italian art, cuisine, literature and history via readings, films, music, and lectures. What makes Italy Italy? What does it mean to be Italian? How do phenomena such as regionalism, the Mafia, and the European Union shape our understanding of contemporary Italy? The course analyzes the interactions among culture, politics, history, and society as a means of defining national identity.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** ITAL 425H**Grade Mode:** Letter Grading**ITAL 444A - Italians Come to America: Representing Emigration and Immigration on Both Sides of the Atlantic****Credits:** 4

Course is designed around the phenomenon of emigration from Italy to the United States over the last century or so, with particular attention to the time period between the end of the nineteenth century and the mid-twentieth century. While core media under examination are literature and film, we also draw on historical, anthropological, political and sociological readings to help us consider the many issues involved.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**ITAL 444B - Mamma Mia! Italian Motherhood from the Virgin Mary to Carmela Soprano****Credits:** 4

This course examines motherhood and the special role of the Italian mother - la mamma italiana - in past and present Italian society. Through readings from a wide variety of disciplines - theology, history, medicine, and literature - as well as an examination of art and film, we will analyze the origins and conflicted nature of Italian attitudes toward motherhood. Topics include: maternal love and self-sacrifice, beliefs about generation and their influence on maternal and paternal roles, Italian family structure. Mussolini's promotion of motherhood, the phenomenon of *mammismo* or "Mama's boys", and Italian-American mothers, including Carmela Soprano. Writing intensive.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading



**ITAL 444C - Feelings: A Cultural History****Credits:** 4

How do we understand emotions? What is their relationship to our daily life, and to the larger world? They seem personal, but they are also universal, shaping not just individuals, but communities, politics, and society at large. This course charts the history of emotions through literature, visual art, and film, with a particular focus on Italy and the United States, and explores how feelings inform our political and cultural understanding of the world around us.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**ITAL 503 - Intermediate Italian I****Credits:** 4

For students who have completed ITAL 402 or an equivalent. A complete review of the fundamentals of grammar and syntax. Selected readings as a general introduction to Italian civilization and culture. Films and activities.

**Attributes:** World Cultures(Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**ITAL 504 - Intermediate Italian II****Credits:** 4

For students who have completed ITAL 503 or an equivalent. A review of the fundamentals of grammar and syntax. Selected readings as a general introduction to Italian civilization and culture. Films and activities.

**Attributes:** World Cultures(Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**ITAL 510J - Rome: The Eternal City in Italian Culture****Credits:** 4

This course offers an interdisciplinary introduction to the Eternal City and its role in Italian culture from the Middle Ages to the present. Together, the online and on-site components of the course allow students to compare their theoretical historical, social and artistic knowledge of Italian culture (acquired through readings, films and online lectures) with experiential knowledge gained through first-hand exposure to contemporary Rome. All readings in English. Fulfills the World Cultures Discovery requirement. Special fee.

**Attributes:** World Cultures(Discovery)

**Grade Mode:** Letter Grading

**ITAL 521 - Medieval and Renaissance Italian Culture****Credits:** 4

This course explores the culture and society of Medieval and Early Modern Italy through major works of fiction and non-fiction. The East met the West and the North met the South in the Italian peninsula making it one of the most diverse, wealthy, creative, powerful, and influential regions in Europe. In examining this period, the course asks such questions as: What was the Renaissance? Why were the Muslims and Vikings in Sicily? What is the Bonfire of the Vanities? Why did Shakespeare set so many plays in Italy? No prerequisites and all work is in English.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**ITAL 522 - Modern and Contemporary Italian Culture****Credits:** 4

This course explores the culture and society of modern and contemporary Italy through major works of fiction and non-fiction. In examining the emergence of the new nation-state, the course poses such questions as: What does "We have made Italy; now we need to make the Italians" mean? What is Fascism? What is "la dolce vita?" How have climate change and the refugee crisis changed Italy and Italians? The unification of Italy, colonialism, Fascism, Made in Italy, La Dolce Vita, domestic terrorism, North vs South are some of the topics examined. No prerequisites and all work is in English.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**ITAL 525 - Italian Cinema****Credits:** 4

Italian Cinema is a survey of the development of the film industry in Italy and of major Italian films. Through film, the course explores the culture, society, history, and politics of Italy, as well as the aesthetics, technology, economics, and theory of cinema. No prerequisites and all work is in English.

**Attributes:** FinePerformingArts(Discovery)

**Grade Mode:** Letter Grading

**ITAL 526 - The Art of Cinema in Italy****Credits:** 4

While studying in Italy students explore the relationship between cinema as art, the reception and distribution of films cinema historiography (including archives), and technology. Students read about movements, directors, and expectations of genre, and identify connections between artistic concerns and the technology involved in making, preserving and restoring films. Students visit the Cineteca di Bologna and attend the annual Cinema Ritrovato film festival.

**Attributes:** FinePerformingArts(Discovery)

**Grade Mode:** Letter Grading

**ITAL 540 - Making Italian Americans: Migration and Identity Formation****Credits:** 4

This course examines historical, social, economic, political, cultural, religious, and folkloric structures that shape how Italian Americans identify themselves as a distinct ethnicity. Through study of Italian American identity, the course analyzes the Italian state in the late nineteenth century, immigration policies in the United States, the challenges of assimilation, the demise of traditional Italian American communities (i.e., "Little Italy"), and the role of ethnic identity in contemporary American society.

**Attributes:** Social Science (Discovery)

**Grade Mode:** Letter Grading

**ITAL 595 - Practicum****Credits:** 2

Practical use of Italian language and culture through special projects outside the classroom.

**Repeat Rule:** May be repeated for a maximum of 4 credits.

**Equivalent(s):** ITAL #595A

**Grade Mode:** Credit/Fail Grading

**ITAL #595A - Practicum****Credits:** 2 or 4

Practical use of Italian language and culture through special projects outside of the classroom. The Practicum consists of unpaid placement in an approved business, social service, or educational organization in an Italian-speaking context with on-site supervision. The course also includes a classroom component that incorporates readings and assignments pertinent to the Practicum experience. Permission. Letter Grade.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** ITAL 595**Grade Mode:** Letter Grading**ITAL 631 - Advanced Conversation and Composition I****Credits:** 4

Rapid review of basic grammatical structures and in-depth study of more complex linguistic patterns. Vocabulary building. Frequent written compositions and oral presentations using materials on contemporary culture taken from the various media. Phonetics and oral/aural skills development.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Prerequisite(s):** ITAL 504 with a minimum grade of C.**Grade Mode:** Letter Grading**ITAL 632 - Advanced Conversation and Composition II****Credits:** 4

Advanced spoken and written Italian to attain aural-oral fluency. Advanced reading and composition.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Prerequisite(s):** ITAL 504 with a minimum grade of C.**Grade Mode:** Letter Grading**ITAL 635 - Italian Food Studies****Credits:** 4

Italian Food Studies acquaints students with the principles of aesthetics as they pertain to our understanding of and relationship to food. The philosophical aspects of the course are complemented by experiential components that emphasize the particularity as well as the diversity of the Italian regions.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**ITAL 651 - Introduction to Italian Culture and Civilization I: Middle Ages, Renaissance, Baroque****Credits:** 4

Survey of major representative writers and artists, studied against the backdrop of social and cultural history. Dante, Petrarch, Boccaccio, Machiavelli, Marino. (Not offered every year).

**Attributes:** Writing Intensive Course**Prerequisite(s):** ITAL 631 (may be taken concurrently) with a minimum grade of D-.**Grade Mode:** Letter Grading**ITAL 652 - Introduction to Italian Culture and Civilization II: Age of Enlightenment, Romanticism, Modernism****Credits:** 4

Survey of major representative writers and artists, studied against a backdrop of social and cultural history. Parini, Goldoni, Leopardi, Manzoni, Pavese, Calvino. (Not offered every year).

**Attributes:** Writing Intensive Course**Prerequisite(s):** ITAL 631 (may be taken concurrently) with a minimum grade of D-.**Grade Mode:** Letter Grading**ITAL 675 - Special Topics in Italian Studies****Credits:** 4

Topics drawn from all aspects and periods of Italian Studies. May be repeated for credit barring duplication of materials.

**Prerequisite(s):** ITAL 631 with a minimum grade of D-.**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**ITAL 681A - Ancient and Medieval Italy****Credits:** 4

Taking an interdisciplinary, but historically centered perspective, this course examines the construction of Italy as both a nation and culture from the pre-Roman period to the fifteenth century.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** ITAL 681B**Grade Mode:** Letter Grading**ITAL 681B - Ancient and Medieval Italy****Credits:** 4

Taking an interdisciplinary, but historically centered perspective, this course examines the construction of Italy as both a nation and culture from the pre-Roman period to the fifteenth century.

**Attributes:** Humanities(Disc)**Equivalent(s):** ITAL 681A**Grade Mode:** Letter Grading**ITAL 682B - Italian Culture: Early Modern, Modern and Contemporary****Credits:** 4

Taking an interdisciplinary, but humanistically-centered perspective, this course examines the construction of Italy as both a nation and culture from the fifteenth century to the contemporary era.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**ITAL 683 - UNH in Bologna Summer Program****Credits:** 0-8

This is an administrative placeholder course for the UNH in Bologna summer program. Students can be registered for both this administrative course number and the course number(s) of course(s) being offered on site. Special Fee.

**Co-requisite:** INCO 589**Grade Mode:** Credit/Fail Grading**ITAL 733 - History and Development of the Italian Language****Credits:** 4

Development of the Italian language from Roman times to the present. Examines the comparative method and internal reconstruction as well as processes of changes in phonology, syntax and lexicon. The course introduces issues in dialect geography, the basic features of paleography and surveys the evolution of scripts.

**Prerequisite(s):** ITAL 631 with a minimum grade of D-.**Grade Mode:** Letter Grading**ITAL 775 - Topics in Literary & Cultural Studies****Credits:** 4

Advanced course on a literary/cultural topic. Possible topics include African Italian Literature, Dante, Poetry, Theatre, Italy and the European Union, Social & Political Movements, Environment, Sustainability, Film. Barring duplication of subject, the course may be repeated for credit.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**ITAL 795 - Independent Study in Italian Language and Literature****Credits:** 1-4

Individual guided study.

**Grade Mode:** Letter Grading

**ITAL 796 - Independent Study in Italian Language and Literature****Credits:** 1-4

Individual guided study.

**Grade Mode:** Letter Grading

## Japanese (JPN)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**JPN 401 - Elementary Japanese I****Credits:** 4

Elements of Japanese grammar. Oral practice and written drills designed to achieve a mastery of basic grammatical patterns. Reading of graded exercises introducing the student to written Japanese (Hiragana and Katakana) and Chinese characters used in contemporary Japan. Labs. (No credit for students who have had two or more years of Japanese in secondary school; however, any such students whose studies of Japanese have been interrupted for a significant period of time should consult with the department chairperson about possibly receiving credit).

**Grade Mode:** Letter Grading**JPN 402 - Elementary Japanese II****Credits:** 4

Elements of Japanese grammar. Oral practice and written drills designed to achieve a mastery of basic grammatical patterns. Reading of graded exercises introducing the student to written Japanese (Hiragana and Katakana) and Chinese characters used in contemporary Japan. Labs. (No credit for students who have had two or more years of Japanese in secondary school; however, any such students whose studies of Japanese have been interrupted for a significant period of time should consult with the department chairperson about possibly receiving credit). Prereq: JPN 401.

**Attributes:** Foreign Language Requirement**Grade Mode:** Letter Grading**JPN 503 - Intermediate Japanese I****Credits:** 4

Review of Japanese grammar. Reading of prose and practice in oral and written expression. Labs. Prereq: JPN 402 with a grade of C (2.00) or better or permission of instructor.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**JPN 504 - Intermediate Japanese II****Credits:** 4

Review of Japanese grammar. Reading of prose and practice in oral and written expression. Labs. Prereq: JPN 402 with a grade of C (2.00) or better or permission of instructor.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**JPN #631 - Advanced Japanese I****Credits:** 4

Advanced spoken and written Japanese to attain aural-oral fluency. Advanced reading and composition. Prereq: JPN 504 with a grade of C or better or permission of instructor.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**JPN 795 - Independent Study****Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with the permission of department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit.

**Equivalent(s):** JAPN 695, JPN 695**Grade Mode:** Letter Grading**JPN 796 - Independent Study****Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with the permission of department chairperson and of the supervising faculty member or members. Barring duplication of subject, may be repeated for credit.

**Equivalent(s):** JAPN 696, JAPN 796**Grade Mode:** Letter Grading

## Justice Studies (JUST)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**JUST 401 - Introduction to Justice Studies****Credits:** 4

Overview of justice studies as the study of law and law-like systems. Includes literature from both the law and society, and criminology. Topics will include morality versus legality, the American legal civil and criminal system, torts, and adult versus juvenile justice.

**Grade Mode:** Letter Grading**JUST 405 - Technology, Crime, and Society: A Forensic Exploration of High-Tech and Digital Crime****Credits:** 4

This course addresses the ways in which technology, crime, and law converge in the wider society in the twenty-first century. While emerging technologies bring great benefits, they also bring unintended and unforeseen consequences. This course uses a social science orientation to explore a new and evolving field of forensic technology.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**JUST 410 - Sexual Harassment and Rape Prevention (SHARPP) Peer Advocacy****Credits:** 4

SHARPP Peer Advocacy is designed to provide the training and development of peer advocates to work directly with survivors of interpersonal violence while staffing SHARPP's 24/7 support line. Under NH state law (NH RSA 173:C), to have confidentiality as an advocate, individuals must successfully complete a minimum of 30-hours of specialized training and complete 6 hours of annual continuing education. This course will give students the basic understandings and skills needed to serve as a peer advocate, though is not meant to be the only training they receive in this role or as a comprehensive overview of all information needed to work with survivors.

**Grade Mode:** Letter Grading**JUST 415 - SHARPP Advocacy II****Credits:** 2

This course is a continuation of JUST 410. Advocates will demonstrate understanding of skills learned in JUST 410 by practical use of the skills on the Crisis Line. Prereq: JUST 410.

**Grade Mode:** Credit/Fail Grading

**JUST 501 - Research Methods****Credits:** 4

Overview of the various methodologies used in justice studies research: quantitative, qualitative, and legal. Topics include issues of design such as ethics, reliability, and validity measurement. Students will design and write up research proposals using one of the methods reviewed in the course.

**Attributes:** Inquiry (Discovery)

**Prerequisite(s):** ADMN 510 with a minimum grade of C- or MATH 420 with a minimum grade of C- or MATH 422 with a minimum grade of C- or MATH 439 with a minimum grade of C- or MATH 644 with a minimum grade of C- or PSYC 402 with a minimum grade of C- or SOC 402 with a minimum grade of C-.

**Grade Mode:** Letter Grading**JUST 520 - Girls Gone Bad: Delinquent Girls in Cultural Context****Credits:** 4

This course explores the important and under-studied intersection between gender/girls and delinquency. Who is the typical female delinquent? What causes her to get into trouble? What happens to her if she is arrested? Topics include the extent and nature of adolescent girl's delinquency and theoretical explanations for delinquency. Focus on social contexts (family, peers, school), developmental and social psychological factors and adolescent girls' experiences with the juvenile system.

**Grade Mode:** Letter Grading**JUST 550 - Mock Trial****Credits:** 2

Participation in American Mock Trial Association intercollegiate competition. Study and preparation for trial of national case (criminal or civil, alternate years). Year long course, 2 credit hours per semester. Special fee. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**JUST 551 - Mock Trial****Credits:** 2

Participation in American Mock Trial Association intercollegiate competition. Study and preparation for trial of national case (criminal or civil, alternate years). Year long course, 2 credit hours per semester. Special fee. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**JUST 591 - Forensic Psychology****Credits:** 4

Forensic psychology is one of the fastest growing sub-fields in psychology and in fact one of the fastest growing disciplines in the world of social science. Still, most people in the general population as well as many individuals within the study of psychology know very little about what forensic psychology actually is. This course is designed to cover the various roles and issues that constitute the science of forensic psychology and to help student deepen their understanding of the various roles forensic psychologists play in the real world. Needless to say, this course will not train you to be a forensic psychologist, but hopefully it will spark your interest about a very exciting topic and encourage you to study some of the issues we touch on, as you move on academically.

**Grade Mode:** Letter Grading**JUST 595 - Special Topics****Credits:** 1-4

Special topics of advanced study in Justice Studies. Selected offerings reflect faculty expertise in teaching and research. May be repeated in different topic areas.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**JUST 601 - Internship****Credits:** 4

Weekly class meeting and a semester-long field internship in justice studies (e.g., law enforcement, corrections, victim advocacy, criminal or civil courts etc.) or a research internship working with a UNH faculty member or in a campus research lab (e.g., Crimes against Children's Lab, Prevention Innovations Research Center etc.) Placement must be approved by the justice studies internship coordinator. 155 internship hours required.

**Grade Mode:** Letter Grading**JUST 602 - Research Internship****Credits:** 4

Independent research working with Justice Studies faculty on their projects. Includes working with faculty at such research centers as Crimes against Children, Family Research Lab, and Justiceworks. Student/supervisor contract required. Minimum time commitment: 12 hours per week.

**Prerequisite(s):** JUST 401 with a minimum grade of D- and JUST 501 with a minimum grade of D-.

**Grade Mode:** Letter Grading**JUST #650 - Special Studies in Comparative Justice Systems****Credits:** 4

This course will involve periodic offerings in comparative analysis of justice systems in an international context. May be repeated provided both course offerings are substantially different. Must be taken with JUST #651 for those students participating in the Justice Studies Budapest Program. Prereq: POLT 507 and/or SOC 515.

**Co-requisite:** COLA #657, INCO 588, JUST #651**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**JUST #651 - Field Studies in the Hungarian Justice System****Credits:** 6

This course is designed to provide Justice Studies Budapest Program students with first-hand experience with the workings of the Hungarian justice system. Weekly field trips to agencies in law enforcement, the courts, and correctional facilities in the Budapest area will be arranged, and periodic lectures by Hungarian criminal justice professionals and scholars will compliment these visits. Must be taken with JUST #650 for those students participating in the Justice Studies Budapest Program.

Prereq: POLT 507 and/or SOC 515. Cr/F.

**Co-requisite:** COLA #657, INCO 588, JUST #650**Grade Mode:** Credit/Fail Grading**JUST 701 - Senior Seminar****Credits:** 4

Advanced material in which the instructor has specialized knowledge through research and study. Topics may include the death penalty, terrorism, psychology of the jury, ethics and morality, immigration, therapeutic jurisprudence, and juveniles tried as adults.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** JUST 401 with a minimum grade of D- and JUST 501 with a minimum grade of D-.

**Grade Mode:** Letter Grading



**JUST 795 - Reading and Research****Credits:** 1-4

An independent study that is arranged by the student and supervised by a Justice Studies faculty member. Course requirements include: assembling and reading a substantial bibliography in the field; completing several written assignments and in some cases participating in hands-on experiences such as data collection and analysis. This course is by permission only and requires a signed agreement/proposal prior to registration. May be taken for 1-4 credits and includes a minimum of 3 hours of coursework per week per credit hour. Writing intensive in some select cases.

**Grade Mode:** Letter Grading

## Kinesiology (KIN)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**KIN 501 - First Aid: Responding to Emergencies****Credits:** 1

Covers the American Heart Association HeartSaver First Aid/CPR/AED: Adult, Child, Infant curriculum, the National Association of EMTs Bleeding Control for the Injured (BCon) curriculum which meets the Department of Homeland Security's Stop the Bleed initiative, and training for civilian responses to critical incidents. Special fee. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 2 credits.**Grade Mode:** Credit/Fail Grading**KIN 505 - Activity, Injuries and Disease****Credits:** 4

Sports and exercise are a part of American society and are used as entertainment, leisure activity as well as a means to better health. Unfortunately while we partake in these activities few individuals are aware of the risks they are exposing themselves to. In addition as more women engage in sports and exercise medical science is realizing that many conditions and injuries are gender specific. It is well known that women athletes deal with reproductive, orthopedic and nutritional issues that differ greatly from men. Also we know that individuals with varying diseases benefit greatly from exercise. This course will join, musculoskeletal anatomy, injuries, gender and special problems together to explain how an individual can enjoy activities safely. In addition this course addresses the interpretation of current medical literature and how to utilize new information.

**Attributes:** Biological Science(Discovery)**Grade Mode:** Letter Grading**KIN 585 - Emergency Medical Responder****Credits:** 4

Standards of practice that conform to the content of the US Department of Transportation curriculum for Emergency Medical Responder (EMR). Initial evaluation and stabilization of patients at the scene of medical emergencies, CPR, and other basic medical care for illness and injury. Prepares the student for the National Registry of EMT (NREMT) EMR certifications exams. (Note: this is a different level of certification than Emergency Medical Technician (EMT). KIN 684/685 prepares students for EMT certification) Prereq: Athletic training; Exercise Science; HHS: undeclared. Lab. Special Fee.

**Grade Mode:** Letter Grading**KIN 652 - Clinical Kinesiology****Credits:** 4

The science of human movement from biomechanical, neuromuscular, and anatomical perspectives; human muscular, joint, and connective tissue anatomy; and actions of skeletal muscles are detailed. Prereq: BMS 507 and BMS 508.

**Grade Mode:** Letter Grading**KIN 653A - Musculoskeletal Assessment****Credits:** 2

Principles and methodology of joint range of motion, body mechanics, and muscle strength evaluation. Uses muscle palpation, goniometry, manual muscle testing, hand-held dynamometry to facilitate understanding of musculoskeletal anatomy and assessment. Special fee. Prereq: BMS 507 and BMS 508.

**Grade Mode:** Letter Grading**KIN 668 - Ergogenic Aids in Sports****Credits:** 2

In sports, faster, higher, stronger, longer, and better is what everyone wants. Athletes and coaches seek out sports ergogenics that will give them a training and performance advantage over their competition. This course introduces the use of sports ergogenics and their use in athletic competition.

**Equivalent(s):** AT 668**Grade Mode:** Letter Grading**KIN 684 - Emergency Medical Care: Emergency Medical Technician (EMT)****Credits:** 3

Based on the curriculum established by the U.S. Department of Transportation for Emergency Medical Technician, and authorized by the State of New Hampshire-Bureau of Emergency Medical Services (EMS). Topics covered include trauma; medical, environmental and psychiatric emergencies; childbirth; hazardous materials; and infection control procedures. Students participate in clinical observations in one of the region's hospital emergency departments. Students have the option to take the state of NH-EMS Practical Examination and the National Registry Written Examination for EMT. Passage of both these examinations leads to national certification as an EMT. Pre- or Coreq: ANSC 511 and ANSC 512, ZOOL 401, BMS 507 and BMS 508.

**Co-requisite:** KIN 685**Grade Mode:** Letter Grading**KIN 685 - Emergency Medical Care: EMT Lab****Credits:** 2

Basic emergency health care, including trauma patients, medical and environmental emergencies, and childbirth. Includes clinical experience with a local hospital and ambulance service. Prepares the student for the National Registry of EMT's Examination. Pre- or Coreq: ANSC 511 and ANSC 512, ZOOL 401, BMS 507 and BMS 508.

**Co-requisite:** KIN 684**Grade Mode:** Letter Grading



**KIN 690 - Study Abroad in Kinesiology****Credits:** 0-16

A) Foreign study in, or related to, athletic training. Interested students should contact Program Director, Kinesiology Athletic Training Option. Prereq: KIN: Athletic Training majors only. special fee. Cr/F. Permission.

B) Foreign study in, or related to, exercise science. Interested students should contact Program Director, Kinesiology Exercise Science Option. Prereq: KIN: Exercise Science majors only. special fee. Cr/F. Permission.

C) Foreign study in, or related to, outdoor education. Interested students should contact Program Director, Kinesiology Outdoor Education Option. Prereq: KIN: Outdoor Education majors only. special fee. Cr/F. Permission.

D) Foreign study in, or related to, physical education. Interested students should contact Program Director, Kinesiology Physical Education Option. Prereq: KIN: Physical Education majors only. special fee. Cr/F. Permission.

E) Foreign study in, or related to, sports studies. Interested students should contact Program Director, Kinesiology Sports Studies Option. Prereq: KIN: Sports Studies majors only. special fee. Cr/F. Permission.

**Co-requisite:** INCO 588**Attributes:** World Cultures(Discovery)**Grade Mode:** Credit/Fail Grading**KIN 693 - Teaching Assistantship****Credits:** 2

A) Physical Education Pedagogy; B) Exercise Leader; C) Outdoor Education; D) Science Labs; E) Cardiac Rehabilitation; F) Coaching. Students serve as teaching assistants in assigned class activities. Assignments to be made by the class instructor may include teaching assistants' and administrative duties. May take two different sections. Prereq: junior standing; departmental approval. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.

**Grade Mode:** Credit/Fail Grading

**KIN 696 - Independent Study****Credits:** 2-4

An advanced, individual scholarly project under the direct supervision of a faculty member. Prereq: junior or senior; departmental approval. Special fee.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**KIN 696W - Independent Study****Credits:** 2-4

An advanced, writing-intensive, individual scholarly project under the direct supervision of a faculty member. Student and Faculty Adviser will prepare a written proposal that outlines: the questions to be pursued, the methods of investigation, the student's qualifications to conduct the research, the nature of the finished written product (e.g. case study, position paper, extended lab report). This proposal must be approved by major faculty and the department chair prior to the student's registration for KIN 696 WI. All KIN 696 WI projects must include: Some forms of informal, ungraded writing such as a journal, reading summaries, draft chapters, or invention activities. Regular writing interaction between student and faculty adviser (i.e. at least weekly or biweekly), to include written feedback from the adviser. A finished product that is polished via revision. Faculty sponsors and students should consult the resources and guidelines of the UNH Writing Program. Prereq: junior or senior; departmental approval.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**KIN 699H - Honors Project****Credits:** 4

Project first involves tutorial sessions to introduce the student to the experimental design, after which a research question is developed. After an appropriate literature review, the student collects and analyzes data, forms conclusions, and prepares a written report on the findings.

**Attributes:** Honors course**Grade Mode:** Letter Grading**KIN 706 - Neurology****Credits:** 4

Development, morphology, internal configuration, physiology, histology, function, and pathology of the human nervous system. Prereq: BMS 507-508 or equivalent.

**Co-requisite:** KIN 707**Grade Mode:** Letter Grading**KIN 707 - Neurology Lab****Credits:** 2

Basic histology, neuroanatomy and neurophysiology of the human nervous system. Use of brain specimens, videos and pathology case studies to elucidate cell structure, sensory and motor systems, and spinal cord, brainstem and cortical organization and anatomy. Prereq: BMS 507-508 or COMM 521 or equivalent. Special fee. Cr/F.

**Co-requisite:** KIN 706**Grade Mode:** Credit/Fail Grading**KIN 798 - Special Topics****Credits:** 1-4

New or specialized courses not normally covered in regular course offerings. Special fee on some sections.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Languages, Literatures & Cultures (LLC)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**LLC 444H - Honors/Human Rights and the Disappeared in Latin American Culture****Credits:** 4

This course is situated at the intersection of Latin American culture and Human Rights (1973-2020). Through our examination of case studies dealing with violations of Human Rights and forced disappearances in Central America, Colombia, Mexico, and the Southern Cone, the course uses methodologies from the humanities to explore the poetics/politics of mourning, the search for the disappeared, transitional justice, and memory practices by examining cultural production such as novels, poems, music, documentaries, films, performances, and visual arts.

**Attributes:** Honors course; World Cultures(Discovery); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading

**LLC 444I - US Latinx Cities: Urban Culture, Society and Space****Credits:** 4

This course will explore urbanism of four US Latinx Cities: Los Angeles, Chicago, Miami, and New York. We will examine how Hispanics have historically shaped and changed the landscape of each of these cities in the United States through various forms of cultural production such as literature, music, film and television as well as discuss the social issues that these cities and communities face such as social inequality, gentrification, race relations, sexuality/gender, and transportation.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**LLC 535A - Professional Culture in European Union - - Case Study:****Germany****Credits:** 4

No previous German required. Conducting business with countries of the European Union, with a particular emphasis on Germany. The course focuses on the central role played by professional culture and business practices in the global marketplace. Special fee.

**Attributes:** World Cultures(Discovery)

**Grade Mode:** Letter Grading

**LLC 535B - Professional Culture in Latin America - Case Study: Mexico and Brazil****Credits:** 4

Conducted in English. No previous Spanish or Portuguese required. Conducting business with countries in Latin America with a particular emphasis on Mexico and Brazil. The course focuses on the central role played by professional culture and business practices in the global marketplace. Special fee.

**Attributes:** World Cultures(Discovery)

**Equivalent(s):** SPAN 535B

**Grade Mode:** Letter Grading

**LLC #535C - Professional Culture in Asia -- Case Study: China and Japan****Credits:** 4

Conducted in English. No previous Chinese or Japanese required. Conducting business with countries in Asia, with a particular emphasis on China and Japan. The course focuses on the central role played by professional culture and business practices in the global marketplace.

**Attributes:** World Cultures(Discovery)

**Grade Mode:** Letter Grading

**LLC 540 - Film History****Credits:** 4

Examines the historical development of film from a global perspective and the emergence of national cinemas as well as the cross-cultural influences that have produced the modern transnational film industry.

**Attributes:** Historical Perspectives(Disc)

**Grade Mode:** Letter Grading

**LLC #551 - Comparative Literature: Masterpieces of World Literature I****Credits:** 4

Comparative studies of major authors representative of important periods of literary achievement. Common themes and development of epic and lyric traditions in early Western and non-Western literatures. Introduction to various concepts of literature and genre. Topics and approaches may vary from semester to semester.

**Attributes:** Humanities(Disc); Writing Intensive Course

**Grade Mode:** Letter Grading

**LLC 552 - Comparative Literature: Masterpieces of World Literature II****Credits:** 4

Comparative studies of major authors representative of important periods of literary achievement. Renaissance to modern. Studies the age of empires through the colonial and post colonial periods. Introduction to various concepts of literature and genre. Topics and approaches may vary from semester to semester.

**Attributes:** Humanities(Disc); Writing Intensive Course

**Grade Mode:** Letter Grading

**LLC 555 - Discover Cuba: An Arts Experience****Credits:** 4

This discovery course is designed to provide students with first-hand experience of the art, history, culture, music and visual arts of Cuba. The course combines an online academic class with on-site experiential learning through a fourteen day trip to Cuba. The course takes a highly contextual approach, locating the artwork in its historical, social, economic and cultural context for students to analyze and understand the complexities of modern Cuba. Special fee.

**Attributes:** FinePerformingArts(Discovery)

**Grade Mode:** Letter Grading

**LLC 560 - Divine Madness and Dangerous Minds! - Mental Health in Literature and Art****Credits:** 4

Analysis and interpretation of art, literature, film, and various other representations of mental health and 'madness' from across the globe. Discussions of 'madness' are informed by artistic, medical, theoretical, political, and historical perspectives.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**LLC 595 - Language Practicum****Credits:** 2-4

Practical use of language skills outside the classroom through special projects. Prereq: LLC 504 or its equivalent. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.

**Grade Mode:** Credit/Fail Grading

**LLC 790 - World Languages Capstone****Credits:** 4

The World Languages capstone consists of a semester-long exploration of the language learning enterprise, study of life-long language learning strategies, reflection on intercultural competence, and development of comprehensive digital portfolio, including a reflection on the course of study and a language assessment as well as a culminating project.

**Grade Mode:** Letter Grading

**LLC 791 - Methods of Foreign Language Teaching****Credits:** 4

Objectives, methods and techniques in teaching foreign languages from elementary grades through college. Discussion, demonstration, preparation of instructional materials, micro-teaching of the language skills, including developments in computer-aided instruction.

**Equivalent(s):** SPAN 791

**Grade Mode:** Letter Grading

## Latin (LATN)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**LATN 401 - Elementary Latin I****Credits:** 4

Explore the world of the ancient Romans by learning the basic elements of Latin: the alphabet, vocabulary and grammar. By the end of the first semester students will be prepared to read short adapted passages on the history, mythology and culture of the Romans and the many cultures that they were associated with. Ideal preparation for exploration in politics, legal studies, music, myth/religion, theology, philosophy, medicine and the history of science.

**Grade Mode:** Letter Grading**LATN 402 - Elementary Latin II****Credits:** 4

A continuation of LATN 401, this course expands students' abilities to read simple to moderately complex Latin passages, furthering their insights into the fascinating history and culture of the ancient Romans.

**Attributes:** Foreign Language Requirement**Grade Mode:** Letter Grading**LATN 403 - Review of Latin****Credits:** 4

Intensive review of Latin grammar and vocabulary. Preparation for LATN 503. Designed primarily for those whose study of Latin has been interrupted for a year or more and for those who have had only two years of high school Latin.

**Equivalent(s):** LATN 501**Grade Mode:** Letter Grading**LATN 503 - Intermediate Latin I****Credits:** 4

Review. Readings from Cicero, Caesar, Sallust, Livy, Catullus, Horace, Ovid, Plautus, Terence, and Seneca. Prereq: LATN 402 or equivalent.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**LATN 504 - Intermediate Latin II****Credits:** 4

Review. Readings from Cicero, Caesar, Sallust, Livy, Catullus, Horace, Ovid, Plautus, Terence, and Seneca. Prereq: LATN 402 or equivalent.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**LATN 605 - Readings in Latin Literature****Credits:** 4

Reading and analysis of major works of Latin literature. Focus on improving translation skills and comprehension of Latin grammar and Latin language. Introduction to the critical analysis of Latin literature in the context of Roman civilization and culture. Prereq: Latin 504 or equivalent with a grade of C or better. Satisfies foreign language requirement.

**Attributes:** Foreign Language Requirement**Grade Mode:** Letter Grading**LATN 606 - Readings in Latin Literature****Credits:** 4

Reading and analysis of major works of Latin literature. Focus on improving translation skills and comprehension of Latin grammar and Latin language. Introduction to the critical analysis of Latin literature in the context of Roman civilization and culture. Prereq: Latin 504 or equivalent with a grade of C or better. Satisfies foreign language requirement.

**Grade Mode:** Letter Grading**LATN 753 - Advanced Studies in the Literature of the Golden Age****Credits:** 4

A) Lucretius; B) Catullus; C) Caesar; D) Sallust; E) Vergil; F) Horace; G) Tibullus; H) Propertius; I) Ovid; J) Livy. Major Roman authors from the dictatorship of Sulla to the death of Augustus. Prereq: permission. Each special topic may be repeated two times for up to eight credits.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 1 time.**Grade Mode:** Letter Grading**LATN 754 - Advanced Studies in the Literature of the Golden Age****Credits:** 4

A) Lucretius; B) Catullus; C) Caesar; D) Sallust; E) Vergil; F) Horace; G) Tibullus; H) Propertius; I) Ovid; J) Livy. Major Roman authors from the dictatorship of Sulla to the death of Augustus. Prereq: permission. Each special topic may be repeated two times.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**LATN #756 - Advanced Studies in the Literature of the Silver Age****Credits:** 4

A) Seneca the Younger; B) Persius; C) Petronius; D) Lucan; E) Statius; F) Quintilian; G) Martial; H) Juvenal; I) Tacitus; J) Pliny the Younger. Major Roman authors from the reign of Nero to the death of Trajan. Prereq: permission. Each special topic may be repeated two times.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Life Sciences & Agriculture (LSA)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**LSA 400 - Freshman Academic Experience I****Credits:** 1

Assistance to the undeclared student in identifying a major within the College of Life Sciences and Agriculture, including the biological, natural, and social sciences. The goal of this seminar is to support students in developing a sound academic program and assist them in making a successful transition from high school to college. The seminar also covers strategies for being a successful college student. Required for all first-semester LSA undeclared students. Cr/F.

**Grade Mode:** Credit/Fail Grading**LSA 401 - Scientific Research Exploration****Credits:** 2

This course introduces incoming freshmen to the scientific research process via a hands-on approach, which includes case studies, group work, and a two-week research immersion experience under the guidance of the College of Life Sciences and Agriculture (COLSA) faculty. Course readings, discussions, and active participation in local research will facilitate the student's exploration of experimental design, hypothesis testing, data collection and analysis, interpretation of results, and effective communication of research findings. In the context of a group research project, students begin thinking like scientists, as well as strengthening their math, writing, and oral communication skills. Prereq: permission. Open to incoming freshmen only.

**Grade Mode:** Credit/Fail Grading

**LSA 402 - Freshman Academic Experience II****Credits:** 1

The second part of Freshman Academic Experience. This course reviews academic skills and focuses on your "academic career" as a student in COLSA including: major choices, opportunities for enrichment, networking, internships, and career paths. The goal of this seminar is to support students in developing a sound academic program and assist them in making a successful transition to college. The seminar also covers research strategies and building effective presentations. Required for all LSA undeclared students. Cr/F. Prereq: LSA 400.

**Grade Mode:** Credit/Fail Grading**LSA 500 - College of Life Sciences and Agriculture Career Development****Credits:** 1

This course equips COLSA students with the tools and resources needed to land a job, internship, and/or prepare for graduate studies. Students will explore career paths; identify opportunities in field, research, and industry experiences; learn the fundamentals of planning and organizing job/internship search strategies; and develop their professional image in preparation for post-graduation plans.

**Grade Mode:** Credit/Fail Grading**LSA 595 - P2BIO Transfer Preparation Course****Credits:** 0

This zero-credit course is required for second-year life science students in the CCSNH who intend to apply for the P2BIO transfer scholarship. The course provides students with opportunities to learn about career pathway and curricular opportunities available through the P2BIO program. It will provide students with an opportunity to hone skills as developing science scholars with an emphasis on professional development and metacognition.

**Grade Mode:** Credit/Fail Grading**LSA 601 - P2Bio Professional Preparation Seminar****Credits:** 1

This course is required for P2Bio transfer students entering UNH in the fall semester. The course provides students with opportunities to learn about career pathways and curricular opportunities available through the P2Bio program. Students will hone skills as developing sciences scholars with an emphasis on professional development and metacognition.

**Grade Mode:** Credit/Fail Grading**LSA 700 - Peer Advisor Leadership Experience****Credits:** 2

Training course for peer advisors who lead/support LSA 400/402. The course meets twice a week; once in LSA 400/402 and once with the Program Coordinator. This course focuses on leadership training, teaching, group dynamics, and the UNH community. Students accepted into the role of Peer Advisor will be required to sign a contract committing to an entire year of Peer Advisor Role. This course prepares students to take on a teaching/advising/mentoring role with COLSA. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** LSA 798**Grade Mode:** Credit/Fail Grading**LSA 798 - Who's on First? Interprofessional Colloquium****Credits:** 2

Students engage with other professions on teams working through health care situations across the continuum. Students collaborate with faculty mentors to learn effective strategies in team-based care and develop competencies in ethics, responsibility, communication and teamwork. (Also listed as HHS 798.) Cr/F.

**Equivalent(s):** HHS 798**Grade Mode:** Credit/Fail Grading

## Lifetime Activity Program (LAP)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**LAP 501 - Lifetime Activity Program****Credits:** 2

The UNH Lifetime Activity Program UNH activity courses are designed to enhance the experience of UNH students of all abilities and contribute to the overall health and well-being of the UNH student population. These activity courses are motivated by the Healthy UNH goal of "Working to make UNH the healthiest campus community in the country by 2020". Courses can include a variety of learning exercises, including online modules, assigned readings, lectures, practices, games, and other methods as determined by the instructor. The same topic may be repeated once. Special Fee.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading

## Linguistics (LING)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**LING 405 - Introduction to Linguistics****Credits:** 4

Overview of the study of language: universal properties of human language, Chomsky's innateness hypothesis, language acquisition in children, dialects and language variation, language change. Includes an introduction to modern grammar (phonology, syntax, and semantics) and to scientific linguistic methodology. (Also offered as ENGL 405.)

**Attributes:** Social Science (Discovery); Inquiry (Discovery)**Equivalent(s):** ENGL 505, ENGL 505H, LING 405H, LING 505, LING 505H**Grade Mode:** Letter Grading**LING 605 - Intermediate Linguistic Analysis****Credits:** 4

Analysis and problem solving in phonology, morphology, and syntax using data from many languages. Emphasis is both practical (learning how to describe grammar and sound system of a language) and theoretical (understanding languages' behavior). Prereq: LING/ENGL 405, or permission. (Also offered as ENGL 605.)

**Equivalent(s):** ENGL 605**Grade Mode:** Letter Grading**LING 606 - Languages of the World****Credits:** 4

A survey of the languages of the world from genetic, areal, and typological perspectives. Students learn about the geographic and demographic distribution of language families and language isolates, as well as about structural characteristics of languages, language families and language areas. Additional topics include language endangerment and the question of linguistic universals. Students work collaboratively on a project investigating a particular language family, giving in class presentations and writing up a final project report. Some prior knowledge of phonetics, phonology, morphology, and syntax is necessary. Prereq: ENGL 605/LING 605 or ENGL 405/LING 405 and permission of the instructor.

**Equivalent(s):** ENGL 606**Grade Mode:** Letter Grading



**LING 695 - Senior Honors****Credits:** 4

Open to senior LING majors who, in the opinion of the department, have demonstrated the capacity to do superior work. Prereq: permission.

**Grade Mode:** Letter Grading**LING 717 - Languages in Contact****Credits:** 4

This course will explore topics related to languages in contact, including borrowing, code-switching, second language acquisition, bilingual mixed languages, language shift and maintenance, pidgins and creoles, and the linguistic and social factors which play a role in language contact. Prereq: ENGL 405 or LING 405 or permission of instructor.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENGL 717**Grade Mode:** Letter Grading**LING 718 - Morphology****Credits:** 4

Morphology is the study of word formation and the mental lexicon. This course explores processes of derivation, compounding and inflection that allow us to form new words. Students will become proficient in analyzing word formation processes in English and other languages, including deploying terminology used by morphologists. Students will learn and practice the conventions of "writing like a linguist". Prereq: ENGL 405 or LING 405.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENGL 718**Grade Mode:** Letter Grading**LING 719 - Sociolinguistics Survey****Credits:** 4

How language varies according to the characteristics of its speakers: age, sex, ethnicity, attitude, time, and class. Quantitative analysis methods; relationships to theoretical linguistics. Focus is on English, but some other languages are examined. Prereq: ENGL or LING 405 (previously numbered 505) or permission. (Also offered as ENGL 719.)

**Equivalent(s):** ENGL 719**Grade Mode:** Letter Grading**LING 728 - Language and Gender****Credits:** 4

This course will explore a variety of topics around the theme of language and gender, including the relationship between gender, language and power; the linguistic marking of gender; how people use language to construct and perform their gender; how gender intersects with other facets of identity, including sexuality and race and ethnicity. Prereq: ENGL 405/LING 405, or WS 401, or WS 405, or permission of instructor.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**LING 779 - Linguistic Field Methods****Credits:** 4

Study of a non-Indo-European language by eliciting examples from an informant, rather than written descriptions of the language. Students learn how to work out the grammar of a language from raw data. Prereq: ENGL 405/LING 405. (Also offered as ENGL 779.) (Not offered every semester).

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**LING 790 - Special Topics in Linguistics Theory****Credits:** 4

Advanced course on a topic chosen by the instructor. Inquire at the English department office for a full course description each time the course is offered. Topics such as word formation, dialectology, linguistic theory, and language acquisition, history of linguistics, language and culture, cross-disciplinary studies relating to linguistics. Barring duplication of subject, may be repeated for credit. (Also offered as ENGL 790.) Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENGL 790**Grade Mode:** Letter Grading**LING 793 - Phonetics and Phonology****Credits:** 4

Sound system of English and of other languages viewed from the standpoint of modern linguistic theory, including the following topics: the acoustic and articulatory properties of speech sounds, the phonemic repertoires of particular languages, phonological derivations, and prosodic phenomena such as stress and intonation. (Also offered as ENGL 793). Prereq: a basic linguistics course or permission.

**Equivalent(s):** ENGL 793**Grade Mode:** Letter Grading**LING 794 - Syntax****Credits:** 4

Relationship of grammar and meaning viewed from the standpoint of modern linguistic theory. Emphasis on the syntax and semantics of English, with special attention to the construction of arguments for or against particular analyses. Prereq: a basic linguistics course or permission of the instructor. (Also offered as ENGL 794.) Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ENGL 794**Grade Mode:** Letter Grading**LING 795 - Independent Study****Credits:** 1-4

A) Synchronic Linguistics, B) Diachronic Linguistics, C) Linguistic Theory. For students showing a special aptitude for linguistics who desire to pursue a line of inquiry for which no appropriate course is offered. All requests must be forwarded by the faculty sponsor to the director of the Inter-departmental Linguistics Committee.

**Grade Mode:** Letter Grading

## Management (MGT)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**MGT 520 - Topics in Management****Credits:** 4

Special topics, vary by semester.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading



**MGT 535 - Organizational Behavior****Credits:** 4

Application of behavioral science concepts to work settings in profit and nonprofit organizations. Individual settings behavior, interpersonal relations, work groups, relations among groups studied in the context of organizational goals and structure. Experiential focus. For non-business administration majors and minors.

**Equivalent(s):** MGT 580**Mutual Exclusion:** No credit for students who have taken ADMN 575.**Grade Mode:** Letter Grading**MGT 540 - Leadership in the 21st Century****Credits:** 4

This course provides students with the opportunity to explore leadership through multiple modes of inquiry and learning experiences. The emphasis is on students' development of their own philosophies of leadership through self-reflection, peer-to-peer dialogue, and experiential learning opportunities. This multi-modal learning experience better prepares students to take on 21st century leadership challenges.

**Equivalent(s):** MGT 585**Grade Mode:** Letter Grading**MGT 620 - Topics in Management****Credits:** 4

Special topics, vary by semester.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**MGT 630 - Leading in Diverse Organizations****Credits:** 4

This course is designed to help students navigate diverse organizational settings more effectively and improve their ability to work within and lead diverse teams and organizations. It also offers students the opportunity to develop their critical thinking on topics such as identity, relationships across difference, discrimination and bias, equality, and equity in organizations and society and how they relate to organizational issues of power, privilege, opportunity, inclusion, creativity and innovation and organizational effectiveness.

**Prerequisite(s):** PHIL 431 with a minimum grade of C- and ADMN 575 with a minimum grade of C-.**Grade Mode:** Letter Grading**MGT 640 - Human Resource Management****Credits:** 4

This course introduces the fundamentals of Human Resource Management (HRM) and how HR is using data to drive decision making (People Analytics). HRM should be an essential part of any business strategy to be integrated into the traditional trio of finance, marketing and operations. In most organizations, Human resource related costs are by far the number one line of operating expenses. But to earn and maintain a seat at the table, and help make data-informed strategic decisions, HR partners will need to bring a solid knowledge about gathering the right data, choosing appropriate analysis, and interpreting and communicating findings in a meaningful way. Prereq: ADMN 575 or MGT 580 or MGT 535.

**Grade Mode:** Letter Grading**MGT 642 - Talent Acquisition****Credits:** 4

This course is designed to provide an understanding of organizational staffing and hiring with an emphasis on issues that impact staffing in modern organizations. It will cover multiple aspects of the staffing process, including recruitment, assessment, and selection methods and procedures. In addition, the utility of methods used in job analysis, performance measurement, and internal and external market analysis will be discussed. This course is project intensive; students will be responsible for creating job descriptions, developing recruitment strategies, and building basic selection systems. Prereq: ADMN 575 or MGT 580 or MGT 535 or HMG 635.

**Grade Mode:** Letter Grading**MGT 662 - Exploration in Entrepreneurial Management****Credits:** 4

Examines the management of change and innovation, especially the role of entrepreneur in managing new ventures. Uses case analysis, guest speakers, and business plan preparation to study the characteristic behavioral, organizational, financial, and marketing problems of entrepreneurs and new enterprises. Prereq: ADMN 575 or MGT 580 or MGT 535, ADMN 585 or MKTG 550 or MKTG 530, ADMN 502 or ACFI 501 or ACCT 501.

**Attributes:** Writing Intensive Course**Equivalent(s):** MGT 732, MGT 733**Grade Mode:** Letter Grading**MGT 666 - Judgment Days: Revelations for Negotiating in your Favor****Credits:** 4

Negotiation is the art and science of securing agreements between two or more interdependent parties seeking to maximize their outcomes.

Negotiating and decision-making are essential managerial skills, necessary for influencing employees and stakeholders. This course will draw on the latest research, to help you learn how to negotiate successfully and with integrity. Topics covered include bargaining with one or more parties, influence strategies, ethical and social dilemmas, and negotiating with difficult people. Prereq: ADMN 575 or MGT 580 or MGT 535 or MGT 635.

**Grade Mode:** Letter Grading**MGT 701 - Stakeholder Engagement & Sustainable Businesses****Credits:** 4

Demands on strategy have expanded in a new era of capitalism. Businesses must assume responsibility for addressing complex issues at the intersection of business and society. This course prepares students to drive change by leading purpose-driven businesses that engage all stakeholders, not just shareholders and management. Conscious capitalism and realizing that everything connects to everything else – ethics, economics, politics, culture, technology, environment – is the foundation for growing businesses while simultaneously solving global societal challenges.

**Prerequisite(s):** ADMN 575 with a minimum grade of C-.**Equivalent(s):** ADMN 701**Grade Mode:** Letter Grading

**MGT 713 - Leadership Assessment and Development****Credits:** 4

Activities and exercises to help students determine their ideal job upon graduation as well as their career goals for the next three to five years. Students learn a matrix of key leadership behaviors and skills that distinguish high-performing managers and executives. Each student's behavior is assessed using this model so that students can determine the leadership behaviors and skills they most need to develop to meet their early career goals. Faculty assist students in developing a personal leadership development plan to focus professional energy, efforts, and achievements over the next three to five years. Prereq: ADMN 575.

**Grade Mode:** Letter Grading**MGT 714 - Organizational Changemaker Skills****Credits:** 4

This course will leverage research from strategy, economics, organizational behavior, psychology, and sociology to understand organizations' dynamic and ever-changing nature. This multi-disciplinary view will cut across organizational levels to examine frame-breaking change at the macro level, like major strategy shifts to the more micro implications of team change like member churn. Students will learn how to diagnose organizational problems, communicate issues, options, and recommendations, and lead change efforts at the team and organizational level.

**Prerequisite(s):** ADMN 575 with a minimum grade of C-.**Equivalent(s):** MGT 614**Grade Mode:** Letter Grading**MGT 720 - Topics in Management II****Credits:** 4

Special topics, vary by semester.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**MGT 720W - Topics in Management II****Credits:** 4

Special topics, vary by semester.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**MGT 733 - Launching New Ventures****Credits:** 4

This capstone course in the Entrepreneurial Studies option builds on business ideas developed during previous courses. Focused on developing a well-researched business plan and turning that into a high-quality "pitch", students have the opportunity to develop the skills needed to launch their own entrepreneurial venture, work for new ventures, and/or launch new ventures/products within an existing organization. Students will be part of UNH's Holloway Competition and will build relationships within New Hampshire's entrepreneurial ecosystem. Prereq: DS 741; MGT 742 or DS 742.

**Attributes:** Writing Intensive Course**Equivalent(s):** MGT 662, MGT 732**Grade Mode:** Letter Grading**MGT 755 - Global Mindset for Sustainable Business****Credits:** 4

A global mindset is the awareness and skills needed to communicate and manage across cultures as well as understanding how national/cultural contexts shape views of ethics and sustainability. A global mindset is not just for students who will work overseas. Almost all businesses today have international suppliers and/or customers. The course will provide students with the theoretical understanding and practical tools they need to develop a global mindset using a combination of active learning experiences.

**Attributes:** Writing Intensive Course**Prerequisite(s):** ADMN 575 with a minimum grade of C-.**Grade Mode:** Letter Grading

## Marine Sciences (MARI)

**MARI 405 - Introduction to Marine Mammal Science and Policy****Credits:** 3

This course embarks on the scientific discovery of marine mammals through the intersection of marine policy, physics, biology, and societal value of the ocean. Marine mammal and human interactions will be related to specific marine laws protective of the major taxonomic groups. Students will receive an introduction to marine mammal evolution, morphological and physiological adaptations, ecology, and behavior. These foundational concepts will convey to students the intent of marine policy protective of marine mammals.

**Equivalent(s):** INCO 405**Grade Mode:** Letter Grading**MARI 533 - Basic SCUBA****Credits:** 3

A full semester rigorous introduction to the fundamentals of SCUBA diving, including diving physics, physiology, decompression issues, environment, equipment, and safety. Through a progressive series of classroom lectures and pool sessions, students gain the knowledge and skills necessary to conduct themselves with competence in New England waters. Emphasis on safety and problem prevention. Strong swimming ability required. Prereq: permission of instructor.

**Equivalent(s):** KIN 533**Grade Mode:** Letter Grading**MARI 705 - Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy****Credits:** 3

Effective management of human activities in ocean, coastal and Great Lakes areas is critical to our future. This course provides a foundation for students from various backgrounds to understand US marine policy and how it relates to their future careers in research, policy, law, or management. While focused on US marine policy, the course also provides international context, including the UN Law of the Sea and other related conventions on pollution, fisheries, and resource protection.

**Equivalent(s):** INCO 705**Grade Mode:** Letter Grading

**MARI 730 - Research Diving Technologies****Credits:** 4

Certified divers receive extensive training in the methods, specific techniques, and challenges required to conduct underwater research in the Gulf of Maine. Progressively builds upon basic diving skills and knowledge until the student is competent to formulate and implement an independent pilot research project. The results will be written up and presented to the class. Completion of 100-hour course may lead to UNH/AAUS Scientific Diver certification. Prereq: SCUBA open water certification; college level science course; instructor approval.

**Equivalent(s):** KIN 730**Grade Mode:** Letter Grading**MARI 735 - Advanced SCUBA****Credits:** 4

Through this course students will become competent and highly educated in a variety of diving disciplines to prepare them to work underwater. Students will be exposed to a variety of diving-related topics through a series of lecture and hands-on practical applications. Topics covered are navigation, search and recovery, low visibility, night diving, surface supplied diving, boat driving, accident management, hyperbaric medicine, physics, physiology, working and scientific research methods for diving. Prereq: open water certification, college level science, instructor permission. Special Fee.

**Equivalent(s):** KIN 735**Grade Mode:** Letter Grading**MARI 795 - Special Topics****Credits:** 1-4

New or specialized topics not normally covered in regular course offerings.

**Repeat Rule:** May be repeated for a maximum of 5 credits.**Grade Mode:** Credit/Fail Grading

## Marine, Estuarine and Freshwater Biology (MEFB)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**MEFB 401 - Marine Estuarine and Freshwater Biology: Freshmen Seminar****Credits:** 1

The purpose of this course is threefold: First to acquaint freshmen MEFB majors to the wide range of topics that are included in the broad area of marine, estuarine and freshwater biology. Second, to introduce new UNH students to many of the MEFB faculty at UNH and give them the opportunity to become aware of the types of research that is being conducted at UNH. Finally, to begin teaching freshmen how to read the primary literature, write concise summaries of papers they read, give oral presentations to their peers, and understand how scientific knowledge is acquired and disseminated. Students attend a series of seminars presented by a wide range of MEFB faculty. The topics presented vary from year to year depending on the faculty that agree to participate. In addition students are required to read the current literature, write short papers and give presentations to the class. Cr/F.

**Grade Mode:** Credit/Fail Grading**MEFB 403 - Investigative Marine Biology Laboratory****Credits:** 2-4

This course is an intensive marine-based introduction to the scientific method and experimental biology taught at Shoals Marine Laboratory. The course takes advantage of the unique learning opportunities afforded by the pristine marine environment (especially the intertidal) around Appledore Island. The overall course philosophy is to allow students to learn the scientific method by doing it themselves under the guidance of veteran marine biologists. The course is structured around two class projects that are designed to expose students to concepts and techniques in marine ecophysiology and biomechanics. Permission required. Special fee. (Summers only at Shoals Marine Lab.)

**Grade Mode:** Letter Grading**MEFB 410 - Marine Immersion****Credits:** 2

An intensive 2-credit course for incoming freshmen, surveying a range of marine-related fields (with an emphasis on biology and ecology), research approaches, and organisms. The course is based at the Shoals Marine Laboratory on Appledore Island, where students, and some faculty, will be in residence. "Marine Immersion" introduces students to the breadth, excitement, and challenges of marine sciences through lectures, demonstrations, and field experiences offered by a cohort of UNH faculty, and through short research projects carried out on the island. It also introduces them to resources and opportunities available at UNH, provides an opportunity to get to know some of their professors, and lets them begin building a network among their peers even before they arrive in Durham. Special fee. (Summers only at Shoals Marine Lab.)

**Equivalent(s):** ZOO 410**Grade Mode:** Letter Grading**MEFB 500 - Coastal Habitat Field Research Methods****Credits:** 4

This two-week intensive field based course is intended for students who wish to explore and gain proficiency in various research and assessment methods of terrestrial and aquatic plant communities of the Isles of Shoals and nearby coastal habitats of the Seacoast and Great Bay Estuary. Topics covered will include quantitative surveys methods, GIS based an aerial (UAV) mapping of plant communities, taxonomy and systematics of major vascular taxa, island biogeography, rare species ecology and conservation, and the management of invasive species. Through both field and classroom exercises, we will use a variety of sampling protocols to document the existing plant communities, contribute to ongoing plant community studies, investigate the floristic changes that the Isles of Shoals have experienced from past to present, and use these data to predict trends into the future to help preserve their unique flora. Student will use skills developed in class to design and implement brief field research project in a related topic of their choice. Prereq: BIOL 411 or BIOL 412. Permission required. Special fee. (Summers only at Shoals Marine Lab.)

**Grade Mode:** Letter Grading**MEFB 503 - Introduction to Marine Biology****Credits:** 0 or 4

Emphasizes the organization of marine biological communities. Various marine environments pelagic, benthic, temperate, tropical, and their characteristic communities. Major emphasis on the approaches (e.g., analysis of energy flow and predator-prey interactions) used to analyze marine communities as well as the sampling techniques employed for each approach and the characteristic habitat type. Prereq: BIOL 411 and BIOL 412. Special fee.

**Equivalent(s):** BOT 503, PBIO 503, ZOO 503**Grade Mode:** Letter Grading

**MEFB 504 - Field Wildlife Forensics****Credits:** 2

Introduction to forensic science and the utilization of marine biology within the justice system. Comprehensive instruction concerning the recognition, documentation, collection, and preservation of physical evidence. Students develop practical incident response, scene management, and forensic teamwork skills. Prereq: BIOL 411 or BIOL 412. Special fee. Permission required. (Summers only at Shoals Marine Lab.)

**Grade Mode:** Letter Grading**MEFB #505 - Introduction to Applied Science Communication****Credits:** 4

In this course students develop the capacity to solve increasingly challenging problems with greater independence. Students fill their science communication "tool box," learning how to engage a nonscientist audience. They will be introduced to video production, podcasts, Wikipedia editing, public science events, social media platforms, blogging and press release writing. After gaining basic skills with these communication platforms and tools, students will apply their skills to a topic of their own research interest on the island. Students will actively participate in a local public science event (Rock talks) and learn how to start a science cafe on their own. Students will receive feedback from their peers and their instructors, and by the end of this course they will become more effective science communicators. Skills gained in this course in this unique environment can be applied to any research field and are essential for every scientist. Prereq: BIOL 411, BIOL 412. Special Fee. (Summers only at Shoals Marine Lab.)

**Grade Mode:** Letter Grading**MEFB 506 - Marine Parasitology and Disease****Credits:** 4

This course will focus on one of the most diverse and fascinating groups of marine organisms: parasites. The course will explore marine parasites and pathogens at multiple levels, including: (1) the evolutionary perspective with an emphasis on coevolutionary relationships; (2) parasitic diseases and life cycles (from simple to complex); (3) taxonomic and phylogenetic understanding of parasite and host groups (with a focus on metazoan parasites and hosts); (4) ecological implications of parasitism in marine systems at the population, community, and ecosystem levels; and (5) the effects of human induced global change on parasitism in marine communities. Prereq: Biol 411, BIOL 412. Special Fee. (Summers only at Shoals Marine Lab.)

**Grade Mode:** Letter Grading**MEFB #507 - Examining Marine Climate Changes on Appledore Island, ME****Credits:** 2

Marine climatic changes will severely impact ocean-based ecosystems, coastlines, and human communities. Hands-on inquiry research in this course at the Shoals Marine Laboratory located on Appledore Island, ME will involve students in examining alterations to the marine environment due to global climatic changes. Students will use the Columbia University-National Aeronautics and Space Administration (NASA) Goddard Institute for Space Studies (GISS) Educational Global Climate Model (EdGCM) and smartphone applications to envision future shorelines. Guest lectures and fieldwork will be led by marine and climate scientists from University of New Hampshire and the Woods Hole Oceanographic Institution and involve examination of changes to the littoral zone, Gulf of Maine, and the world's oceans more broadly. Topics covered in this one-week field course include: Examining the evidence that the Earth's climate is changing, the greenhouse effect and natural forcings on global climate, climate change and sea-level rise, sea-levels and coasts of the geologic past, alterations to ocean chemistry and temperature, marine ecological impacts, human coastal impacts, and possible policy solutions. This course is targeted toward early and mid-career students with backgrounds in Earth and environmental science, marine science, or environmental policy. Prereq: BIOL 411, BIOL 412. Special Fee. (Summers only at Marine Shoals Lab.)

**Grade Mode:** Letter Grading**MEFB 508 - Marine Ecosystem Research and Management****Credits:** 4

This course challenges students with real-world problems in the Gulf of Maine related to ecosystem research and management. Students learn the tools to conduct field and laboratory research and how to apply these tools in a real-world conservation management problem. Students work in small groups to design and implement and short research project. Results are presented to local and regional conservation practitioners in the Gulf of Maine. One semester of college biology should be taken prior to this course. Special Fee.

**Grade Mode:** Letter Grading**MEFB 510 - Field Ornithology****Credits:** 4

Introduces field ornithology focusing on the biology, ecology, and behavior of avifauna on the Isles of Shoals. Includes such ornithological field methods as censusing techniques, territory mapping, banding, behavioral observation, and creating a field notebook. Fieldwork is designed to supplement many classroom concepts, including territoriality, breeding biology, and survivorship. Prereq: one year of college-level biology. Lab. Special fee. Permission required. (Summers only at Shoals Marine Lab.)

**Equivalent(s):** ZOOL 510**Grade Mode:** Letter Grading**MEFB 530 - Evolution and Marine Diversity****Credits:** 4

Patterns of diversity and processes of evolution. Topics include the diversity of life, the fossil record, macro-evolutionary patterns, the genetics and developmental basis of evolutionary change, processes at the population level, evolution by natural selection, modes of speciation, long-term trends in evolution, and human evolution. Prereq: BIOL 411 or BIOL 412. Special fee. Permission required. (Summers only at Shoals Marine Lab.)

**Grade Mode:** Letter Grading



**MEFB 535 - Marine Mammal Biology****Credits:** 4

This course explores the biology and conservation of the whales and seals, with a particular focus on species of the Gulf of Maine. Lectures examine many facets of marine mammal science including: taxonomy and species diversity, morphological and physiological adaptations for life in the sea, foraging ecology and behavior, reproductive cycles, bio-acoustics, anthropogenic interactions, and management of threatened species. Land and open water observations of whale and seal behavior give students hands on opportunities to study marine mammals in the field. Prereq: BIOL 411 or BIOL 412. Special fee. Permission required. (Summers only at Shoals Marine Lab.)

**Grade Mode:** Letter Grading**MEFB 600 - Field Experience in Marine, Estuarine, and Freshwater Biology****Credits:** 1-4

A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty adviser selected by the student.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**MEFB 625 - Introduction to Marine Botany****Credits:** 5

Life history, classification, and ecology of micro- and macroscopic marine plants, including phytoplankton, seaweed, and salt marsh plants, and the interactions between humans and marine plant communities. Occasional Saturday morning field trips. Prereq: BIOL 412 or BIOL 409 or permission. Special fee. Lab. Offered alternating years only.

**Equivalent(s):** BOT 625, PBIO 625**Grade Mode:** Letter Grading**MEFB 628 - Marine Invertebrate Evolution and Ecology****Credits:** 5

Stresses the rich diversity of marine invertebrates by integrating phylogenetic trends with physiological and behavioral adaptation, and with ecological and symbiotic interactions. Offers a comparative survey of invertebrates from protozoans to protochordates; deals with aspects of form and function, development, evolution, classification, ecology, and natural history. Students work with live and preserved animals. Extensive dissections and a field component are required. Prereq: BIOL 411 and BIOL 412. Special Fee.

**Grade Mode:** Letter Grading**MEFB #630 - Biodiversity and Biology of Marine Invertebrates****Credits:** 4

An introduction to the biology and evolution of the major invertebrate phyla, concentrating on marine representatives. Emphasis placed on the evolution of form and function, and the ecology, behavior, physiology, chemical ecology, and natural history of invertebrates. Appledore Island's unique location provides an excellent venue for the study of freshly collected and in situ representatives of most of the major phyla. Special fee. (Summers only at Shoals Marine Lab.) Prereq: one year college level biology. Permission required. Special Fee. (Summers only at Shoals Marine Lab.)

**Equivalent(s):** ZOOL 628, ZOOL 630**Grade Mode:** Letter Grading**MEFB 631 - Ecotoxicology and Quantitative Reasoning****Credits:** 4

An introduction to the field of ecotoxicology through hands-on laboratory research on the impact of biotoxins on wildlife, humans and ecosystems. Focus of the course is on development of the students ability to design and carry out actual research projects using modern technique in this field. Concepts and application of quantitative thinking and biostatistics are integrated throughout the course. Results are communicated through oral and written reports, publications and posters. Pre- or Co-reqs: BIOL 411, BIOL 412, CHEM 403, CHEM 404.

**Grade Mode:** Letter Grading**MEFB 674 - Ecology and Marine Environment****Credits:** 4

Introduces the marine sciences with an emphasis on field work in natural habitats. Examines aspects of the systematics, morphology, physiology, behavior, and ecology of marine organisms, including intertidal plants and invertebrates, fishes, marine mammals and birds; fisheries biology; oceanography, marine geology; and human impacts on the marine environment. Sessions include lectures, discussions, field work, experience aboard a coastal research vessel, and excursions to distinctive habitats. Offered in cooperation with Cornell University. Students may not take Field Marine Science after taking Field Marine Biology and Ecology. Prereq: one full year of college-level biology/or permission. (Summers only at Shoals Marine Lab.) Permission required. Special Fee. (Summers only at Shoals Marine Lab.)

**Equivalent(s):** ZOOL 674, ZOOL 675**Grade Mode:** Letter Grading**MEFB 702 - Sustainable Marine Fisheries****Credits:** 4

An intensive course for undergraduate students that introduces students to the complex challenges facing today's fishing industry, which is being asked to simultaneously sustain the livelihood of fishermen while meeting long-term conservation goals. The course is held both at the UNH Campus and at the Shoals Marine Laboratory. New England fisheries are used as a case-study for this course through global fishing management, trends, and issues are also discussed. Special fee. Permission required. (Summers only at Shoals Marine Lab.)

**Grade Mode:** Letter Grading**MEFB 714 - Field Animal Behavior****Credits:** 4

An animal's behavioral patterns represent its abilities to deal with the environment dynamically. Course focuses on ecological and evolutionary significance of behavioral patterns found in all organisms, particularly those animals that inhabit coastal marine environments. Strong emphasis on methods of behavioral research and interpretation of behavioral patterns using field observations of diverse fauna of Appledore Island and surrounding waters. Prereq: one year college biology or permission. Special fee. Permission required. (Summers only at Shoals Marine Lab.)

**Equivalent(s):** ZOOL 714**Grade Mode:** Letter Grading



**MEFB 717 - Lake Ecology****Credits:** 4

Introduces the ecology of freshwater systems with emphasis on lakes. Origins of lakes and the effects of watersheds on lake chemistry and nutrient cycling are explored. Other topics include the impact of human disturbances on productivity and aquatic food webs and methods used for the management and restoration of lakes. Comparisons are made of the structure and functions of lake ecosystems found in temperate, tropical and arctic regions. Prereq: general biology.

**Equivalent(s):** BOT 717, PBIO 717, ZOOL 717**Grade Mode:** Letter Grading**MEFB 719 - Field Studies in Lake Ecology****Credits:** 4

Ecology of lakes and other freshwater habitats examined through field studies. Emphasizes modern methods for studying lakes; analysis and interpretation of data; and writing of scientific papers. Seminars on research papers and student presentations of class studies. Field trips to a variety of lakes, from the coastal plain to White Mountains; investigate problems, such as eutrophication, acidification, biodiversity and biotoxins. Capstone experiences include interaction with state agencies, lake stakeholders and the submission of written manuscripts for publication. Prereq: introductory biology. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** BOT 719, PBIO 719, ZOOL 719**Grade Mode:** Letter Grading**MEFB 720 - Marine Invasive Species: Ecology, Evolution and Management****Credits:** 4

This course explores the spread, establishment, and impact of invasive species. Students will become familiar with ecological and evolutionary theories pertaining to species invasions, and methods for assessing their spread and impact at local and global scales. The course examines: (1) ecological impacts and predictors of invasive species; (2) evolutionary insights of invasions; (3) taxonomic identification and survey techniques; (4) management implications of invasive species; and (5) the effects of global change on their spread. One semester of college biology or equivalent should be taken prior to this course. Special Fee.

**Grade Mode:** Letter Grading**MEFB 721 - Aquatic Invasive Species****Credits:** 4

Capstone course for a limited number of biological science majors to work closely with and help teach a Discovery course for non-majors in biology. Involves lectures, discussions, and laboratory and field exercises and write-ups focusing on managing aquatic invasive species based on an understanding of their ecology. Special Fee.

**Grade Mode:** Letter Grading**MEFB 725 - Marine Ecology****Credits:** 4

Marine environment and its biota, emphasizing intertidal and estuarine habitats. Includes field, laboratory exercises, and independent research project. Prereq: general ecology; permission. Marine invertebrate zoology, oceanography, and statistics are desirable. Special fee. (Offered alternate years.)

**Equivalent(s):** PBIO 725, ZOOL 725**Grade Mode:** Letter Grading**MEFB 730 - Underwater Research****Credits:** 4

Hypothesis testing and experimental design, theoretical and practical aspects of sampling, and critiques of current research papers. Includes special problems of conducting research underwater (diving physics and physiology, theory and use of diving tables, hyperbaric medicine) and underwater techniques (underwater photography and video, photo quadrates, tagging and marking, cages and enclosures). Students must supply their own equipment. Students with special research interests are encouraged to enroll in an additional third week of independent underwater research. Prereq: recognized scuba certification, a medical examination, one year of biology or other supporting science. Special fee. Permission required. (Summers only at Shoals Marine Lab.)

**Equivalent(s):** KIN 730, ZOOL 730**Grade Mode:** Letter Grading**MEFB #732 - Lake Management****Credits:** 4

Lectures and seminars on interpreting lake water quality, developing a natural history inventory for lakes, the process of creating a lake management plan, and resolution of conflicting uses of lakes. Students develop lake management plans in cooperation with governmental agencies and lake associations. Guest speakers from state agencies and non-governmental organizations. Introduces use of GIS (Geographic Information Systems) methods for the analysis of lakes and watersheds. Presents lake management issues from scientific and social science points of view. Open to students from all disciplines. (Also offered as ZOOL 732.) Special fee. Lab.

**Equivalent(s):** BOT 732, PBIO 732, ZOOL 732**Grade Mode:** Letter Grading**MEFB 741 - Sharks: Biology and Conservation****Credits:** 4

The last 30 years have produced an explosion of new information on the biology of the approximately 1,000 living species of sharks, skates, rays, and chimaeras, which collectively make up the group Chondrichthyes. This course will cover advanced topics in the evolution, diversity, anatomy, functional morphology, physiology, sensory systems, behavior, reproduction, development, and conservation of cartilaginous fishes. Prereq: BIOL 411, BIOL 412; ZOOL 518 or ZOOL 625. Special Fee. (Summers only at Shoals Marine Lab.)

**Grade Mode:** Letter Grading**MEFB 747 - Aquatic Plants in Restoration/Management****Credits:** 4

A field-intensive class focusing upon freshwater and marine vascular plants with an emphasis on species commonly associated with ecological restoration, the identification and conservation of rare species, and the adaptations and management of invasive species of aquatic habitats in New England. Field trips emphasize the flora of various wetland habitats, including open water and vegetated fresh water wetlands, as well as coastal and estuarine habitats. Lectures and readings examine the current trends in research and management focusing upon specific taxa and pertinent facets of their taxonomy, physiology, and natural history. Prereq: BIOL 566 or permission. Special fee. Offered alternating years only.

**Equivalent(s):** BOT 747, PBIO 747**Grade Mode:** Letter Grading

**MEFB #750 - Marine Ecological Genomics****Credits:** 4

This course combines fieldwork for sample collection with extensive training in marine genomics research approaches including next generation sequence analysis, phylogenomics, differential gene expression and population genomics. Prereq: BIOL 411 and BIOL 412. Special fee.

**Grade Mode:** Letter Grading**MEFB 751 - Research in Marine Biology****Credits:** 4

Introduces the adaptations of organisms to marine environments and the role these adaptations have in structuring marine communities using an experimental approach. Emphasizes experimental design, implementation, data analysis, and scientific presentations. Prereq: one year of college-level biology or permission. Additional experience in biology, ecology or physiology is recommended. Prereq: BIOL 411, BIOL 412. Special fee. (Summers only at Shoals Marine Lab.)

**Equivalent(s):** ZOOL 751**Grade Mode:** Letter Grading**MEFB 754 - Anatomy and Function of Marine Vertebrates****Credits:** 4

The course is designed to introduce students to a comparative study of the principal organ systems of vertebrates (i.e., fishes, sea turtles, marine birds, marine mammals) that are specifically adapted to the marine environment. Rather than focusing only on description of anatomical structure, the anatomy of structures are investigated with function, biological role, and evolutionary relationships. Laboratory exercises cover osteology, dissection, behavior and biomechanics. Special fee. Prereq: one year college biology/or permission. Permission required. (Summers only at Shoals Marine Lab.)

**Equivalent(s):** ZOOL 753, ZOOL 754**Grade Mode:** Letter Grading**MEFB 755 - Biological Oceanography****Credits:** 3

Biological processes of the oceans, including primary and secondary production, trophodynamics, plankton diversity, zooplankton ecology, ecosystems and global ocean dynamics. Prereq: BIOL 411 or BIOL 412 or equivalent.

**Equivalent(s):** ESCI 750, ZOOL 750**Grade Mode:** Letter Grading**MEFB 770 - Senior Seminar in Marine, Freshwater, and Estuarine Biology****Credits:** 2

Explore and synthesize your undergraduate MEFB knowledge and skills through an integrated outlook at a topic relating to your professional future. Each semester revolves around a different overarching topic on which students read assigned topical papers, prepare critical analyses, and give presentations to the class.

**Grade Mode:** Letter Grading**MEFB 772 - Fisheries Biology: Conservation and Management****Credits:** 4

Globally, many fished populations are declining, but 3.2 billion people eat fish and the average human eats >40 pounds of fish a year. This course identifies what biological characteristics are important to management and how they are measured. The course also explores quantitative methods describing fishery-population interactions and other management tools. Lastly, students will learn about the impacts of fishing on ecosystems. Prereq: BIOL 411 and BIOL 412 or equivalent.

**Equivalent(s):** ZOOL 772**Grade Mode:** Letter Grading**MEFB 773 - Physiology of Fishes****Credits:** 4

Investigates the physiological processes responsible for maintaining homeostasis in fishes. Focuses on the function and regulation of the major organ systems during stress and environmental adaptation. Topics include reproduction, osmoregulation, digestion, endocrinology, and sensory perception.

**Grade Mode:** Letter Grading**MEFB 795 - Independent Investigations in Marine, Estuarine, and Freshwater Biology****Credits:** 1-4

Independent study in a topic related to Marine, Estuarine, or Freshwater Biology, arranged by the student with a faculty sponsor. Enrollment by permission only.

**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 5 times.

**Grade Mode:** Letter Grading**MEFB 799H - Honors Senior Thesis in Marine, Estuarine, and Freshwater Biology****Credits:** 2-4

Independent research requiring a written proposal, a thesis, and a final public presentation (e.g. the Undergraduate Research Conference). Intended for MEFB majors completing Honors-in-major requirements. Contact MEFB program coordinator prior to senior year to arrange supervision and obtain permission. Two consecutive semesters. (4 credit minimum total; 8 credits maximum).

**Attributes:** Honors course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

## Marketing (MKTG)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**MKTG 520 - Topics in Marketing****Credits:** 1-4

Special topics covering a variety of marketing principles, topics vary by semester.

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Letter Grading**MKTG 530 - Survey of Marketing****Credits:** 4

Focuses on marketing as the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods and services to create exchanges that satisfy individual and organizational objectives. For business administration minors and non-business administration majors.

**Equivalent(s):** MKTG 550

**Mutual Exclusion:** No credit for students who have taken ADMN 585, HMG2 #600.

**Grade Mode:** Letter Grading

**MKTG 547 - Promotion and Advertising****Credits:** 4

Focuses on advertising and promotions while providing coverage of other marketing communication tools (direct marketing, point-of-purchase, personal selling, public relations). Examines both traditional and electronic/online/digital approaches to advertising and promotions as means to each audiences with messages that support the organization's goals. Prereq: MKTG 550.

**Equivalent(s):** MKTG 557**Grade Mode:** Letter Grading**MKTG 620 - Topics in Marketing****Credits:** 4

Special topics covering a variety of marketing principles, topics vary by semester. Prereqs: MKTG 550 or MKTG 530 or ADMN 585.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**MKTG 620T - Topics in Marketing - Study Away****Credits:** 4

Special topics covering a variety of marketing principles, topics vary by semester. Prereq: MKTG 550 or MKTG 530 or ADMN 585. Special Fee.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**MKTG 644 - Retail Management in an Omnichannel World****Credits:** 4

Success in retail requires managing multiple channels - online, traditional brick & mortar, and hybrid combinations. This course examines a broad range of retail management topics covering retailer types, selection of channels and locations, understanding online and in-store shopper behavior, financial strategy, purchasing, merchandise assortments including across products and services retailing, pricing, visual merchandising, and customer service and experience. Prereq: ADMN 585 or MKTG 550 or MKTG 535.

**Equivalent(s):** MKTG 754**Grade Mode:** Letter Grading**MKTG 649 - Foundations of Personal Selling****Credits:** 4

The Foundations of Personal Selling combines heavy experiential learning with the academic principles of relationship selling to prepare students for the professional world. Students learn personal selling as they develop an understanding of, and appreciation for, applying the consultative sales process through partnering with customers. This course is ideal for those exploring a career in sales or simply interested in knowing how to sell their own strengths.

**Equivalent(s):** MKTG 559, MKTG 759**Grade Mode:** Letter Grading**MKTG 650 - Professional Sales Group****Credits:** 2

The Professional Sales Group is an elite experiential sales and leadership course where students actively train for, host, and compete in sales competitions and business networking events. These sales role-play competitions use real business case scenarios, with corporate professionals and alumni as buyers & judges, to simulate selling experiences for the students. Students in good standing may retake the course.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**MKTG 652 - Digital Marketing Agency****Credits:** 2

Voice Z gives students the opportunity to gain real-world marketing experience by working hand in hand with clients to create impactful and innovative digital marketing campaigns. Admission to the course is competitive through an application process each April for the following year. Students accepted into the Voice Z Digital Marketing Agency for the Fall Semester are expected to continue through the Spring semester.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**MKTG 689 - Advanced Sales****Credits:** 4

Advanced Sales is for students looking to enter a professional sales career upon graduation. This course builds on the consultative and relationship selling processes, concepts and experiences in their sales introductory course. Students learn and practice adaptability through cases, exercises, and role-plays while introducing, and using, increasingly important sales enabling technologies. Key skill components covered include prospecting, time management, and communicating value through storytelling.

**Prerequisite(s):** (MKTG 559 with a minimum grade of D- or MKTG 649 with a minimum grade of D- or MKTG 759 with a minimum grade of D-).**Grade Mode:** Letter Grading**MKTG 720 - Topics in Marketing II****Credits:** 4

Special topics covering a variety of marketing principles, topics vary by semester. Prereq: ADMN 585.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**MKTG 720T - Topics/Study Away****Credits:** 4

Special topics study away; may be repeated. Prereq: ADMN 585 or HMGD #600. Special fee.

**Co-requisite:** INCO 589**Grade Mode:** Letter Grading**MKTG 720W - Topics in Marketing II****Credits:** 4

Special topics covering a variety of marketing principles, topics vary by semester. Prereq: ADMN 585.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**MKTG 750 - Marketing Strategy****Credits:** 4

An integrative marketing course designed to provide the student with a cohesive understanding of marketing decision making through the exploration of marketing problems with an emphasis on qualitative analysis as well as strategy formulation. Through the use of case studies, the course is designed for students who want to learn and apply what they learn, and thus emphasizes both the understanding and the application of concepts and practices in marketing strategy. Prereq: ADMN 585. MKTG 752 and/or MKTG 753 are recommended.

**Equivalent(s):** ADMN 750**Grade Mode:** Letter Grading

**MKTG 752 - Marketing Research****Credits:** 4

Understanding fundamental concepts, tools, and methods used in conducting a marketing research study. Taking general managerial problems and structuring them in terms of specific questions amenable to research. Developing a competence in designing and conducting common qualitative and quantitative research (e.g., survey research). Students will learn various statistic techniques commonly used in marketing research and be able to use these analyses to provide managerial recommendations. Prereq: ADMN 585 or HMGT #600.

**Equivalent(s):** ADMN 752**Grade Mode:** Letter Grading**MKTG 753 - Consumer/Buyer Behavior****Credits:** 4

Covers concepts, models, and theories from the behavioral sciences applied to consumer decision making and purchasing behavior. Examines consumer behavior from economic, psychological, sociological, and anthropological perspectives. Topic coverage includes discussion of marketing strategies and tactics to understand and influence consumer choice. Prereq: ADMN 585 or HMGT #600. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**MKTG 756 - International Franchising****Credits:** 4

Designed to provide an understanding of franchising as a system of distribution and business expansion. Franchising is studied from both the perspectives of the franchise and the franchiser. In addition, economic, financial, and legal issues associated with franchising are covered. By the end of the course, students have skills and sources of information that permit sound assessment of the business opportunities available in franchising. Prereq: ADMN 585 or HMGT #600. (Also offered as HMGT 756.)

**Grade Mode:** Letter Grading**MKTG 757 - Integrated Marketing Communication****Credits:** 4

Provides balanced coverage of all marketing communication tools: advertising, sales promotion, public relations, direct marketing, personal selling, POP, packaging, sponsorships, licensing, and customer service. Emphasizes the integration of these tools to send target audiences a consistent, persuasive message that promotes the organization's goals. Prereq: ADMN 585 or HMGT #600.

**Grade Mode:** Letter Grading**MKTG 760 - International Marketing****Credits:** 4

Environmental factors affecting international trade: culture and business customs, political and legal factors and constraints, economic and technological development, and the international monetary system. Integration of these with the marketing management functions of market research and segmentation; product, promotion, distribution, and pricing decisions. Prereq: ADMN 585 or HMGT #600.

**Equivalent(s):** ADMN 760**Grade Mode:** Letter Grading**MKTG 763 - Marketing Analytics****Credits:** 4

Marketing Analytics introduces students to the fascinating world of marketing analytics. It provides a broad perspective on product, consumer, marketing-mix, and digital analytics areas. It blends the art and science of marketing and orients students to the systematic use of data and empirical models, which enhance the decision-making of a company about its customers, competitors, and the industry. Prereq: ADMN 585 or HMGT #600. Pre- or Coreq: ADMN 580.

**Grade Mode:** Letter Grading**MKTG 764 - New Product Development****Credits:** 4

Tactical and strategic issues concerned with the development and marketing of product and service innovations. Equips students with the concepts, tools, and approaches useful in the development, management, and marketing of products and services. Provides an integrated experience of the process of uncovering customer problems, understanding these problems, and providing superior solutions. Prereq: ADMN 585 or HMGT #600.

**Grade Mode:** Letter Grading**MKTG 765 - Applications in Digital Marketing****Credits:** 4

This class will introduce students to the different disciplines that make up digital marketing in order to better prepare them for roles as either digital marketing generalists (where they will need to appreciate and possess a broad understanding of these disciplines), or as digital marketing specialists, (where they will need to focus on and master one of these disciplines). Prereq: ADMN 585.

**Grade Mode:** Letter Grading**MKTG 775 - Marketing Workshop****Credits:** 4

This course is open only to senior marketing option students and serves as their capstone learning experience. Students work in small teams on a real-world marketing problem given them by outside business, non-profits, or government agencies. The teams conduct extensive field research, formulate strategy, and then implement, or test marketing campaign ideas and programs. Prereq: ADMN 585, 2 courses from MKTG 752, MKTG 753, or MKTG 763.

**Attributes:** Writing Intensive Course**Equivalent(s):** MKTG 762**Grade Mode:** Letter Grading

## Materials Science (MS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**MS 401 - Science of Stuff****Credits:** 4

Materials Science is a relatively new and fast growing field that studies all types of materials, including metals, ceramics, polymers, semiconductors, and composites. Material Science explores how stuff is put together, how to change stuff and make it better, the properties and applications of stuff, and even how to make totally brand new stuff. This course explores materials from various topic areas, including sports, forensics, medicine and health, fashion, architecture and construction, music and art, food and transportation from the perspective of materials science. Students explore additional materials independently as well as practice the process of science through simple experimentation and data analysis. Special fee.

**Attributes:** Physical Science(Discovery)**Grade Mode:** Letter Grading**MS 402 - Nanoscience in Energy****Credits:** 4

An introduction to nanomaterials, or matter with important structural features that are nanometers in size. A nanometer is very small—a billionth of a meter; a sugar molecule is only about 1 nm wide. Scientists and engineers are now building materials by manipulating atoms or groups of atoms. The course explores how materials with nanoscale features demonstrate novel and beneficial properties for energy applications. The growing energy demands of the planet require timely, if not urgent, innovative multidisciplinary solutions. These solutions require an informed citizenry knowledgeable about the various perspectives related to powering our planet. This course is a means to inform the non-scientist student about the physical science aspects of energy, nanomaterial solutions for our energy needs, along with some historical, economic, and environmental perspectives. The energy discussion provides a backdrop for our exploration of the structure and properties of nanomaterials. Special fee.

**Attributes:** Physical Science(Discovery)**Grade Mode:** Letter Grading**MS 762 - Electronic Materials Science****Credits:** 4

This course provides engineering and science students with a foundation in the materials science of modern electronic devices. Topics include bonding and structure of solids, electrical and thermal conduction, elements of quantum mechanics, band theory of electrons in solids, semiconductors, magnetism, dielectrics and superconductors. Examples of applications are taken primarily from the fields of semiconductor electronics and nanotechnology, and illustrate how the electrical and optical properties of devices are obtained from their compositions, crystal structures and microstructures. Permission of instructor required.

**Equivalent(s):** ME 762**Grade Mode:** Letter Grading

## Mathematics & Statistics (MATH)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**MATH #302 - Elementary Math II****Credits:** 4

Review of elementary algebra, exponents, polynomials, factoring, rational exponents, and absolute value. Solving linear and quadratic equations and inequalities; systems of equations; radical equations. Linear functions and related notions; quadratic functions. May not be taken for credit toward a bachelor's degree. Prereq: MATH 301 or the equivalent.

**Equivalent(s):** MATH 402**Grade Mode:** Letter Grading**MATH 400 - Freshman Seminar****Credits:** 1

A seminar experience that presents a mathematical culture associated with first-year college mathematics, including the ideas of abstraction, theorem and proof, and that provides a perspective of the diversity of mathematical areas of research and their interrelationships. Emphasis is on reading and writing mathematics. Cr/F.

**Grade Mode:** Credit/Fail Grading**MATH 418 - Analysis and Applications of Functions****Credits:** 4

Analysis and applications of algebraic and transcendental functions, with special emphasis on exponential, logarithmic, and trigonometric functions. Graphical analysis. Written projects are required on some or all of the following topics: rates of change, optimization, logarithmic or exponential modeling, and trigonometric functions. Intended for students planning to take MATH 425. Prereq: MATH #302 or equivalent. Not offered for credit if credit is received for MATH 424 or MATH 425.

**Equivalent(s):** MATH 305, MATH 405**Grade Mode:** Letter Grading**MATH 420 - Finite Mathematics****Credits:** 0 or 4

Topics selected from probability, systems of linear equations, matrix algebra, linear programming, mathematics of finance. Not a preparation for calculus. Prereq: MATH #302 or the equivalent. Not offered for credit to mathematics majors.

**Attributes:** Quantitative Reasoning(Disc)**Mutual Exclusion:** No credit for students who have taken MATH 422.**Grade Mode:** Letter Grading**MATH 421 - Pathways between Mathematics and the Arts****Credits:** 4

Exploration of the interaction between mathematics and the arts on numerous levels. The course builds on basic knowledge of elementary number systems to illuminate such topics symmetry, fractals, light, color, sound structures and musical materials. Students immediately apply new knowledge and techniques to make computer generated 2-D and 3-D images, animations and sound/music.

**Attributes:** Quantitative Reasoning(Disc)**Grade Mode:** Letter Grading**MATH 422 - Mathematics for Business Applications****Credits:** 4

Functions, sets and their use in mathematical models in business, economics and finance, including probability, linear systems and mathematics of finance; basic concepts of differential calculus and relevant applications.

**Attributes:** Quantitative Reasoning(Disc)**Mutual Exclusion:** No credit for students who have taken MATH 420.**Grade Mode:** Letter Grading



**MATH 424A - Calculus for Social Sciences****Credits:** 4

Rational, exponential and logarithmic functions; associated derivatives and their applications; associated antiderivatives and their applications. Applications focus on contexts relevant to majors in the College of Liberal Arts and the Paul College. Not offered for credit to CEPS majors. Repeat rule applies for MATH 425 and MATH 424B. Students wanting a two-semester calculus course are strongly advised to take MATH 425-426. Those students who successfully complete MATH 424A and subsequently wish to continue their study of mathematics with MATH 426 are encouraged to complete supplementary modules available from the Mathematics Center (MaC).

**Attributes:** Quantitative Reasoning(Disc)**Equivalent(s):** MATH 424B, MATH 425**Grade Mode:** Letter Grading**MATH 424B - Calculus for Life Sciences****Credits:** 0 or 4

Rational, exponential and logarithmic functions; associated with derivatives and their applications; associated with antiderivatives and their applications. Applications focus on contexts relevant to majors in the College of Life Sciences and Agriculture. Not offered for credit for CEPS majors. Repeat rule applies for MATH 425 and MATH 424A. Students wanting a two-semester calculus course are strongly advised to take MATH 425-426. Those students who successfully complete MATH 424B and subsequently wish to continue their study of mathematics with MATH 426 are encouraged to complete supplementary modules available from the Mathematics Center (MaC).

**Attributes:** Quantitative Reasoning(Disc)**Equivalent(s):** MATH 424A, MATH 425**Grade Mode:** Letter Grading**MATH 425 - Calculus I****Credits:** 4

Calculus of one variable covering limits, derivatives of algebraic, trigonometric, exponential, and logarithmic functions; applications include curve sketching, max-min problems, related rates, and volume and area problems. Prereq: completing MATH 418 with a grade of C or better or qualifying with the placement evaluation. Beginning in Spring 2019 students who have taken MATH 418 may not take the placement test as a means of entry into MATH 425. (Repeat rule applies for MATH 424A and MATH 424B).

**Attributes:** Quantitative Reasoning(Disc)**Equivalent(s):** MATH 424A, MATH 424B, MATH 425H**Grade Mode:** Letter Grading**MATH 425H - Honors/Calculus I****Credits:** 4

Calculus of one variable covering limits, derivatives of algebraic, trigonometric, exponential, and logarithmic functions; applications include curve sketching, max-min problems, related rates, and volume and area problems. Prereq: completing MATH 418 with a grade of C or better or qualifying with the placement evaluation. (Not offered for credit if credit is received for MATH 424.) Enrollment in MATH 425H requires concurrent enrollment in PHYS 407H.

**Attributes:** Honors course; Quantitative Reasoning(Disc)**Equivalent(s):** MATH 425**Grade Mode:** Letter Grading**MATH 426 - Calculus II****Credits:** 4

Second course in calculus of one argument, techniques and applications of integration, polar coordinates, and series. Prereq: MATH 425.

**Equivalent(s):** MATH 426H**Grade Mode:** Letter Grading**MATH 426H - Honors/Calculus II****Credits:** 4

Second course in calculus of one argument, techniques and applications of integration, polar coordinates, and series. Prereq: MATH 425.

Enrollment in MATH 426H requires concurrent enrollment in PHYS 408H.

**Attributes:** Honors course**Equivalent(s):** MATH 426**Grade Mode:** Letter Grading**MATH 439 - Statistical Discovery for Everyone****Credits:** 4

Introduces the framework and concepts for learning with data. Emphasis on statistical discovery in everyday life and on drawing valid conclusion from data. Topics include: good and bad data, data ethics, how to conduct a valid survey, how to describe a population distribution; when to believe a poll; how to design an experimental study; how to avoid ambiguous results caused by "lurking" variables; how to make inference about an entire population based on a sample; how to describe relationships among variables; an understanding of the question of causation and chance in everyday life and in scientific studies, as well as the use and misuse of statistics in explaining what is statistical significance. This course has an activity-based learning component with lab exercises using statistical software for calculations without assuming a calculus background. The course may be used as a preparation for a more technical introductory statistics course. Science and Engineering students should take MATH 539 or MATH 644 according to their programs.

**Attributes:** Quantitative Reasoning(Disc)

**Mutual Exclusion:** No credit for students who have taken ADM 430, ADMN 420, ADMN 510, BIOL 528, EREC 525, HHS 540, MATH 539, MATH 644, PSYC 402, PSYC 402H, SOC 402, SOC #402H, SOC 502, SOC 502H.

**Grade Mode:** Letter Grading**MATH 444 - Excursions in Quantitative Reasoning****Credits:** 4

Problems involving quantitative reasoning (most are nontraditional, some are fun, while others are interdisciplinary) designed to inspire curiosity encourages students to formulate and evaluate questions, all the while slowly drawing them into the process of scholarly investigation. In this regard, in addition to traditional mathematics homework, students need to do research outside of class to write and present projects.

**Attributes:** Quantitative Reasoning(Disc); Inquiry (Discovery)**Grade Mode:** Letter Grading

**MATH 445 - Mathematics and Applications with MATLAB****Credits:** 4

Through the use of the MATLAB computation software, this course reinforces and builds on a student's mathematics foundation and previews more advanced mathematical concepts. The power and limitations of modern computational algorithms to solve real world problems are introduced and shown to influence nearly every aspect of modern society. The state-of-the-art computational tools afforded by MATLAB provide the student with a strategy for enhancing their knowledge and comprehension in subsequent Science, Engineering, or Technology themed courses. Prereq: MATH 418 or permission.

**Attributes:** Environment, TechSociety(Disc)**Mutual Exclusion:** No credit for students who have taken IAM 550.**Grade Mode:** Letter Grading**MATH 525 - Linearity I****Credits:** 6

Examines the fundamental role that linear models play in science and engineering; and the role of linearization in understanding nonlinear phenomena. Models are considered along several conceptual axes: discrete to continuous, one-dimensional to multidimensional, and static to dynamic, with an emphasis on the former. Mathematical areas of coverage include matrix algebra, concepts from calculus of several variables, difference equations, and linear transformations. Prereq: MATH 426, permission. Lab.

**Grade Mode:** Letter Grading**MATH 526 - Linearity II****Credits:** 6

Continuation of study of linear models and the process of linearization begun in MATH 525, with an emphasis on models of dynamic phenomena. Additional mathematical areas of coverage include differential equations, eigenvalue and eigenvector analysis, phase plane analysis, and additional concepts from vector calculus. Prereq: MATH 525, permission. Lab.

**Grade Mode:** Letter Grading**MATH 527 - Differential Equations with Linear Algebra****Credits:** 0 or 4

Fundamental methods of solving first-order equations, essentials of matrix algebra; higher-order linear equations, and linear systems; series solutions; Laplace transforms; selected applications. Prereq: MATH 426.

**Equivalent(s):** MATH 527H**Grade Mode:** Letter Grading**MATH 528 - Multidimensional Calculus****Credits:** 0 or 4

Partial differentiation; composite functions and chain rules; maximum and minimum; transformations; vector algebra; vector functions; gradient, divergence, and curl; curves and surfaces; multiple, line, and surface integrals; divergence, Green's and Stoke's theorem. Prereq: MATH 426.

**Grade Mode:** Letter Grading**MATH 531 - Mathematical Proof****Credits:** 4

Introduces reading and writing proofs in mathematics. The basic language of mathematics common to all branches of the subject, especially set theory and basic logic. Prereq: MATH 425; or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**MATH 539 - Introduction to Statistical Analysis****Credits:** 4

A first course introducing concepts of probability and scientific methods for data analysis. Exploratory data analysis, survey sampling, probability, discrete and continuous distributions, confidence intervals, hypothesis testing, comparing samples, linear regression, analysis of variance. Statistical software is used. Prereq: MATH 425; or permission. Offered primarily for mathematics majors; engineering majors should take MATH 644.

**Mutual Exclusion:** No credit for students who have taken ADM 430, ADMN 420, ADMN 510, BIOL 528, COMP 490, EREC 525, HHS 540, MATH 439, MATH 644, PSYC 402, PSYC 402H, SOC 402, SOC 502, SOC 502H.

**Grade Mode:** Letter Grading**MATH 545 - Introduction to Linear Algebra****Credits:** 4

Designed to reinforce ideas seen throughout the mathematics curriculum. Centered on a study of vector spaces and linear systems, beginning with a brief focus on systems of linear equations and progressing to a full discussion of linear transformation and vector spaces. The course includes a survey of properties of matrices, such as rank, kernel, eigenvalues, eigenvectors, and diagonalization. Prereq: MATH 426.

**Attributes:** Writing Intensive Course

**Mutual Exclusion:** No credit for students who have taken MATH 645, MATH 762.

**Grade Mode:** Letter Grading**MATH 601 - Exploring Mathematics for Teachers I****Credits:** 4

Provides prospective elementary teachers with the opportunity to explore and master concepts involving number systems and operations, data analysis and probability. Additional topics may include geometry, measurement, and algebraic thinking. Mathematical reasoning, problem solving, and the use of appropriate manipulatives and technology are integrated throughout the course. Readings, class discussions, and assignments focus on mathematics content as well as applicable theories of learning, curriculum resources, and state and national recommendations. The course models instructional techniques that can be adapted to the elementary curricula. (Not offered for credit if credit is received for MATH 621 or MATH 623; not offered for credit to CEPS majors.)

**Grade Mode:** Letter Grading**MATH 621 - Number Systems for Teachers****Credits:** 4

Ways of representing numbers, relationships between numbers, number systems, the meanings of operations and how they relate to one another, and computation within the number system as a foundation for algebra; episodes in history and development of the number system; and examination of the developmental sequence and learning trajectory as children learn number concepts. Prereq: permission.

**Equivalent(s):** MATH 602, MATH 701, MATH 702**Grade Mode:** Letter Grading

**MATH 622 - Geometry for Teachers****Credits:** 4

Explorations of the foundations of informal measurement and geometry in one, two and three dimensions. The van Hiele model for geometric learning is used as a framework for how children build their understanding of length, area, volume, angles and geometric relationships. Visualization, spatial reasoning and geometric modeling are stressed. As appropriate, transformational geometry, congruence, similarity and geometric constructions will be discussed. Prereq: permission.

**Equivalent(s):** MATH 602, MATH 702**Grade Mode:** Letter Grading**MATH 623 - Probability and Statistics for Teachers****Credits:** 4

An introduction to probability, descriptive statistics and data analysis; exploration of randomness, data representation and modeling. Descriptive statistics will include measures of central tendency, dispersion, distributions and regression. Analysis of experiments requiring hypothesizing, experimental design and data gathering. Prereq: permission.

**Equivalent(s):** MATH 701**Grade Mode:** Letter Grading**MATH 624 - Analysis of Secondary School Mathematics****Credits:** 4

Examines concepts from calculus and pre-calculus mathematics with an emphasis on connecting and logically refining the concepts of function, limit, sequences, series, and probability. Includes a deeper analysis of problems and topics drawn from secondary school mathematics with the kind of mathematical knowledge and sophistication that the student has gained from other collegiate mathematics courses. Proofs for many of the theorems that are typically introduced in a non-rigorous fashion in calculus are studied. Prereq: EDUC 500, MATH 425 and 545 (or equivalent); or permission. Offered in alternate years in the spring semester following MATH 623.

**Grade Mode:** Letter Grading**MATH 625 - Functions and Algebra for Teachers****Credits:** 4

Representation and analysis of mathematical structure using generalization and algebraic symbols and reasoning. Attention is given to transition from arithmetic to algebra, working with quantitative change, the description of and prediction of change, and concepts in discrete mathematics. Prereq: MATH 621.

**Grade Mode:** Letter Grading**MATH 632 - Financial Mathematics****Credits:** 4

A mathematical introduction to interest theory and an overview of mathematical models used to analyze and price standard financial instruments including: interest bearing accounts, stocks and bonds. Introduction to basic concepts used in mathematical finance including: random variables, mathematics of arbitrage, risk and diversification. Includes a substantive introduction to all aspects of the financial mathematics actuarial exam.

**Grade Mode:** Letter Grading**MATH 644 - Statistics for Engineers and Scientists****Credits:** 4

Introduces the design of controlled experiments and the collection and analysis of scientific data. Use of a statistical software package is an integral part of the course; interpreting and drawing conclusions from standard software output is emphasized. Graphical data analysis, statistical process control, regression and correlation, multifactor experimental designs, confidence intervals, hypothesis testing. Pre- or Co-req: MATH 426.

**Mutual Exclusion:** No credit for students who have taken ADM 430, ADMN 420, ADMN 510, BIOL 528, COMP 490, EREC 525, HHS 540, MATH 439, MATH 539, PSYC 402, PSYC 402H, SOC 402, SOC #402H, SOC 502, SOC 502H.

**Grade Mode:** Letter Grading**MATH 645 - Linear Algebra for Applications****Credits:** 4

Fundamental notions of vector space theory, linear independence, basis, span, scalar product, orthogonal bases. Includes a survey of matrix algebra, solution of systems linear equations, rank, kernel, eigenvalues and eigenvectors, the LU- and QR-factorizations, and least squares approximation. Selected applications in mathematics, science, engineering and business. Prereq: MATH 426.

**Mutual Exclusion:** No credit for students who have taken MATH 545, MATH 762.

**Grade Mode:** Letter Grading**MATH 647 - Complex Analysis for Applications****Credits:** 4

Complex numbers, analytic functions, Cauchy-Riemann equations, conformal mapping, contour integration, Cauchy's integral formula, infinite series, residue calculus, Fourier and Laplace transforms. Prereq: MATH 528. (Not offered for credit if credit is received for MATH 788.)

**Mutual Exclusion:** No credit for students who have taken MATH 788.

**Grade Mode:** Letter Grading**MATH 696 - Independent Study****Credits:** 1-4

Individual projects of study developed by the student and a faculty sponsor. Intended for students with superior scholastic achievement. May be taken as writing intensive. Prereq: a written proposal, including goals and assessment, endorsed by a faculty sponsor and approved by the department chairperson.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Equivalent(s):** MATH 696W**Grade Mode:** Letter Grading**MATH 696W - Independent Study****Credits:** 1-4

Individual projects of study developed by the student and a faculty sponsor. Intended for students with superior scholastic achievement. May be taken as writing intensive. Prereq: a written proposal, including goals and assessment, endorsed by a faculty sponsor and approved by the department chairperson.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Equivalent(s):** MATH 696**Grade Mode:** Letter Grading

**MATH #699 - Internship Experience****Credits:** 1

Provides the opportunity to apply and enhance knowledge in a setting associated with future professional employment. A written mid-semester report is required as well as a final report along with an oral presentation that is open to other undergraduates. Prereq: A written proposal, endorsed by a faculty sponsor and approved by the department chairperson (or designee), that outlines the goals, academic merit and assessment of the work experience. Only open to Math majors. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Credit/Fail Grading**MATH 700 - Introduction to Mathematics Education****Credits:** 4

General background information about mathematics education, such as theories of learning and teaching mathematics, mathematics curricula, classroom management, and techniques for the teaching and learning of mathematics that are common to all levels of mathematics education K-12. Prereq: MATH 426 and EDUC 500; or permission.

**Grade Mode:** Letter Grading**MATH 703 - Teaching of Mathematics in Grades K-5****Credits:** 4

Methods of teaching mathematics at the elementary school level; uses of technology, manipulatives, models, and diagrams; developing unit and lesson plans; assessment; instructional formats; teaching reading and writing in mathematics. Prereq: MATH 621 (or MATH 601); or permission.

**Grade Mode:** Letter Grading**MATH #708 - Teaching Mathematics in Grades K-8****Credits:** 4

Methods of teaching mathematics in grades K-8, uses of technology, manipulatives, models, and diagrams; developing unit and lesson plans; investigating instructional formats. Prereq: MATH 700 or permission. Offered in alternate years in the spring semester.

**Equivalent(s):** MATH 780**Grade Mode:** Letter Grading**MATH 709 - Teaching of Mathematics in Grades 6-12****Credits:** 4

Methods of teaching mathematics at the middle and high school levels; uses of technology, manipulatives, models, and diagrams; developing unit and lesson plans; assessment; instructional formats; teaching reading and writing in mathematics. Prereq: MATH 700; or permission.

**Equivalent(s):** MATH 791**Grade Mode:** Letter Grading**MATH 732 - Introduction to the R Software****Credits:** 1

This course provides a basic introduction to the open-sources statistical software R for students who have never used this software or have never formally learned the basics of it. Topics include: Numeric calculations, simple and advanced graphics, object management and work-flow, RStudio, user-contributed packages, basic programming, writing of functions, statistical modeling and related graphs, distributed computing, reproducible research and document production via markup language. Cr/F.

**Equivalent(s):** MATH 759**Grade Mode:** Credit/Fail Grading**MATH 734 - Statistical Computing****Credits:** 4

This is a course on statistics-oriented programming and common computational methodologies used in statistics. Students will learn principles and techniques of sample-splitting, cross-validation, simulation, bootstrap, and optimization, and how to implement them in R. The students will gain experience of reading/modifying, writing and debugging code, and how to speed up computation. Prereq: MATH 738 or MATH 739.

**Grade Mode:** Letter Grading**MATH 736 - Advanced Statistical Modeling****Credits:** 4

This is a course on statistical models behind normal linear model. Topics covered in this course include generalized linear model, linear mixed model, generalized additive model, generalized linear mixed model, generalized additive mixed model, and smoothing methods if time allows. Prereq: MATH 739.

**Grade Mode:** Letter Grading**MATH 737 - Statistical Methods for Quality Improvement and Design****Credits:** 4

Six Sigma is a popular, data-focused methodology used worldwide by organizations to achieve continuous improvement of their existing processes, products and services or to design new ones. This course provides a thorough introduction to the Six Sigma principles, methods, and applications for continuous improvement (DMAIC process) and an overview of Design for Six Sigma (DFSS). Both manufacturing and non-manufacturing (transactional Six Sigma) applications are included. Emphasis is placed on the use of case studies to motivate the use of, as well as the proper application of, the Six Sigma methodology. Formal Six Sigma Green Belt certification from UNH may be attained by successfully completing TECH 696. Prereq: MATH 539, MATH 644; or permission.

**Grade Mode:** Letter Grading**MATH 738 - Data Mining and Predictive Analytics****Credits:** 4

An introduction to supervised and unsupervised methods for exploring large data sets and developing predictive models. Unsupervised methods include: market basket analysis, principal components, clustering, and variables clustering. Important statistical and machine learning methods (supervised learning) include: Classification and Regression Trees (CART), Random Forests, Neural Nets, Support Vector Machines, Logistics Regression and Penalized Regression. Additional topics focus on metamodeling, validation strategies, bagging and boosting to improve prediction or classification, and ensemble prediction from a set of diverse models. Required case studies and projects provide students with experience in applying these techniques and strategies. The course necessarily involves the use of statistical software and programming languages. Undergraduate students are required to have junior or senior status to enroll in this course. Prereq: MATH 539 (or MATH 644); or permission.

**Mutual Exclusion:** No credit for students who have taken IT 630.**Grade Mode:** Letter Grading

**MATH 739 - Applied Regression Analysis****Credits:** 4

Statistical methods for the analysis of relationships between response and input variables: simple linear regression, multiple regression analysis, residual analysis and model selection, multi-collinearity, nonlinear curve fitting, categorical predictors, analysis of variance, analysis of covariance, examination of validity of underlying assumptions, logistic regression analysis. Emphasizes real applications with use of statistical software. Prereq: MATH 539 (or 644). Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**MATH 740 - Design of Experiments I****Credits:** 4

Course in design of experiments with applications to quality improvement in industrial manufacturing, engineering research and development, or research in physical and biological sciences. Experimental factor identification, statistical analysis and modeling of experimental results, randomization and blocking, full factorial designs, random and mixed effects models, replication and sub-sampling strategies, fractional factorial designs, response surface methods, mixture designs, and screening designs. Focuses on various treatment structures for designed experimentation and the associated statistical analyses. Use of statistical software. Prereq: MATH 539 (or 644); or permission.

**Grade Mode:** Letter Grading**MATH 741 - Survival Analysis****Credits:** 4

Explorations of models and data-analytic methods used in medical, biological, and reliability studies. Event-time data, censored data, reliability models and methods, Kaplan-Meier estimator, proportional hazards, Poisson models, loglinear models. The use of statistical software, such as SAS, JMP, or R, is fully integrated into the course. Prereq: MATH 739. (Offered in alternate years in the spring semester.)

**Grade Mode:** Letter Grading**MATH 743 - Time Series Analysis****Credits:** 4

An introduction to univariate time series models and associated methods of data analysis and inference in the time domain and frequency domain. Topics include: auto regressive (AR), moving average (MA), ARMA and ARIMA processes, stationary and non-stationary processes, seasonal ARIMA processes, auto-correlation and partial auto-correlation functions, identification of models, estimation of parameters, diagnostic checking of fitted models, forecasting, spectral density function, periodogram and discrete Fournier transform, linear filters, parametric spectral estimation, dynamic Fournier analysis. Additional topics may include wavelets and long memory processes (FARIMA) and GARCH Models. The use of statistical software, such as JMP, or R, is fully integrated into the course. Prereq: MATH 739. Offered in alternate years in the spring semester.

**Grade Mode:** Letter Grading**MATH 744 - Design of Experiments II****Credits:** 4

A second course in design of experiments, with applications in quality improvement and industrial manufacturing, engineering research and development, research in physical and biological sciences. Covers experimental design strategies and issues that are often encountered in practice: complete and incomplete blocking, partially balanced incomplete blocking (PBIB), partial confounding, intra and inter block information, split plotting and strip plotting, repeated measures, crossover designs, Latin squares and rectangles, Youden squares, crossed and nested treatment structures, variance components, mixed effects models, analysis of covariance, optimizations, space filling designs, and modern screening design strategies. Prereq: MATH 740; or permission.

**Grade Mode:** Letter Grading**MATH 745 - Foundations of Applied Mathematics I****Credits:** 4

An introduction to Partial Differential Equations (PDEs) and associated mathematical methods and the analytical foundation for applied mathematics. Topics include: PDE classification, superposition, separation of variables, orthonormal functions, completeness, convergence, Fourier Series, Sturm-Liouville eigenvalue problems, and eigenfunctions. Methods are introduced for the analysis and solution of boundary value problems, in particular, the Heat, Wave, and Laplace equations. Prereq: MATH 527 and MATH 528; or equivalent.

**Grade Mode:** Letter Grading**MATH 746 - Foundations of Applied Mathematics II****Credits:** 4

An introduction to special functions, asymptotic analysis, and transform methods applied to partial differential equations. Topics include: Boundary value problems in cylindrical coordinates, the Bessel equation and Bessel functions, Fourier-Bessel expansions in cylindrically symmetric spatial domains, the Fourier Transform, the Hilbert Transform, Cosine and Sine Transforms, problems on semi-infinite intervals, and Asymptotic Analysis. Prereq: MATH 527 and MATH 528; or equivalent.

**Grade Mode:** Letter Grading**MATH 747 - Introduction to Nonlinear Dynamics and Chaos****Credits:** 4

The mathematics of chaos and nonlinear dynamics. Topics include linear and nonlinear systems of ordinary differential equations, discrete maps, chaos, phase plane analysis, bifurcations and computer simulations. Prereq: MATH 527, MATH 528, and MATH 645.

**Grade Mode:** Letter Grading**MATH 753 - Introduction to Numerical Methods I****Credits:** 4

Introduces mathematical algorithms and methods of approximation. Topics include a wide survey of approximation methods. Methods examined include polynomial interpolation, root finding, numerical linear algebra, numerical integration, and the approximation of differential equations. Included in each case is a study of the accuracy and stability of a given technique, as well as its efficiency. Prereq: MATH 426; MATH 445 (or CS 410 or IAM 550).

**Grade Mode:** Letter Grading



**MATH 755 - Probability with Applications****Credits:** 4

Introduces the theory, methods, and applications of randomness and random processes. Probability concepts, random variable, expectation, discrete and continuous probability distributions, joint distributions, conditional distributions; moment-generating functions, convergence of random variables. Prereq: MATH 528 and MATH 539 (or MATH 644).

**Grade Mode:** Letter Grading**MATH 756 - Principles of Statistical Inference****Credits:** 4

Introduces the basic principles and methods of statistical estimation and model fitting. One- and two-sample procedures, consistency and efficiency, likelihood methods, confidence regions, significance testing, Bayesian inference, nonparametric and re-sampling methods, decision theory. Prereq: MATH 755; or permission.

**Grade Mode:** Letter Grading**MATH 757 - Mathematical Optimization for Applications****Credits:** 4

This course introduces the foundations of mathematical optimization and reinforces them via applications. The content includes convex optimization, first and second-order methods, constrained problems, duality, linear and quadratic programming, as well as discrete and non-convex optimization. Applications will focus on machine learning methods but also include problems from engineering and operations research. Prereq: MATH 426; Programming proficiency in MATLAB, R, Java, C, Python, or equivalent.

**Equivalent(s):** CS 757**Grade Mode:** Letter Grading**MATH 760 - Geometry****Credits:** 4

Advanced approach to fundamental properties of Euclidean and other geometries through deductive reasoning and proof. Prereq: MATH 531. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** MATH 657**Grade Mode:** Letter Grading**MATH 761 - Abstract Algebra****Credits:** 4

This course establishes the axiomatic framework that underlies number systems and similar mathematical structures, investigating basic properties of groups, rings, fields and their homomorphisms. Prereq: MATH 531. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**MATH 763 - Abstract Algebra II****Credits:** 4

This course extends the investigations of MATH 761 into more specialized situations related to old and new problems in mathematics, such as the nature of solutions of polynomial equations. It presents advanced properties of groups, rings, fields and their applications. Prereq: MATH 761.

**Grade Mode:** Letter Grading**MATH 765 - Introduction to Commutative Algebra and Algebraic Geometry****Credits:** 4

Methods of determining solution sets of polynomial systems; affine varieties and their ideals; the 'algebra-geometry correspondence'; theory and applications of Grobner bases. Prereq: MATH 531, MATH 761 or permission of instructor.

**Grade Mode:** Letter Grading**MATH 767 - One-Dimensional Real Analysis****Credits:** 4

Theory of limits, continuity, differentiability, and integrability. Prereq: MATH 531. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**MATH 768 - Real Analysis II****Credits:** 4

Theory of integration; series; power series and uniform convergence of power series. Prereq: MATH 767.

**Grade Mode:** Letter Grading**MATH 769 - Introduction to Differential Geometry****Credits:** 4

Introduction to the study of geometric properties of curves and surfaces in 3-dimensional space. Prereq: MATH 527, MATH 528, MATH 645.

**Grade Mode:** Letter Grading**MATH 770 - Foundations of Number Theory****Credits:** 4

Factorization and prime numbers, arithmetic functions, congruences, reciprocity laws, quadratic forms, Diophantine equations, computational number theory. Prereq: MATH 531. Offered in alternate years.

**Grade Mode:** Letter Grading**MATH 772 - Combinatorics****Credits:** 4

Graph theory (including planar graphs, graph coloring, Hamiltonian circuits, trees); counting principles (including permutations, combinations, pigeonhole principle, inclusion-exclusion principle); and related topics. Prereq: MATH 531.

**Grade Mode:** Letter Grading**MATH 776 - Logic****Credits:** 4

Examination of the basic notions of soundness and completeness, first for sentential and then for propositional logic. Turning to the question of decision procedures for logical formulae, the concept of recursive function, which emerges in the work of Church and Turing, provides the essential link between logic and theory of computation. The course culminates with Godel's Incompleteness Theorems, which demonstrate the intrinsic limitations of the logical method. Prereq: MATH 531. Offered in alternate years.

**Grade Mode:** Letter Grading

**MATH 783 - Set Theory****Credits:** 4

Axiomatic set theory, including its history. Cantor's theory of infinite cardinal and ordinal numbers seemed laden with contradictions and paradoxes. A satisfactory treatment of these difficulties came with the axiomatic set theory of Zermelo and Fraenkel. This course develops the Zermelo-Fraenkel axioms and examines cardinal and ordinal arithmetic in the context they provide. The course then investigates the consequences of various additional axioms extending Zermelo-Fraenkel, such as the Axiom of Choice, the Continuum Hypothesis, large cardinal axioms of determinacy. Prereq: MATH 531. Offered in alternate years.

**Grade Mode:** Letter Grading**MATH 784 - Topology****Credits:** 4

Open sets, closure, base, and continuous functions; connectedness, compactness, separation axioms, and metrizability. Prereq: MATH 767/ MATH 867 or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**MATH 788 - Complex Analysis****Credits:** 4

Complex functions, sequences, limits, differentiation and Cauchy-Riemann equations, elementary functions, Cauchy's theorem and formula, Taylor's and Laurent's series, residues, conformal mapping. Prereq: MATH 767. Not offered for credit if credit is received for MATH 647.

**Mutual Exclusion:** No credit for students who have taken MATH 647.**Grade Mode:** Letter Grading**MATH 790 - Historical Foundations of Mathematics****Credits:** 4

Historical development of number theory, geometry, probability, algebra, and analysis. Study of the significant mathematical contributions to these topics made by prominent mathematicians spanning several historical periods. Prereq: MATH 531 or MATH 545. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** MATH 619**Grade Mode:** Letter Grading**MATH 796 - Topics****Credits:** 1-4

New or specialized courses not covered in regular course offerings. Prereq: permission of instructor.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**MATH 797 - Senior Seminar****Credits:** 4

Exploration of mathematical topics beyond the student's previous coursework in the seminar format. The course focus is on independent research, collaborative work and classroom engagement; oral presentations and written work are required. Prereq: senior standing.

**Equivalent(s):** MATH 698**Grade Mode:** Letter Grading**MATH 798 - Senior Project****Credits:** 4

Students work either individually or as a group under the direction of a faculty sponsor to plan and carry out an independent research project resulting in a written report and presentation to the department. Prereq: Senior standing in the department; a written proposal approved by a faculty sponsor and by the department chairperson (or designee).

**Grade Mode:** Letter Grading**MATH 799 - Senior Thesis****Credits:** 2 or 4

Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in a written thesis. Required for honors-in-major. Prereq: senior standing; a written proposal endorsed by a faculty sponsor and approved by the department chairperson (or designee).

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Letter Grading

## Mechanical Engineering (ME)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ME 441 - Introduction to Engineering Design and Solid Modeling****Credits:** 0 or 4

Why are some products better than others? What is the definition of "better"? This course uses an inquiry-guided approach to explore the product design process via team design projects and laboratory exercises. Everyday products are examined from historical, societal, design, safety and manufacturing perspectives. Topics include ideation, sketching, design constraints, solid modeling, decision making, statistical quality control, manufacturing methods and engineering analysis. Students develop an appreciation for good design and the ability to communicate design ideas via 3-D solid models, written and oral reports. Prereq: MATH 418 or equivalent.

**Attributes:** Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**ME 477 - Introduction to Solid Modeling****Credits:** 1

Introduction to solid modeling and engineering drawings using computer-aided design software. For Mechanical Engineering students, this course can only be taken with permission as an alternative to the required ME 441 Introduction to Engineering Design and Solid Modeling for students with extensive engineering design experience (e.g., high school or another university course), an engineering project based program (e.g., FIRST Robotics or Project Lead the Way), or similar experience (e.g., working in the industry). Students should not take both ME 441 and ME 477. Lecture and Lab.

**Grade Mode:** Letter Grading**ME 503 - Thermodynamics****Credits:** 3

Properties of a pure substance, work and heat, laws of thermodynamics, entropy, thermodynamic relations, cycles. Prereq: PHYS 407. Pre- or Coreq: CHEM 405; MATH 528.

**Grade Mode:** Letter Grading**ME #523 - Introduction to Statics and Dynamics****Credits:** 3

Overview of statics and dynamics applying concepts to particles then to rigid bodies. Topics include two- and three-dimensional force systems; laws of equilibrium; analyses of trusses and frames; friction; relative motion; impulse-momentum principles; work-energy relationships. Prereq: MATH 426; PHYS 407. Not for ME majors.

**Grade Mode:** Letter Grading

**ME 525 - Statics****Credits:** 4

Introduces statics. Two- and three-dimensional force systems, the concept of equilibrium, analysis of trusses and frames, centroids, bending moment and shear force diagrams, and friction. Prereq: PHYS 407 and MATH 426.

**Equivalent(s):** CEE 500, CIE 525, CIE 528**Grade Mode:** Letter Grading**ME 526 - Mechanics of Materials****Credits:** 3

Introduces strength of materials. Analysis of members under torsion, axial, shear and bending stresses, superposition of stresses, stability of columns. Prereq: ME 525. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** CEE 501, CIE 526, CIE 529**Grade Mode:** Letter Grading**ME 561 - Introduction to Materials Science****Credits:** 4

The concepts of materials science and the relation of structure of material properties. Atomic structure, bonding material transport, mechanical properties of materials, solidification, phase diagrams, solid state transformations, and corrosion and oxidation. Laboratory exercises are carried out to demonstrate the basic concepts of the course. Prereq: one semester of introductory chemistry with a lab or equivalent; MATH 425. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ME 661**Grade Mode:** Letter Grading**ME 603 - Heat Transfer****Credits:** 3

Analysis of phenomena; steady-state and transient conduction, radiation, and convection; engineering applications. Prereq: MATH 527, ME 608.

**Grade Mode:** Letter Grading**ME 608 - Fluid Dynamics****Credits:** 0 or 3

Dynamics and thermodynamics of compressible and incompressible fluid flow; behavior of fluids as expressed by hydrostatic, continuity, momentum, and energy equations. Prereq: ME 503. Pre- or Coreq: MATH 527, IAM 550.

**Co-requisite:** ME 627**Equivalent(s):** ME 508**Grade Mode:** Letter Grading**ME 627 - Dynamics****Credits:** 3

Introduction to particle and rigid body dynamics. Rectilinear and curvilinear motion, translation and rotation, momentum and impulse principles, and work-energy relationships. Prereq: ME 525 or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** CIE 527, ME 527**Grade Mode:** Letter Grading**ME 643 - Machine Design****Credits:** 3

Analysis, synthesis, and design of machine elements and systems. Development of engineering judgment; selection of materials stress and failure analysis; kinematic arrangement design for finite and infinite life. Open-ended design problems unify course topics. Prereq: ME 526, ME 561, ME 627. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ME 646 - Experimental Measurement and Data Analysis****Credits:** 0 or 4

Basic and advanced techniques of engineering and scientific parameter measurement including statistical data and error analysis, curve fitting, calibration and application of transducers, and technical writing. Laboratory experiments draw on concepts from mechanics, thermodynamics, and fluid mechanics. Prereq: ME 526. Pre- or Co-req: ME 608. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ME 670 - Systems Modeling, Simulation, and Control****Credits:** 4

Lumped parameter models for mechanical, electrical, thermal, fluid, and mixed systems. Matrix representation, eigenvalues, eigenvectors, time domain solutions, frequency response plots, and computer simulations are used to explore system response. Design of system for desired responses. Introduces feedback control, stability, and performance criteria. Prereq: ECE 537, ME 627, MATH 527. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ME #696 - Projects****Credits:** 1-4

Analytical, experimental, or design projects undertaken individually or in teams under faculty guidance. May be repeated for credit.

**Grade Mode:** Letter Grading**ME 699 - Engineering Internship****Credits:** 1

Internship experience provides on-the-job reinforcement of academic programs in mechanical engineering. Contact the Mechanical Engineering department office for guidelines. Prereq: appropriate class standing in major, 2.5 grade point average, and permission. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 3 credits.**Grade Mode:** Credit/Fail Grading**ME 705 - Thermal System Analysis and Design****Credits:** 4

Engineering design of thermal systems that involve real problems and analysis of performance of the design. Design criteria include function, performance, optimization, economy, safety, and others as appropriate for the system. Required for ME seniors. Prereq: ME 503. Writing intensive.

**Co-requisite:** ME 608**Attributes:** Writing Intensive Course**Equivalent(s):** ME 605**Grade Mode:** Letter Grading

**ME 706 - Renewable Energy: Physical and Engineering Principles****Credits:** 3

The goal of this course is to become "Fluent in energy" and to learn about the engineering fundamentals of renewable energy technologies. The course will begin by giving an overview of U.S. energy usage and sources, as well as history and trends. Various renewable energy topics will then be discussed. Where applicable, topics will be discussed in detail from a fluid and thermal sciences point of view. Guest lecturers and a field trip may be included. This course is open to all engineering seniors. Prereq: ME 503 - Thermodynamics, ME 608 - Fluid Dynamics, or equivalent, or instructor permission.

**Grade Mode:** Letter Grading**ME 707 - Analytical Fluid Dynamics****Credits:** 4

Kinematics of flow; constitutive relationships; development of the Navier-Stokes equations; vorticity theorems; potential flow. Prereq: ME 608.

**Grade Mode:** Letter Grading**ME 709 - Computational Fluid Dynamics****Credits:** 3

Conservation of mass, momentum, and energy, discretization schemes, boundary and initial conditions, turbulence and turbulence models, two-equation models, CFD software such as OpenFOAM, best practice guidelines for CFD. The class incorporates the use and creation of Open Educational Resources (OER).

**Grade Mode:** Letter Grading**ME 710 - Experimental Fluid Dynamics****Credits:** 4

This course will introduce students to a variety of experimental methods and techniques for the measurement of fluid flow. Topics include signal processing and analysis, pressure measurement, thermal anemometry, imaging, and advanced laser based optical diagnostics. The knowledge gained in this course is intended to help students carry out advanced research in fluid mechanics at the graduate level or in an industrial research lab setting. Prereq: ME 503, ME 603, ME 608, ME 646.

**Grade Mode:** Letter Grading**ME 712 - Waves in Fluids****Credits:** 3

Linear and nonlinear dynamics of hyperbolic and dispersive wave systems with application to acoustic waves, surface and internal gravity waves, Rossby waves, and capillary waves. Key physical concepts include wave-generation mechanisms, wavelength and amplitude dispersion, group velocity and energy propagation, steady streaming, and mode interactions. Prereq: ME 608 or equivalent.

**Grade Mode:** Letter Grading**ME 717 - Marine Robotics and Applications****Credits:** 3

The purpose of this course is to cover (in lecture and lab format) the broad spectrum of marine vehicles and applications, as well as what is involved in designing and building robotic vehicles for specific missions. Course topics include: marine applications, sensors for marine environments, vehicle subsystems, ocean and open water environment, dynamic modeling and control, and design/fabrication/testing. Various invited speakers (both scientists and engineers) provide learning modules on various marine robotic related topics.

**Co-requisite:** ME 670**Equivalent(s):** OE 717**Grade Mode:** Letter Grading**ME 726 - Fracture Mechanics****Credits:** 4

The goal is to acquaint the student with understanding of the basic principles behind the derivation of the most common linear and non-linear fracture mechanical equations. The aim is also to gain knowledge in analytical predictions of the failure of materials and become familiar with the ongoing fracture mechanical research. The motivation for this course is that many practical problems in mechanical engineering, manufacturing and materials science have to do with material deformation and failure. Prereq: Mechanics of Materials; Introduction to Materials Science.

**Grade Mode:** Letter Grading**ME 727 - Advanced Mechanics of Solids****Credits:** 4

Stress, strain, stress-strain relations, anisotropic behavior, introduction to elasticity, plane stress/strain, bending and torsion of members with general cross-sections introduction to thin plates and shells, energy methods. Prereq: ME 526 or permission.

**Grade Mode:** Letter Grading**ME 730 - Mechanical Behavior of Materials****Credits:** 4

Elastic and inelastic behavior of materials in terms of micro- and macro-mechanics. Stress, strain, and constitutive relations related to recent developments in dislocation theory and other phenomena on the atomic scale and to the continuum mechanics on the macroscopic scale. Elasticity, plasticity, viscoelasticity, creep, fracture, and damping. Anisotropic and heterogeneous materials. Prereq: ME 526; 561 or permission.

**Grade Mode:** Letter Grading**ME 735 - Mechanics of Composite Materials****Credits:** 4

Classification of composites. Anisotropy of composite materials. Micromechanical predictions of elastic and hygrothermal properties. Strength and failure of composite materials. Analysis of laminates. Experimental methods for characterization of composites. Prereq: ME 526 or permission.

**Grade Mode:** Letter Grading**ME 742 - Materials Processing in Manufacturing****Credits:** 4

Description and analysis of major material shaping processes in modern manufacturing. Casting: fluid flow and heat transfer, solidification, casting processes, properties of cast components and geometric capabilities. Forming: plasticity and formability, bulk and sheet metal forming processes, properties of formed components and geometric capabilities. Machining: cutting forces and tool wear, machining processes, properties of machined components and geometric capabilities. Overview of some non-conventional processes. Lab demonstrations. Prereq: ME 526 and ME 561.

**Grade Mode:** Letter Grading**ME 743 - Satellite Systems, Dynamics, and Control****Credits:** 3

General satellite systems with emphasis on spacecraft dynamics and control. Topics include general satellite information such as types of satellites, missions, and orbits, as well as satellite subsystems. Basic spacecraft dynamics and orbital mechanics topics are covered. Advanced topics include attitude and orbit estimation, and automatic attitude control. Prereq: ME 670 or permission.

**Grade Mode:** Letter Grading

**ME 747 - Experimental Measurement and Modeling of Complex Systems****Credits:** 0 or 4

Experimental measurements for evaluation, design, and control of mechanical, electrical, and thermal/fluid phenomena. Emphasizes the dynamic response of both sensors and systems and the interactions between physical processes. Experimental examples are drawn from mechanics, material science, thermal-fluid science and controls. Prereq: ME 646; ME 670. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ME 755 - Senior Design Project I****Credits:** 2

Part I of this two-part sequence emphasizes problem definition, analysis, development of alternative concepts, decision-making processes, synthesis of an optimum solution and the development of a conceptual design. Lectures on these and other topics are combined with seminars given by professionals from industry, government, and academia. Related topics include ISO9000 quality systems, engineering management, design review process, engineering economics, team building and communications. Students are organized into project teams to develop a conceptual design. Formal design reviews are conducted. A formal proposal documents the semester's work. Prereq: Senior standing in ME. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ME 656**Grade Mode:** Letter Grading**ME 756 - Senior Design Project II****Credits:** 2

Continuation of Senior Design Project I, in which the proposal submitted in the previous course is developed into a prototype system. Part II emphasizes the development, assembly, testing and evaluation of the system designed in Part I. Lectures and seminars focus on the prototype development process, design verification and industry practices. A formal report documents the semester's work. Prereq: ME 755. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ME 656**Grade Mode:** Letter Grading**ME #757 - Coastal Engineering and Processes****Credits:** 3

Introduces small amplitude and finite amplitude wave theories. Wave forecasting by significant wave method and wave spectrum method. Coastal processes and shoreline protection. Wave forces and wave structure interaction. Introduces mathematical and physical modeling. Prereq: ME 608 or permission. (Also offered as CIE 757 and OE 757.)

**Equivalent(s):** CIE 757, OE 757**Grade Mode:** Letter Grading**ME #761 - Diffraction and Imaging Methods in Materials Science****Credits:** 4

Introduces x-ray diffraction and electron microscopy. Basic crystallography, reciprocal lattice, x-ray and electron diffraction, x-ray methods, transmission and scanning electron microscopy. Prereq: CHEM 403; PHYS 408 or permission. Lab.

**Grade Mode:** Letter Grading**ME 772 - Control Systems****Credits:** 0 or 4

Development of advanced control system design concepts such as Nyquist analysis, lead-lag compensation, state feedback, parameter sensitivity, controllability, observability, introduction to non-linear and modern control. Includes interactive computer-aided design and real-time digital control. Prereq: ME 747 or permission. (Also offered as ECE 772.) Lab.

**Equivalent(s):** ECE 772, EE 772**Grade Mode:** Letter Grading**ME #773 - Electromechanical Analysis and Design****Credits:** 4

Analysis and design of electromechanical systems using lumped parameter models and magnetic finite element analysis (FEA). Electrostatic and magnetic field equations are discussed and used to derive magnetic and electric lumped model elements. Brushless dc motor is analyzed using lumped models and FEA. Various drive types are discussed and the motor system analyzed to obtain torque-speed curves. Design principles are given and utilized in a design project.

Prereq: ME 670 or permission.

**Grade Mode:** Letter Grading**ME 777 - Computer Aided Engineering****Credits:** 4

In this course, modules of Solid Works (beyond its basic solid modeling capabilities) and other software is used to demonstrate how computer based tools can be used in engineering practice, in particular design analysis and optimization. Emphasis placed on using knowledge from past engineering courses to obtain theoretical calculations to compare with the results from the computer software package. Prereq: ME 526 Strength of Materials; ME 627 Mechanics III; ME 603 Heat Transfer; and ME 608 Fluid Dynamics (or equivalent).

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ME #782 - Industrial Skills and Engineering****Credits:** 3

In this course, the principles of Lean Manufacturing and Value Stream Mapping (VSM) as pioneered by Toyota and now utilized by most leading manufacturers will be studied and applied. Lean Manufacturing principles will be taught with classroom instruction and a structured model factory exercise. Instruction on the theory of Value Stream Mapping (VSM) will be followed with an actual industrial VSM activity where a process will be studied and a Desired Future State defined with VSM methods. This factory floor activity will be done collaboratively with employees from a manufacturing company.

**Grade Mode:** Letter Grading**ME 785 - Solid Mechanics in Manufacturing****Credits:** 4

Characterization of material properties are studied with emphasis on plastic deformation. Also, numerical approaches to solve for the forces, stresses, and strains in manufacturing processes are covered. In particular, two prominent mass production manufacturing areas, metal forming and cutting, are examined. Prereq: ME 561; ME 627.

**Grade Mode:** Letter Grading



**ME 786 - Introduction to Finite Element Analysis****Credits:** 4

Topics include basic matrix theory, potential energy approach, direct stiffness method, calculus of variations, development of finite element theory, and modeling techniques. Applications in solid mechanics, heat transfer, fluids, and electromagnetic devices, via both commercially available codes and student-written codes. Prereq: ME 526 or permission. Lab.

**Equivalent(s):** CIE 786**Grade Mode:** Letter Grading**ME 795 - Special Topics****Credits:** 1-4

New or specialized courses and/or independent study.

**Repeat Rule:** May be repeated for a maximum of 20 credits.**Grade Mode:** Letter Grading**ME 797 - Honors Seminar****Credits:** 1

Course enrichment and/or additional independent study in subject matter pertaining to a 600- or 700-level ME course other than ME 695, ME #696, ME 697, or ME 795.

**Attributes:** Honors course**Repeat Rule:** May be repeated for a maximum of 3 credits.**Grade Mode:** Letter Grading

## Military Science (MILT)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**MILT 400PT - Physical Training****Credits:** 0

This course is intended to fulfill the U.S. Army Cadet Command requirement to conduct organized physical training at the program level.

**Grade Mode:** Credit/Fail Grading**MILT 401 - Leadership Laboratory I****Credits:** 0

Open only to students taking another Military Science class, with different roles offered for students at different levels of the program. Involves leadership responsibilities for the planning, coordination, execution, and evaluation of various training programs. Students develop, practice and refine leadership skills by serving and being evaluated in a variety of supervisory positions. Specific events include a team-building leader reaction course, orientation to military weapons, basic tactical movement, and land navigation. Cr/F.

**Grade Mode:** Credit/Fail Grading**MILT 402 - Leadership Laboratory II****Credits:** 0

Open only to students taking another Military Science class, with different roles offered for students at different levels of the program. Involves leadership responsibilities for the planning, coordination, execution, and evaluation of various training programs. Students develop, practice and refine leadership skills by serving and being evaluated in a variety of supervisory positions. Specific events include basic marksmanship, advanced tactical movement, orienteering and land navigation. Cr/F.

**Grade Mode:** Credit/Fail Grading**MILT 403 - United States Army History****Credits:** 2

Develops an understanding of the effects the US military and society have on each other through the establishment and background of the United States Army. Presented in the context of broader US Military history and military strategy and global involvement. Through readings, oral and written presentations, and exams, students describe the role of the US Army, its evolution and its impact on society and technology; and critically analyze an armed conflict using the principles of war. This is a pre-commissioning requirement for professional military education (PME) required by the United States Army Cadet Command. It is open to non-ROTC students.

**Repeat Rule:** May be repeated for a maximum of 6 credits.**Grade Mode:** Letter Grading**MILT 413 - Introduction to ROTC****Credits:** 0 or 2

Make your first new peer group at college one committed to performing well and enjoying the experience. Increase self-confidence through team study and activities in physical fitness, rappelling, first aid, basic marksmanship, and basic drill. Learn fundamental concepts of leadership in both classroom and outdoor laboratory environments. One hour and a required leadership lab (MILT 401L) plus optional (mandatory for scholarship cadets) participation in three one-hour sessions of physical fitness per week. Participation in one weekend exercise is also required for all cadets. Open to all college students, no military commitment required.

**Grade Mode:** Letter Grading**MILT 414 - Introduction to ROTC II****Credits:** 2

Learn and apply principles of effective leadership. Reinforce self-confidence through participation in physically and mentally challenging exercises with other ROTC cadets. Continued activities in basic drill, physical fitness, rappelling, first aid, and basic marksmanship. Develop communication skills to improve individual performance and group interaction. One hour and a required leadership lab (MILT 402L) plus optional (mandatory for scholarship cadets) participation in three one-hour sessions for physical fitness per week. Participation in one weekend exercise is also required for all cadets. Open to all college students; no military commitment required.

**Grade Mode:** Letter Grading**MILT 501 - Self/Team Development I****Credits:** 0 or 2

Learn and apply ethics-based leadership skills that develop individual abilities and contribute to the building of effective teams of people. Develop skills in oral presentations, planning of events, advanced first aid, physical fitness, and land navigation. Learn techniques for training others as an aspect of continued leadership development. Two hours and a required leadership lab (MILT 401L), plus optional participation (mandatory for scholarship cadets) in three one-hour sessions of physical fitness per week. Participation in one weekend exercise is required. Additional weekend exercises may be offered for optional participation. Open to all college students, no military commitment required.

**Co-requisite:** MILT 401**Grade Mode:** Letter Grading

**MILT 502 - Individual/Team Military Tactics****Credits:** 0 or 2

Introduces individual and team aspects of military tactics in small unit operations. Includes use of radio communications, making safety assessments, movement techniques, planning for team safety/security, and methods of pre-execution checks. Practical exercises with other ROTC students. Learn techniques for training others as an aspect of continued leadership development. Two hours and a required leadership lab (MILT 402L), plus optional participation (mandatory for scholarship cadets) in three one-hour sessions of physical fitness per week. Participation in one weekend exercise is required. Additional weekend exercises may be offered for optional participation. Open to all college students, no military commitment required.

**Co-requisite:** MILT 402**Grade Mode:** Letter Grading**MILT 601 - Leading Small Organizations I****Credits:** 0 or 4

Series of practical opportunities to lead small groups, receive personal assessments and encouragement, and lead again in situations of increasing complexity. Plan and conduct training for other ROTC students in small unit offensive and defensive operations. Three hours and required leadership lab (MILT 401L) plus required participation in three one-hour sessions of physical fitness per week. Participation in one weekend exercise is also required. Other weekend exercises are offered for optional participation. Prereq: Cadet completes MILT 550 or completes MILT 413, MILT 414, MILT 501, and MILT 502.

**Grade Mode:** Letter Grading**MILT 602 - Leading Small Organizations II****Credits:** 0 or 4

Continues the methodology from MILT 601. Analyze tasks; prepare written and oral guidance for team members to accomplish tasks. Delegate tasks and supervise. Plan for and adapt to the unexpected in organizations under stress. Examine and apply lessons from leadership studies. Examine importance of ethical decision making in setting a positive climate that enhances team performance. Three hours and a required leadership lab (MILT 402L) plus required participation in three one-hour sessions for physical fitness per week. Participation in one weekend exercise is also required, and one or two more weekend exercises may be offered for optional participation.

**Grade Mode:** Letter Grading**MILT 611 - Seminar on Leadership and Management I****Credits:** 0 or 4

Plan, conduct and evaluate activities of the ROTC cadet organization. Articulate goals and put plans into action to attain them. Assess organizational cohesion and develop strategies to improve it. Develop confidence in skills to lead people and manage resources. Learn/apply various Army policies and programs in this effort. Three hours and a required leadership lab (MILT 401L) plus required participation in three one-hour sessions for physical fitness per week. Participation in one weekend exercise is also required, and one or two more weekend exercises may be offered for optional participation. Prereq: MILT 601 and MILT 602.

**Grade Mode:** Letter Grading**MILT 612 - Transition to Lieutenant****Credits:** 0 or 4

Continues the methodology from MILT 611. Identify and resolve ethical dilemmas. Refine counseling and motivating techniques. Examine aspects of tradition and law as related to leading as an officer in the Army. Prepare for a future as a successful Army lieutenant. Three hours and a required leadership lab (MILT 402L) plus required participation in three one-hour sessions for physical fitness per week. Participation in one weekend exercise is also required, and one or two more weekend exercises may be offered for optional participation. Prereq: MILT 611.

**Grade Mode:** Letter Grading**MILT 695 - Officer Internship****Credits:** 1-4

Experiential learning through fieldwork in a military-type unit. Written analysis required. Prereq: MILT 611 (may be taken concurrently). By permission only. Coreq: MILT 401.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Music (MUSI)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**MUSI 401 - Introduction to Music****Credits:** 4

Fundamental approach to analytical listening with attention to learning how to aurally recognize and apply the basic elements of music to a wide variety of specific musical works in oral and written contexts. Critical thinking and listening skills will be developed through study of music in a variety of cultural and historical perspectives. Some participation in musical life of the University may be required, unless this is the fully online version. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

**Attributes:** FinePerformingArts(Discovery)**Equivalent(s):** MUSI #401H**Grade Mode:** Letter Grading**MUSI #401H - Honors/Introduction to Music****Credits:** 4

Fundamental approach to perceptive listening based on a detailed study of several masterpieces representing different periods and forms. Historical perspective, but main emphasis is on confronting significant works of musical art on their own terms. Some participation in musical life of the University required. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

**Attributes:** FinePerformingArts(Discovery); Honors course**Equivalent(s):** MUSI 401**Grade Mode:** Letter Grading

**MUSI 402 - Historical Survey of Western Classical Concert Music****Credits:** 4

The study of the development of musical styles and idioms of Western European classical concert music in the context of selected historical and cultural aspects of Western civilization. Some participation in musical life of the University may be required. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

**Attributes:** FinePerformingArts(Discovery)**Equivalent(s):** MUSI #402H**Grade Mode:** Letter Grading**MUSI #402H - Honors/Survey of Music History****Credits:** 4

The study of the development of musical styles and idioms in the context of selected historical and cultural aspects of Western civilization. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

**Attributes:** FinePerformingArts(Discovery); Honors course**Equivalent(s):** MUSI 402**Grade Mode:** Letter Grading**MUSI 403 - Roots of Rock****Credits:** 4

Focuses on the musical styles, traditions, and social circumstances that led to a distinctive form of American popular music in the 1950's and '60's. In addition to developing critical listening skills to discern subtle distinctions among such styles and sub-styles as blues, folk, jazz, and country, the course also considers the diverse social trends that helped drive changes and developments in the various styles and genres covered. While some attention will be devoted to rock music of the mid-late sixties, the course emphasizes the various musical styles that preceded rock.

**Attributes:** FinePerformingArts(Discovery)**Grade Mode:** Letter Grading**MUSI 404 - An Introduction to Music, Media, and the Moving Image****Credits:** 4

Through selected readings, attentive listening, viewing, and discussion of a variety of films and multi-media productions, students develop a common vocabulary for analyzing music accompanying moving images. Students develop an understanding of the western and non-western musical conventions that work, often at a subconscious level, in conjunction with images to shape and cue audience responses to, and interaction with, visual cues. Media includes canonic Hollywood films, independent and foreign cinema, with explorations of non-Western films, video game scoring, television, and animation. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program.

**Attributes:** FinePerformingArts(Discovery)**Grade Mode:** Letter Grading**MUSI 405 - Survey of Music in America****Credits:** 4

From colonial times to the present, including various European influences, the quest for an American style, and the emergence of such indigenous phenomena as jazz. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program. (Formerly MUSI 511).

**Attributes:** FinePerformingArts(Discovery)**Equivalent(s):** MUSI 511**Grade Mode:** Letter Grading**MUSI 406 - Country Music****Credits:** 4

This course surveys the rich musical, cultural, and economic history of country music in the United States. Since its inception, country music has embodied a tension between tradition and progress. Country music thereby reflects a basic feature of the American story, valorizing our history while valuing social and technological development. Throughout the course, we consider this tension as it affects the musical content and cultural meaning of country music.

**Attributes:** FinePerformingArts(Discovery)**Grade Mode:** Letter Grading**MUSI 411 - Fundamentals of Music Theory****Credits:** 4

Elements of music theory for the non-music major; principles of musical structure, analysis, elementary written counterpoint and harmony, and ear training. May not be counted for credit toward a music major.

**Grade Mode:** Letter Grading**MUSI 412 - Fundamentals of Music Theory****Credits:** 4

Elements of music theory for the non-music major; principles of musical structure, analysis, elementary written counterpoint and harmony, and ear training. May not be counted for credit toward a music major.

**Prerequisite(s):** MUSI 411 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI 441 - Concert Choir****Credits:** 0-1

Large, non-auditioned, SATB chorus specializing in the performance of choral art-song, masterworks, and symphonic choral repertoire. Open to all students. Pre-registration is encouraged. This class requires two concerts outside of the normal class meeting times.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 442 - Chamber Singers****Credits:** 0-1

Auditioned SATB chorus specializing in unaccompanied choral repertoire. Choral experience and strong skills in musicianship are recommended.

Students who register for MUSI 442 must also register for MUSI 441.

Auditions are open to all students and conducted the first week of the semester. Contact the instructor for further information. This class requires a number of concerts outside of the normal class meeting times; a schedule is included in the syllabus.

**Co-requisite:** MUSI 441**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 444 - Music and Social Change****Credits:** 4

The connections between music and social change with a twofold goal:

1) to heighten critical listening skills so as to become more aware of ways in which music can express social attitudes; and 2) to introduce the social, cultural, and political issues surrounding the music being studied. Course work consists of listening to selected repertoires, reading scholarly and popular essays about those repertoires, and extensive in-class (and on-line) discussion about issues raised by the listening and reading. This course does not fulfill a music major program requirement nor does it satisfy the Fine and Performing Arts Discovery requirement for any music major program. Writing intensive.

**Attributes:** FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading

**MUSI 448 - Vocal Arts Project****Credits:** 0-1

This vocal performance course explores and prepares singers for a diverse and inclusive range of vocal repertory including but not limited to opera, music theatre, jazz, folk, country, contemporary commercial music, and original songs.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 450 - Symphony****Credits:** 0-1

Presents several concerts during the year of repertoire ranging from the great, standard symphonic literature to large modern works.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 451 - Concert Band****Credits:** 1

The Concert Band performs serious, concert music, ranging from transcriptions of works for other mediums, to the 20th century "classics" of the wind band repertoire and music written for wind band. Anyone with previous band experience is welcome. Auditions are for chair placement only.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**MUSI 452 - Wind Symphony****Credits:** 0-1

Select wind ensemble which performs difficult classical and contemporary literature.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 453 - Symphonic Band****Credits:** 0 or 1

Original band music, transcription, marches, etc. For students whose program does not permit music as a major interest, but who are interested in maintaining their playing proficiency and continuing their study of music.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 454 - UNH Marching Band****Credits:** 0 or 1

Open to all students; performs during football games. Rehearsals conclude at the end of the football season.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 455 - Collaborative Piano****Credits:** 1

Drawing from available student instrumentalists and singers, pianists learn the art of performing in trios, duo sonatas, and two-piano works, and gain experience in Lieder accompaniment.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 456 - String Chamber Music****Credits:** 0-1

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 457 - Wind Chamber Music****Credits:** 0-1

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 458 - Brass Chamber Music****Credits:** 0-1

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** MUSI 456, MUSI 457**Grade Mode:** Letter Grading**MUSI 459 - Percussion Ensemble****Credits:** 0-1

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 460 - Jazz Band****Credits:** 0-1

Two jazz bands perform a wide spectrum of big band literature.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 462 - Pep Band****Credits:** 0-1

Rehearsal and performance of a broad range of band music at hockey and basketball games.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**MUSI 463 - Jazz Combo****Credits:** 0-1

Groups of instrumentalists gain experience in the performance of literature for the smaller jazz ensemble.

**Repeat Rule:** May be repeated for a maximum of 9 credits.**Grade Mode:** Letter Grading**MUSI 464 - Guitar Ensemble****Credits:** 0-1

Groups of instrumentalists gain experience in the performance of literature for the smaller ensemble.

**Repeat Rule:** May be repeated for a maximum of 9 credits.**Grade Mode:** Letter Grading**MUSI 471 - Theory I****Credits:** 3

Introduces the tonal system; species counterpoint; principles of voice leading and harmonic progression through the analysis, realization, and composition of one-, two-, and four-voiced textures. Concept of triad inversion and consonant diatonic harmonies of the major and minor modes. Students should register for MUSI 473 and MUSI 474 concurrently.

**Grade Mode:** Letter Grading



**MUSI 472 - Theory I****Credits:** 3

Introduces the tonal system; species counterpoint; principles of voice leading and harmonic progression through the analysis, realization, and composition of one-, two-, and four-voiced textures. Concept of triad inversion and consonant diatonic harmonies of the major and minor modes. Students should register for MUSI 474 and MUSI 476 concurrently.

**Prerequisite(s):** MUSI 471 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI 473 - Ear Training I****Credits:** 1

Laboratory exercises to develop aural skills; sight-singing and dictation. Students should register for MUSI 471 and MUSI 472 concurrently.

**Grade Mode:** Letter Grading**MUSI 474 - Ear Training I****Credits:** 1

Laboratory exercises to develop aural skills; sight-singing and dictation. Students should register for MUSI 472 and MUSI 476 concurrently.

**Prerequisite(s):** MUSI 473 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI 475 - Functional Piano I****Credits:** 1

Basic instruction for music majors with no previous keyboard training. Piano technique, keyboard harmony geared to the practical harmonization of simple melodies, sight reading, transposition, and modulation. May involve both class instruction and periodic short individual lessons.

**Co-requisite:** MUSI 471, MUSI 473**Equivalent(s):** MUSI 467**Grade Mode:** Letter Grading**MUSI 476 - Functional Piano I****Credits:** 1

Basic instruction for music majors with no previous keyboard training. Piano technique, keyboard harmony geared to the practical harmonization of simple melodies, sight reading, transposition, and modulation. May involve both class instruction and periodic short individual lessons.

**Co-requisite:** MUSI 472, MUSI 474**Prerequisite(s):** MUSI 475 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI 501 - The Western Musical Canon****Credits:** 3

An introductory survey of the Western "classical" canon. Students will become familiar with the different style periods of church, court, and concert music from the ninth century to the present day. Some score reading involved; rudimentary knowledge of music theory encouraged.

**Prerequisite(s):** (MUSI 472 with a minimum grade of D- or MUSI 412 with a minimum grade of D-).**Grade Mode:** Letter Grading**MUSI 502 - Musics in Context****Credits:** 3

Through a series of case studies drawn from a variety of global musics past and present, including classical, traditional, and commercial, this course introduces students to different approaches to thinking about and analyzing music in conjunction with the specific case studies and in individual and small group projects. This approach equips students to investigate music that they perform, teach, and listen to - within or beyond the UNH curriculum - drawing on different branches of music study to place any type of music in historical, cultural, and social contexts and to share their findings in written, oral, or recorded formats. A core course for music majors, this course builds on concepts and repertoires encountered in MUSI 501, MUSI 515 MUSI 471–476, 571–576 and prepares students for their 700- level courses in music history and theory.

**Attributes:** Inquiry (Discovery)**Prerequisite(s):** MUSI 471 with a minimum grade of C- and MUSI 472 with a minimum grade of C- and MUSI 501 with a minimum grade of C- and MUSI 515 with a minimum grade of C-.**Grade Mode:** Letter Grading**MUSI 515 - Music in World Cultures****Credits:** 4

An introduction to musicking (participating in any way, including listening, in musical performance) beyond the Western tradition, this course offers students an opportunity to explore the music and culture of diverse regions from an ethnomusicological perspective. Through listening to and analyzing music, readings, lecture, discussion, and individual fieldwork projects, students discover how music functions within different world cultures and gain understanding of the ways people "make music meaningful and useful in their lives," as, through musicking, they articulate, resist, and transform cultural norms.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**MUSI 520 - Diction for Singers I****Credits:** 2

Application of International Phonetic Alphabet (IPA) to English, French, German, and Italian. Emphasizes both written and spoken performance.

**Grade Mode:** Letter Grading**MUSI #521 - Diction for Singers II****Credits:** 2

Application of International Phonetic Alphabet (IPA) to English, French, German, and Italian. Emphasizes both written and spoken performance.

**Prerequisite(s):** MUSI 520 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI 540 - Recital Attendance****Credits:** 0

This course is a requirement for all undergraduate music majors in the Department of Music. Students are required to attend at least twelve approved recitals or concerts during each semester they are enrolled in MUSI 540. This course must be completed six times with a grade of Credit (Satisfactory) for zero credit each time.

**Grade Mode:** Credit/Fail Grading**MUSI 541 - Piano****Credits:** 1-4

Private instruction in piano. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading



**MUSI 545 - Voice**
**Credits:** 1-4

Private instruction in voice. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Equivalent(s):** MUSI 546, MUSI 547, MUSI 746, MUSI 747

**Grade Mode:** Letter Grading

**MUSI 546 - Violin**
**Credits:** 1-4

Private instruction in violin. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Equivalent(s):** MUSI 549, MUSI 550

**Grade Mode:** Letter Grading

**MUSI 547 - Viola**
**Credits:** 1-4

Private instruction in viola. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Equivalent(s):** MUSI 552, MUSI 553, MUSI 554, MUSI 555

**Grade Mode:** Letter Grading

**MUSI 548 - Violoncello**
**Credits:** 1-4

Private instruction in violoncello. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 549 - String Bass**
**Credits:** 1-4

Private instruction in string bass. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 550 - Classical Guitar**
**Credits:** 1-4

Private instruction in classical guitar. Special fee.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Equivalent(s):** MUSI 544

**Grade Mode:** Letter Grading

**MUSI 551 - Flute**
**Credits:** 1-4

Private instruction in flute. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Equivalent(s):** MUSI 536, MUSI 537

**Grade Mode:** Letter Grading

**MUSI 552 - Clarinet**
**Credits:** 1-4

Private instruction in clarinet. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 553 - Saxophone**
**Credits:** 1-4

Private instruction in saxophone. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 554 - Oboe**
**Credits:** 1-4

Private instruction in oboe. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 555 - Bassoon**
**Credits:** 1-4

Private instruction in bassoon. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 556 - French Horn**
**Credits:** 1-4

Private instruction in French horn. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 557 - Trumpet**
**Credits:** 1-4

Private instruction in trumpet. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 558 - Trombone**
**Credits:** 1-4

Private instruction in trombone. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 559 - Euphonium**
**Credits:** 1-4

Private instruction in euphonium. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 560 - Tuba**
**Credits:** 1-4

Private instruction in tuba. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 561 - Percussion**
**Credits:** 1-4

Private instruction in percussion. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 562 - Jazz Piano**
**Credits:** 1-4

Private instruction in jazz piano. Special fee for non-majors. Permission required.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 563 - Jazz Guitar**
**Credits:** 1-4

Private instruction in jazz guitar. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 564 - Drum Set**
**Credits:** 1-4

Private instruction in drum set. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.

**Grade Mode:** Letter Grading

**MUSI 571 - Theory II****Credits:** 3

Continuation of MUSI 471- MUSI 472. Compositional and analytical work stresses the treatment of dissonance within the tonal system; accessory tones, seventh chords, tonicization, modulation, basic principles of chromatic harmony, and harmonization of chorale melodies are covered. Students should register for MUSI 573 and MUSI 574 concurrently.

**Prerequisite(s):** MUSI 472 with a minimum grade of D- and MUSI 474 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**MUSI 572 - Theory II****Credits:** 3

Continuation of MUSI 471- MUSI 472. Compositional and analytical work stresses the treatment of dissonance within the tonal system; accessory tones, seventh chords, tonicization, modulation, basic principles of chromatic harmony, and harmonization of chorale melodies are covered. Students should register for MUSI 573 and MUSI 574 concurrently.

**Prerequisite(s):** MUSI 472 with a minimum grade of D- and MUSI 474 with a minimum grade of D- and MUSI 571 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**MUSI 573 - Ear Training II****Credits:** 1

Laboratory exercises to develop aural skills further. Students should register for MUSI 571-572 concurrently.

**Prerequisite(s):** MUSI 472 with a minimum grade of D- and MUSI 474 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**MUSI 574 - Ear Training II****Credits:** 1

Laboratory exercises to develop aural skills further. Students should register for MUSI 571-572 concurrently.

**Prerequisite(s):** MUSI 472 with a minimum grade of D- and MUSI 474 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**MUSI 575 - Functional Piano II****Credits:** 1

Basic instruction for music majors with no previous keyboard training. Piano technique, keyboard harmony geared to the practical harmonization of simple melodies, sight reading, transposition, and modulation. May involve both class instruction and periodic short individual lessons.

**Co-requisite:** MUSI 571, MUSI 573

**Prerequisite(s):** MUSI 476 with a minimum grade of D-.

**Equivalent(s):** MUSI 467

**Grade Mode:** Letter Grading

**MUSI 576 - Functional Piano II****Credits:** 1

Basic instruction for music majors with no previous keyboard training. Piano technique, keyboard harmony geared to the practical harmonization of simple melodies, sight reading, transposition, and modulation. May involve both class instruction and periodic short individual lessons.

**Co-requisite:** MUSI 572, MUSI 574

**Prerequisite(s):** MUSI 575 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**MUSI 595 - Special Topics in Music Literature****Credits:** 0-4

Open to music majors and non-majors; topics in areas not easily covered in historical courses. May be repeated for credit.

**Grade Mode:** Letter Grading

**MUSI 703 - Music of the Renaissance****Credits:** 3

Works of the 15th- and 16th-century composers from Dunstable to Palestrina.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** MUSI 501 with a minimum grade of D- and MUSI 502 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**MUSI 705 - Music of the Baroque****Credits:** 3

Music of Europe from de Rore to Bach.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** MUSI 501 with a minimum grade of D- and MUSI 502 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**MUSI 707 - Music of the Classical Period****Credits:** 3

Growth of musical styles and forms from early classicism through the high classicism of Haydn, Mozart, and the young Beethoven.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** MUSI 501 with a minimum grade of D- and MUSI 502 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**MUSI 709W - Music of the Romantic Period****Credits:** 3

A survey of romanticism in music from Beethoven's late period to the end of the 19th century. The works of Schubert, Berlioz, Schumann, Mendelssohn, Chopin, Wagner, Verdi, Brahms, Austrian symphonists, French pre-impressionists, and national styles in European music.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** MUSI 501 with a minimum grade of D- and MUSI 502 with a minimum grade of D-.

**Equivalent(s):** MUSI 709

**Grade Mode:** Letter Grading

**MUSI 711 - Music of the 20th and 21st Centuries****Credits:** 3

Styles and techniques of composers from Debussy to the present. Special emphasis on tonal music before World War I, neoclassical trends, the emergence of atonality and serial techniques, electronic music.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** MUSI 501 with a minimum grade of D- and MUSI 502 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**MUSI 713 - Art Song****Credits:** 3

History and literature of the solo song with piano accompaniment. Survey of national styles of the 19th and 20th centuries and deeper study of the central core of the art song--the German Lied.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** MUSI 501 with a minimum grade of D- and MUSI 502 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**MUSI #715 - Survey of Opera****Credits:** 3

History of the genre from Monteverdi to the present.

**Attributes:** Writing Intensive Course**Prerequisite(s):** MUSI 501 with a minimum grade of D- and MUSI 502 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI 731 - Conducting****Credits:** 2

Physical aspects, equipment of conductor, fundamental gestures and beats, baton techniques. Reading and analysis of full and condensed scores, study of transposition, psychology of rehearsal.

**Prerequisite(s):** MUSI 571 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI 732 - Conducting****Credits:** 2

Physical aspects, equipment of conductor, fundamental gestures and beats, baton techniques. Reading and analysis of full and condensed scores, study of transposition, psychology of rehearsal.

**Prerequisite(s):** MUSI 571 with a minimum grade of D- and MUSI 731 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI 741 - Piano****Credits:** 1-4

Private instruction in piano. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 745 - Voice****Credits:** 1-4

Private instruction in voice. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 746 - Violin****Credits:** 1-4

Private instruction in violin. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 747 - Viola****Credits:** 1-4

Private instruction in viola. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 748 - Violoncello****Credits:** 1-4

Private instruction in violoncello. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 749 - String Bass****Credits:** 1-4

Private instruction in string bass. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 750 - Classical Guitar****Credits:** 1-4

Private instruction in classical guitar.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Equivalent(s):** MUSI 550, MUSI 763**Grade Mode:** Letter Grading**MUSI 751 - Flute****Credits:** 1-4

Private instruction in flute. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 752 - Clarinet****Credits:** 1-4

Private instruction in clarinet. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 753 - Saxophone****Credits:** 1-4

Private instruction in saxophone. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 754 - Oboe****Credits:** 1-4

Private instruction in oboe. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Equivalent(s):** MUSI 735**Grade Mode:** Letter Grading**MUSI 755 - Bassoon****Credits:** 1-4

Private instruction in bassoon. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 756 - French Horn****Credits:** 1-4

Private instruction in French horn. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 757 - Trumpet****Credits:** 1-4

Private instruction in trumpet. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 758 - Trombone****Credits:** 1-4

Private instruction in trombone. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 759 - Euphonium****Credits:** 1-4

Private instruction in euphonium. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 760 - Tuba****Credits:** 1-4

Private instruction in tuba. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 761 - Percussion****Credits:** 1-4

Private instruction in percussion. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading

**MUSI 762 - Jazz Piano****Credits:** 1-4

Private instruction in jazz piano. Special fee for non-majors. Permission required.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 763 - Jazz Guitar****Credits:** 1-4

Private instruction in jazz guitar. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 764 - Drum Set****Credits:** 1-4

Private instruction in drum set. Special fee for non-majors.

**Repeat Rule:** May be repeated for a maximum of 99 credits.**Grade Mode:** Letter Grading**MUSI 771 - Counterpoint****Credits:** 3

Contrapuntal techniques of tonal music. Melodic construction and dissonance treatment through work in species counterpoint and studies in harmonic elaboration and prolongation. Analysis of selected compositions emphasizes the connection between fundamental contrapuntal techniques and the voice-leading of composition.

**Prerequisite(s):** MUSI 572 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI 775 - Composition****Credits:** 1-4

Studies in composition and score preparation resulting in the creation of original compositions to be performed on a student composers' concert in the Music Department.

**Prerequisite(s):** MUSI 572 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI 776 - Composition****Credits:** 1-4

Studies in composition and score preparation resulting in the creation of original compositions to be performed on a student composers' concert in the Music Department.

**Prerequisite(s):** MUSI 572 with a minimum grade of D- and MUSI 775 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI 777 - Advanced Composition****Credits:** 1-4

Continuation of MUSI 776. Individual compositional projects. May be repeated for credit.

**Prerequisite(s):** MUSI 776 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI 779 - Reading and Writing Musical Scores****Credits:** 3

This course is designed to assist music majors gain competence and confidence in working with full scores from music ensembles. Course activities will focus on the tasks of score reading and analysis, and the creation of new arrangements for ensembles the student is likely to lead in their professional life. Additionally, various aspects of programming repertoire for performances will be addressed. These skills will be of value to both music education and music performance majors.

**Prerequisite(s):** MUSI 471 with a minimum grade of C- and MUSI 472 with a minimum grade of C- and MUSI 571 with a minimum grade of C- and MUSI 572 with a minimum grade of C-.**Grade Mode:** Letter Grading**MUSI 781W - Analysis: Form and Structure****Credits:** 3

Introduces analytical techniques through the study of representative masterworks: formal and structural elements and their interrelationships. Analysis of 18th- and 19th century works. Special fee.

**Attributes:** Writing Intensive Course**Prerequisite(s):** MUSI 572 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUSI #782W - Analysis: Form and Structure****Credits:** 3

Introduction to analytical techniques through the study of representative masterworks: formal and structural elements and their interrelationships. Analysis of 20th- and 21st-century works.

**Attributes:** Writing Intensive Course**Prerequisite(s):** MUSI 572 with a minimum grade of D-.**Equivalent(s):** MUSI 782**Grade Mode:** Letter Grading**MUSI 795 - Special Studies****Credits:** 1-4

A) J.S. Bach, B) Franz Schubert, C) Debussy and Ravel, D) the world of jazz, E) piano literature, F) 19th century French music, G) advanced analysis, H) advanced study in electronic music, I) composition through computer-generated sound, J) woodwind literature, K) brass literature, L) string literature, M) medieval performance practice, N) renaissance performance practice, O) baroque performance practice, P) classical performance practice, Q) 19th century performance practice, R) 20th century performance practice, S) woodwind repair, T) string repair, U) advanced jazz improvisation, V) advanced piano pedagogy, W) advanced accompanying, X) advanced conducting, Y) independent study. Prereq: permission. May be repeated for credit with permission.

**Repeat Rule:** May be repeated up to 4 times.**Equivalent(s):** MUSI #795W**Grade Mode:** Letter Grading**MUSI #795W - Special Studies/Cardiff****Credits:** 1-3

Advanced Music History or Advance Music Theory for Cardiff U. Study Abroad.

**Attributes:** Writing Intensive Course**Equivalent(s):** MUSI 795**Grade Mode:** Letter Grading

## Music Education (MUED)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**MUED 741 - Techniques and Methods in Choral Music****Credits:** 2

Methods for teaching choral music in 5-12th grade schools, the developing voice, vocal modeling, repertoire selection, choral conducting, rehearsal technique, sequencing and feedback, piano skills for choral rehearsal, in-school fieldwork. This class requires a fieldwork component. Students will conduct rehearsals at Oyster River Middle School 7:00am-7:50am at least once per week for a portion of the semester.

**Prerequisite(s):** EDUC 500 with a minimum grade of D- and MUSI 731 with a minimum grade of D- and MUSI 732 with a minimum grade of D-.**Grade Mode:** Letter Grading

**MUED 743 - Materials and Methods in Piano Music****Credits:** 2

Gives potential piano teachers a coherent but flexible approach to the instruction of students of different ages and levels of talent through evaluation of methods and materials and discussion of the role of the private teacher.

**Grade Mode:** Letter Grading**MUED 745 - Techniques and Methods in String Instruments****Credits:** 2

Class and individual instruction. Intensive training on the violin, viola, cello, and double bass. Classroom procedures, establishment of string programs, and evaluation of available methods materials. Permission required.

**Grade Mode:** Letter Grading**MUED 747 - Techniques and Methods in Woodwind Instruments****Credits:** 2 or 3

Basic course in embouchure formation, tone production, tonguing, fingering and instrument care as applied to each of the woodwinds: flute, oboe, clarinet, bassoon and saxophone. Methods, studies, solos and ensembles most useful with school players of woodwind instruments. Permission required.

**Grade Mode:** Letter Grading**MUED 749 - Techniques and Methods in Brass Instruments****Credits:** 2

Basic course in embouchure formation, tone, tonguing, fingering, flexibility, accuracy, and range development as applied to the trumpet or baritone horn, French horn, and trombone. Methods, studies, solos, and ensembles most likely to be useful with school players of brass instruments. Permission required.

**Grade Mode:** Letter Grading**MUED 751 - Techniques and Methods in Percussion Instruments****Credits:** 2

Basic performance skills on snare drum, timpani, mallet instruments, and other percussion instruments used in bands and orchestras. Materials and methods of instruction. Permission required.

**Grade Mode:** Letter Grading**MUED 755 - Vocal Pedagogy****Credits:** 1 or 2

A study of vocal anatomy, vocal function, and teaching methods, with an emphasis on application for singers and voice teachers.

**Grade Mode:** Letter Grading**MUED 765 - Instrumental Music Methods****Credits:** 2

Organization and delivery of instruction to groups of instrumental music students. Examination of appropriate curricula and materials, application of instrumental and conducting techniques, structure of rehearsals, assessment of student progress.

**Grade Mode:** Letter Grading**MUED 771 - Marching Band Methods****Credits:** 2

Role of marching band in the school music program. Design and execution of field shows and parade marching. Understanding of marching percussion and auxiliary units. Examination of appropriate music.

**Prerequisite(s):** MUSI 471 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUED 790 - Teaching Elementary School Music****Credits:** 3

Experiential approach toward learning creative strategies for teaching elementary school music. Includes various curricula and methods; philosophy and psychology of music; demonstration of materials and instruments. Observation and teaching in schools. Piano proficiency recommended.

**Equivalent(s):** MUED 787**Grade Mode:** Letter Grading**MUED 791 - Teaching Secondary School Music****Credits:** 2

Assembling, managing, and teaching junior/senior high school music curriculum. Academic issues of philosophy, curriculum building, application of learning theories, administration, evaluation, motivation, and classroom management combined with field experience in lesson planning and teaching/rehearsal techniques.

**Prerequisite(s):** MUSI 731 with a minimum grade of D- and MUSI 732 with a minimum grade of D-.**Grade Mode:** Letter Grading**MUED 795 - Special Studies****Credits:** 1-4

Allows upper-level students to explore individually or in groups areas related to their specific professional interests.

**Grade Mode:** Letter Grading

## National Security Intelligence Analysis (NSIA)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**NSIA 710 - National Security Policy and the Intelligence Community****Credits:** 4

This course provides students an introduction to United States national security policy and the role of the intelligence community. Current and historical case studies will highlight the functions and limits of intelligence activities in support of decision makers policy making and implementation. In this course we survey political, institutional, and cultural challenges confronting analysts as they strive to provide intelligence products relevant to strategic and tactical policy goals.

**Grade Mode:** Letter Grading**NSIA 720 - Intelligence Analysis****Credits:** 4

In this class we define intelligence and focus on analysis. We identify intelligence organizations relationships with policymakers and the types of intelligence products they produce. Students will learn to identify and create intelligence requirements and the related variables and collection targets. We will explore analytical approaches and develop critical thinking skills. In this class we will define data, the causes of intelligence failures, and identify creativity in intelligence analysis.

**Grade Mode:** Letter Grading

## Native American Indigenous Studies (NAIS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.



**NAIS 400 - Introduction to Native American and Indigenous Studies****Credits:** 4

This course serves as an introduction to the interdisciplinary field of Native American and Indigenous Studies (NAIS). NAIS cultivates a broad understanding of the history, lands, culture, literature, language and artistic expression, science and technology, race and identity, and social organization and political statuses of Indigenous peoples, emphasizing self-determination, sovereignty, and survivance globally. Students will learn about significant events and issues from Indigenous perspectives and develop new ways of thinking about Native peoples.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading

## Natural Resources (NR)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**NR 400 - Professional Perspectives in Natural Resources****Credits:** 1

Lectures by departmental faculty provide an informal look at the various natural resource disciplines and professions represented by the Department of Natural Resources. These presentations acquaint students with our faculty and inform them of some of the exciting research being undertaken in the department. Students also learn of opportunities for professional involvement. Required for all first-semester Natural Resources majors. Cr/F.

**Grade Mode:** Credit/Fail Grading**NR 403 - Introduction to Environmental Science****Credits:** 4

A multi-disciplinary introduction to Environmental Sciences, presenting basic concepts and controversies in geology, meteorology/hydrology, global biology and biogeochemistry, integrated through the study of the Earth as system. Intended primarily for declared or perspective majors in Environmental Sciences and related programs. Combines lecture and discussion with discovery and presentation experiences to address the history of ideas, and major questions and controversies, both settled and active.

**Attributes:** Inquiry (Discovery)**Grade Mode:** Letter Grading**NR 415 - Natural Resources Field Methods****Credits:** 2

This course is intended to serve first or second year students in Forestry, Wildlife and Conservation Biology, and Environmental Conservation and Sustainability. After taking this course, students are able to navigate successfully in wild terrain using pacing, map, compass, GPS; can conduct a simple planar survey including cartography; and can sample a forest in order to characterize the abundance and quality of forest resources. Moreover, students know the fundamental principles of navigation, surveying, and field sampling.

**Grade Mode:** Letter Grading**NR 417 - Sophomore Seminar: Wildlife and Conservation Biology****Credits:** 2

This course provides a professional foundation and orientation for second-year Wildlife & Conservation Biology (WCB) students. Through readings, seminars, guest speakers, and conservation, students will explore the range of what it means to be a professional Wildlife & Conservation Biologist. After taking this course, students will be better able to navigate and critique the scientific literature, synthesize and communicate information, and understand and articulate the diverse field of Wildlife & Conservation Biology.

**Grade Mode:** Letter Grading**NR 425 - Field Dendrology****Credits:** 4

Students study forest trees in natural communities and urban settings. Identification and nomenclature of important North American trees and shrubs is emphasized. Environmental factors influencing tree growth, combined with study of disturbance history, provide the context for understanding why tree species grow where they do. Students are introduced to the major forest regions of North America. Restricted to NR majors; others by permission. Special fee.

**Equivalent(s):** EC 410, FOR 425, NR 420**Grade Mode:** Letter Grading**NR 433 - Wildlife Ecology****Credits:** 0 or 4

Historical, biological, ecological, and sociological factors influencing the wildlife resource and its management. Concepts in populations, communities, habitat, and contemporary wildlife issues. Special fee. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Equivalent(s):** WILD 433**Grade Mode:** Letter Grading**NR 435 - Contemporary Conservation Issues and Environmental Awareness****Credits:** 4

Explores the impacts of technology and human activity on our environment and natural resources. Key conservation issues are used as examples of past and present biological, social, and environmental conflicts.

**Attributes:** Environment,TechSociety(Disc)**Equivalent(s):** EC 435, NR 435H, NR 435W, NR 535**Grade Mode:** Letter Grading**NR 435H - Honors/Contemporary Conservation Issues and Environmental Awareness****Credits:** 4

Explores the impacts of technology and human activity on our environment and natural resources. Key conservation issues are used as examples of past and present biological, social, and environmental conflicts.

**Attributes:** Environment,TechSociety(Disc); Honors course**Equivalent(s):** NR 435**Grade Mode:** Letter Grading

**NR 437 - Principles of Sustainability****Credits:** 4

In this course, we investigate the foundational principles of the concept of sustainability. Our objectives include: understanding the many integrated dimensions of sustainability; examining illustrations of unsustainable human-environment relations; recognizing the complexity of sustainability problems and the challenges to finding solutions; comprehending that human-environment relations are a multi-level, complex and dynamic system, and appreciating that the sustainability of ecosystems is necessarily embedded in social, cultural and historical trends.

**Grade Mode:** Letter Grading**NR 439 - Environmental Biology****Credits:** 4

Environmental biology focuses on the origins, functions, and interactions of populations, communities, species and ecosystems in relation to dynamic environmental processes. The main course objective is to provide a basic understanding of ecosystem function and the ecological, evolutionary, and genetic principles necessary to understand biological diversity and its distribution. Special fee.

**Grade Mode:** Letter Grading**NR 444E - Eye of Newt and Toe of Frog: The World of Poisonous Animals****Credits:** 4

Course examines a variety of animal poisons and venoms in different contexts. Historical, cultural, physiological, pharmacological, and evolutionary viewpoints are explored. Readings, guest lectures, and peer blog entries are used to refine critical thinking skills and form the basis of in-class discussions.

**Attributes:** Biological Science(Discovery); Inquiry (Discovery)**Grade Mode:** Letter Grading**NR #444F - Does Extinction Matter****Credits:** 4

This course examines the causes and potential consequences of biodiversity loss. By considering ecological, economic, and ethical perspectives students will be asked to develop an informed personal answer to the question Does extinction matter? Development of critical thinking as well as written and oral communication skills will be stressed through a variety of in-class and outside class activities.

**Attributes:** Humanities(Disc); Inquiry (Discovery)**Grade Mode:** Letter Grading**NR #458 - The Science of Where****Credits:** 4

This online course introduces the principles and practices of spatial thinking through lectures, readings, discussions, and hands-on laboratory exercises. Students learn not only to think spatially, but also how to apply this knowledge in their own fields of study.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Grade Mode:** Letter Grading**NR 501 - Studio Soils****Credits:** 0 or 4

An overview of physical, chemical, and biological properties of soil. Sub-disciplines of soil chemistry, soil physics, soil microbiology, soil genesis, and classification. Special fee. Lab.

**Attributes:** Writing Intensive Course**Equivalent(s):** SOIL 501**Grade Mode:** Letter Grading**NR 502 - Forest Ecosystems and Environmental Change****Credits:** 4

Forest ecosystems cover a large fraction of the Earth's land surface and account for most of its terrestrial biological productivity. This course introduces forest ecosystems around the world and explores both the natural processes that regulate them and the environmental factors that cause change over time. Topics include tree growth strategies, successional change, nutrient cycling, and human-induced stressors such as air pollution and climate change. Special fee.

**Attributes:** Environment,TechSociety(Disc)**Equivalent(s):** FOR 502, NR 502W**Grade Mode:** Letter Grading**NR 504 - Freshwater Resources****Credits:** 0 or 4

Major determinants of freshwater resources including hydrologic cycle and water balance, precipitation, stream-flow measurement, pollution, water supply and sewage treatment, water resource management and regulation. Special fee. Lab/field trips.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Equivalent(s):** WARM 504**Grade Mode:** Letter Grading**NR 506 - Forest Entomology****Credits:** 0 or 4

Insects are among the most diverse and abundant organisms on the planet and play a crucial role in forest ecosystems. Insects from the base of the consumer food web in forests and are key drivers of nutrient cycling, pollination, etc. This course surveys common and important insect orders, families, and species found in forest systems and provides the tools for basic identification and biological study of these fascinating creatures. Special fee.

**Equivalent(s):** FOR 506**Grade Mode:** Letter Grading**NR 507 - Introduction to our Energy System and Sustainable Energy****Credits:** 4

This course introduces students to our domestic energy system and the expanding efforts to develop our use and acceptance of sustainable energy. It provides a historical context of our system that explains where we are today in terms of the grid, technologies, energy use and production and energy markets, primarily for electricity and building use. The course examines how our current impedes and enhances opportunities for innovation in renewable technologies and financing.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**NR 508 - Communicating Science****Credits:** 4

Effective communication and community engagement with science are critical, particularly in our modern era of information overwhelm. In this course, we actively explore tools and techniques for oral, written, and visual communication of science in various mediums and with a range of publics and motivations. With an emphasis on critical and creative thinking, we will cultivate a set of skills and best practices as students develop a personal philosophy for communicating science with diverse audiences. Prereq: ENGL 401.

**Grade Mode:** Letter Grading

**NR 527 - Forest Ecology****Credits:** 4

Introduces basic and applied ecology of forests, with emphasis on ecosystem processes, including water, energy, and nutrient cycles; biological interactions, including biodiversity and plant-plant, plant-animal, and plant-microbe relationships; and human impacts, including forest management, land-use/land cover-change, and changes in atmospheric chemistry. Restricted to NR majors or by Permission. Special fee. Lab.

**Equivalent(s):** FORT 527**Grade Mode:** Letter Grading**NR 561 - Chemistry of the Environment****Credits:** 4

The course is designed for students who desire a deeper understanding of chemical principles in environmental- and ecology-related disciplines. This course will focus on understanding key principles that underline many of the important chemical processes that influence the functioning and health of environmental systems. These include reaction rates, oxidation-reduction, kinetics and enzyme dynamics, pH and acid-base equilibria, organic transformations, colloids and particulate behavior, and analytical approaches to understanding environmental chemistry. Prereq: CHEM 403, CHEM 405 or CHEM 411.

**Grade Mode:** Letter Grading**NR 600 - Work Experience****Credits:** 0

As part of their degree program, students are expected to engage in a work experience or internship under professional supervision and approved by natural resources faculty. This experience may occur at any time during their sophomore through senior years. Students are responsible for arranging their own experience in consultation with their advisor and NREN faculty members. Permission. Cr/F.

**Equivalent(s):** NR 599**Grade Mode:** Credit/Fail Grading**NR 602 - Natural Resources and Environmental Policy****Credits:** 4

Contemporary natural resource and environmental policy problems/issues are addressed from a policy sciences perspective with emphasis on domestic policy solutions. Critical assessment of major policy initiatives and their implementation toward sustainable resource use and a healthy environment. Public policies are analyzed to determine the extent to which their implementation strategies have succeeded, and to assess their adequacy within a bioregional or ecosystem approach, and/or capacity to integrate economic and environmental decisions. Cases include national and local policies in their global context. Students apply public policy analysis and decision tools in laboratory sessions. Prereq: junior/senior; Restricted to NR majors or by Permission. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** EC 702**Grade Mode:** Letter Grading**NR 603 - Landscape Ecology****Credits:** 4

This course focuses on the relationships between scale, spatial patterns and ecological processes. Through lecture, discussion and lab exercises students learn about scale and scaling techniques, the abiotic and biotic processes creating landscape patterns, how landscape patterns are characterized, and the application of landscape ecology theory to contemporary issues in conservation and management. Emphasis placed on landscape perspectives and practices as they relate to understanding and managing populations and communities. Prereq: BIOL 541, NR 527 or permission of instructor.

**Grade Mode:** Letter Grading**NR 606 - International Energy Topics****Credits:** 4

This course introduces students to international energy topics. Students will be exposed to a historical context and current status of several energy-related issues from an international perspective. Topics range from energy poverty, energy and climate change and global fossil fuel subsidies. Studies of specific technologies will be delivered through the context of international leaders, Iceland and geothermal, the UK and offshore wind and solar in Germany.

**Grade Mode:** Letter Grading**NR 615 - Wildlife Habitats****Credits:** 4

Introduces animal-habitat associations, including an examination of spatial and temporal features of wildlife habitat, the evolution of habitat selection, and how habitat suitability/productivity is evaluated. Prereq: woody plant identification; limited to wildlife management majors and minors. Permission. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** WILD 615**Grade Mode:** Letter Grading**NR #625 - Physiological Ecology****Credits:** 4

Course examines the physiological mechanisms and adaptive responses of organisms that facilitate their survival in changing natural environments. Following an introduction to homeostasis and general physiological principles, topics focus on adaptations to the marine and freshwater environments, to estuarine challenges, and the specific requirements of terrestrial and aerial environments. Additional topics center on adaptations to extreme habitats and to parasitic life styles. Furthermore, the physiological bases of migrations, sleep, and mating/life history strategies are also explored. Examples are drawn from invertebrates, vertebrates, and plants. Prereq: one year college level biology.

**Grade Mode:** Letter Grading**NR #637 - Practicum in Environmental Conservation****Credits:** 4

Independent participation in an environmental conservation activity in the area of the student's specialization. Individual or group projects may be developed under the supervision of any faculty member within or outside natural resources or with supervisors in public and private agencies, upon approval of the course instructor. Research projects not acceptable. Prereq: senior standing in the environmental conservation program. Cr/F.

**Equivalent(s):** EC 637, NR 637H**Grade Mode:** Credit/Fail Grading

**NR 640 - Wildlife Population Ecology****Credits:** 4

An overview of the mechanisms that influence the characteristics of terrestrial wildlife populations. Lecture covers concepts and theory, with a central focus on population growth, how it is influenced by demographic rates of survival, recruitment, immigration/emigration, with additional consideration given to predation and competition, and how population status is monitored for wildlife, including occupancy, abundance, and viability. Lab provides hands-on exercises, often using computer software, with analysis and interpretation of data from local case studies. Prereq: BIOL 412, BIOL 541 or NR 527.

**Grade Mode:** Letter Grading**NR 642 - Introduction to Biogeography****Credits:** 4

Biogeography is an integrative field of inquiry that unites concepts and information from evolutionary biology, ecology, systematics, geology, and physical geography. Students are introduced to the distribution patterns of wild animals and plants and to the factors that determine these patterns. In this course, the emphasis is on evolutionary aspects of biogeography, biodiversity, and implications for conservation issues.

**Grade Mode:** Letter Grading**NR 643 - Economics of Forestry****Credits:** 4

Intermediate-level analysis of supply and demand for forest-based goods and services, managerial economics, taxation, capital investments.

Prereq: EREC 411 or ECON 402.

**Equivalent(s):** FOR 643**Grade Mode:** Letter Grading**NR 650 - Principles of Conservation Biology****Credits:** 4

Examines the major issues relevant to conservation of biodiversity from the genetic to the ecosystem level. In addition to addressing ecological and biological principles, the interdisciplinary nature and challenges of managing for conservation biology, including the role of economic and social factors are examined. Prereq: one semester of biology, botany, or zoology. Special fee.

**Equivalent(s):** EC 502**Grade Mode:** Letter Grading**NR #655 - Vertebrate Biology****Credits:** 4

Introduces the diversity and evolution of vertebrates. Topics span the morphological, physiological, behavioral, and ecological diversity among the major vertebrate taxa. Labs stress identification of vertebrate taxa based on specimens and morphological structures. Permission. Prereq: BIOL 411 and BIOL 412; or equivalent. Special fee. Lab.

**Equivalent(s):** NR 655H, WILD 655, WILD 655H**Grade Mode:** Letter Grading**NR 658 - Introduction to Geographic Information Systems****Credits:** 4

Introduces the use of geographic information systems (GIS) for natural resources and related fields. Data models/structures, map projections, data input/output/storage, data analysis/modeling, interpolation, and data quality/standards. Hands-on lab using ArcGIS software. Restricted to NR majors or permission. (Also offered as GEOG 658.)

**Equivalent(s):** GEOG 658**Grade Mode:** Letter Grading**NR 660 - Ecology and Biogeography of New Zealand****Credits:** 5

Covers the principles of ecology and biogeography, with a distinct focus on New Zealand. Students investigate the processes that have shaped the New Zealand landmass and its biota. Impact of human settlement on New Zealand's ecosystems is explored in-depth. Methods and techniques of scientific research are incorporated in this course. Field exercises focus on topical case studies in a variety of ecosystems and are designed to strengthen students' conceptual knowledge, enable students to apply this knowledge, as well as develop field skills including classification systems, mapping, habitat assessment, field identification, and sampling techniques. Prereq: junior/senior; permission. Coreq: NR 661, NR 662, and NR 663. Special fee.

**Co-requisite:** INCO 588, NR 661, NR 662, NR 663**Equivalent(s):** EC 660**Grade Mode:** Letter Grading**NR 661 - Restoration Ecology and Ecosystem Management in New Zealand****Credits:** 4

Current restoration projects and strategies for management of natural resources in New Zealand form the framework for this course. Solving problems related to introduced species, changes in habitat, the preservation of ecological processes and watershed management are the major foci of this course. Management of resources for multiple uses, as well as primary and extractive industries is included. Field exercises focus on topical case studies in a variety of terrestrial and coastal-marine ecosystems and include the identification of habitats and communities, stresses on the environment, and risk analysis. Prereq: junior/senior; permission. Coreq: NR 660, NR 662, and NR 663.

**Co-requisite:** NR 660, NR 662, NR 663**Equivalent(s):** EC 661**Grade Mode:** Letter Grading**NR 662 - Environmental Policy, Planning and Sustainability in New Zealand****Credits:** 3

Introduces students to politics in New Zealand. Investigating policy pathways and planning forms part of the curriculum. Students assess scope of legislation, including the Resource Management Act (1991), for the economic and socio-political environment in New Zealand. Government obligations to the Treaty of Waitangi, and customary uses of resources are included as part of this course. Students are exposed to diverse perspectives of local authority planners and policy makers, local iwi (tribes), the Department of Conservation, and community groups. Students examine case studies involving the resource consent process at several levels of decision-making. Case studies provide a comprehensive overview of the interactions between the environment and people and their cultural and socio-economic needs. Prereq: junior/senior; permission. Coreq: NR 660, NR 661, and NR 663.

**Co-requisite:** NR 660, NR 661, NR 663**Equivalent(s):** EC 662**Grade Mode:** Letter Grading

**NR 663 - Applied Directed Research in New Zealand****Credits:** 4

Working closely with faculty, student teams investigate selected ecological, resource management or policy issues. All projects have scientific and societal relevance, and contribute to ongoing/existing projects in the region. Students use the scientific method to design and carry out their projects. Development of rigorous field investigations, experimental design, data analysis, and scientific writing are emphasized. Students prepare a research report and present their findings in a seminar that includes stakeholders and people from the local community. Prereq: junior/senior; permission. Coreq: NR 660, NR 661, and NR 662. Writing intensive.

**Co-requisite:** NR 660, NR 661, NR 662**Attributes:** Writing Intensive Course**Equivalent(s):** EC 663**Grade Mode:** Letter Grading**NR 664 - Conservation Genetics****Credits:** 4

Conservation genetics is the application of genetics to preserve species as dynamic entities capable of coping with environmental change. Includes genetic management of small populations, resolution of taxonomic uncertainties, defining management units within species, and the use of molecular genetic analyses to forensics and the understanding of the biology of species. Topics include methods of measuring genetic diversity in populations, identification of the units of biodiversity to which conservation efforts are directed, genetics of population fragmentation, genetic management of wild and captive populations, reintroduction of organisms back into the wild, and the role of forensics in enforcement and development of species recovery plans. Recitation.

**Mutual Exclusion:** No credit for students who have taken GEN 705.**Grade Mode:** Letter Grading**NR #701 - Ecological Sustainability and Values****Credits:** 4

Deeper more fundamental philosophical questions, including spiritual values questions, are being asked concerning the ecological/environmental challenge of our time; its causes and resolution. Aspects of this challenge—environmental education, energy, food, agriculture, and natural resources—analyzed with ethics and values approaches. Students develop ways of responding to problem identification and resolution. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** EC 702**Grade Mode:** Letter Grading**NR 703 - Watershed Water Quality Management****Credits:** 4

Principles of land use as they relate to water quality and quantity. Lectures focus on biogeochemical cycles and the watershed approach to land and water resource management. Labs and field trips focus on methods of water sampling and analysis. One year of chemistry is recommended. Prereq: NR 504 or NR 604 or permission. Special fee. Lab/field trips.

**Equivalent(s):** WARM 703**Grade Mode:** Letter Grading**NR 706 - Soil Ecology****Credits:** 4

Examines the ecological relationships between soil microorganisms and their biotic and abiotic environment, with emphasis on the role of soil microorganisms in biogeochemical cycling. Specific objectives are to examine the biodiversity present in soil systems, factors controlling microbial community composition and diversity, and linkages between soil microbial communities, soil physical properties, and soil organic matter and nutrient cycling dynamics. Prereq: BIOL 412 or BIOL 409, CHEM 403, or equivalent, or permission. Special fee. Lab. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** SOIL 706**Grade Mode:** Letter Grading**NR 707 - Environmental Modeling****Credits:** 4

Environmental Modeling introduces students to a range of key mathematical and computer modeling concepts and the ways they can be used to address important scientific questions. The course is divided into four topical sections: Population and Community Ecology, Hydrology, Biogeochemistry, and Ecosystems. In each section, modeling concepts and skills are presented together with environmental information to emphasize the linkage between quantitative methods and relevant scientific results. Prereq: MATH 425.

**Grade Mode:** Letter Grading**NR 712 - Mammalogy****Credits:** 4

Evolution, ecology, behavior, physiology and diversity of mammals. The focus of the course is on conceptual issues, such as the relation of structure, function, physiology and ecology of species; reproductive physiology and life history strategies; and the evolution of mating systems and social structure. Familiarity of mammalian groups to the family level and identification of local fauna to species will be required. Prereq: BIOL 411 and BIOL 412 or equivalent. Lab. (Not offered every year.) Special fee.

**Grade Mode:** Letter Grading**NR 713 - Quantitative Ecology****Credits:** 4

Basic quantitative concepts applied to ecological systems including: population and community dynamics, experimental design, spatial patterns, species abundance and diversity, community organization, metapopulations, and landscapes. Prereq: intro. courses in statistics, and ecology.

**Equivalent(s):** FORS 713**Grade Mode:** Letter Grading



**NR 720 - International Environmental Politics and Policies for the 21st Century****Credits:** 4

Students examine policies for managing human activities to sustain the health of regional ecosystems and planetary life-support systems. Selected problems of the international commons (oceans, marine resources, atmosphere, migratory species); global and regional carrying capacity (population, resource consumption), internationally shared ecosystems (transboundary watersheds and waterbodies, tropical forests); and the relevant international institutions and politics for policy formation, conflict resolution, and implementation. Using a policy-analytic framework, students develop case studies to assess international policies and institutional arrangements to achieve the objectives of Agenda 21–Earth Summit Strategy to Save the Planet. Prereq: permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** EC 720**Grade Mode:** Letter Grading**NR 724 - Resolving Environmental Conflicts****Credits:** 4

Theories and practices of environmental dispute settlement. Roles of public, non-governmental and governmental organizations. Effectiveness of public participation initiatives in influencing public policy decisions and/or resolving environmental conflicts. Alternative approaches to consensus (policy dialogues, joint problem solving; strategic planning; negotiation, mediation) as well as litigation. Specific cases are critiqued and evaluated; conflict resolution skills are developed. Students observe and/or participate in ongoing local decision processes. Prereq: second-semester juniors, seniors; permission. Lab. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** EC 724**Grade Mode:** Letter Grading**NR 729 - Silviculture****Credits:** 4

The science and art of establishing, growing, and tending forests to meet multiple objectives. Basics of forest stand dynamics applied to the problems of timber management, wildlife habitat, water quality, and carbon sequestration. Prereq: NR 425 and NR 527 or permission. Special fee.

**Grade Mode:** Letter Grading**NR 730 - Terrestrial Ecosystems****Credits:** 4

Processes controlling the energy, water, and nutrient dynamics of terrestrial ecosystems; concepts of study at the ecosystem level, controls on primary production, transpiration, decomposition, herbivory; links to earth-system science, acid deposition, agriculture. Prereq: NR 527 and BIOL 409 or BIOL 411, or permission.

**Equivalent(s):** EOS 730, FOR 730, FORS 730**Grade Mode:** Letter Grading**NR 734 - Tropical Ecology****Credits:** 4

This course introduces students to the ecology of different tropical ecosystems, and involves students in analyzing and interpreting ecological field data and remotely sensed data. An important emphasis is to understand patterns and processes across scales - from individual plants to ecosystems and landscapes. The course also addresses important global issues in the tropics, including climate change, land use change, diverse ecosystem services, and sustainable resource management. Prereq: NR 527, BIOL 541, or equivalent.

**Equivalent(s):** FOR 734**Grade Mode:** Letter Grading**NR 740 - Inventory and Monitoring of Ecological Communities****Credits:** 4

Provides an introduction to the major concepts associated with monitoring change in ecological communities. Students develop an appreciation for such issues as: identification of appropriate baselines for comparison; use of indicator species; the tools used to inventory common, rare, and secretive species; how trend data are analyzed; and the implications of failing to detect an indicator species. Restricted to senior wildlife majors others by permission. Special fee. Lab.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**NR 743 - Ecology and Society in a Changing Arctic****Credits:** 4

Students will gain an appreciation for the effect of climate change on ecology and people in the Arctic, which is experiencing rapid climate change. The format of this course is inquiry-based, peer to peer instruction, and self-driven exploration of literature and data. Students will tackle a research project, including in-depth analysis in R, with the aim of contributing new knowledge in the form of a peer-reviewed publication, policy brief, outreach product, or other technical document. Prereq: BIOL 528 or SOC 402 or instructor permission.

**Grade Mode:** Letter Grading**NR 744 - Biogeochemistry****Credits:** 4

Examines the influence of biological and physical processes on elemental cycling and geochemical transformations from the molecular to the global scale, involving microorganisms, higher plants and animals and whole ecosystems; factors that regulate element cycles including soils, climate, disturbance and human activities; interactions among the biosphere, hydrosphere, lithosphere, and atmosphere; transformations of C, N, S, and trace elements. Prereq: one semester biology and two semesters of chemistry or permission.

**Grade Mode:** Letter Grading**NR 745 - Forest Management****Credits:** 4

Forest land ownership, management objectives, forest inventory regulation and policy, forest administration, professional responsibilities and opportunities. Restricted to Natural Resources majors. Lab. Special fee.

**Attributes:** Writing Intensive Course**Equivalent(s):** FOR 745**Grade Mode:** Letter Grading

**NR 749 - Forest Inventory and Modeling****Credits:** 4

Applied sampling and statistical techniques for assessing current forest conditions and predicting future growth, yield, and structure. Topics include plot and point sampling, ecological inventory, and evaluation of site quality and stand density. Prereq: MATH 420 and BIOL 528. Special fee.

**Grade Mode:** Letter Grading**NR 750 - Sustaining Biological Diversity****Credits:** 4

This course examines the approaches to recover and restore declining populations and at-risk communities. Major concepts addressed include: population viability analysis; use of simulation models to explore conservation alternatives; integrating the political, economic, and social realities that affect natural resource management; the adaptive nature of any restoration of rare organisms and communities; and preparing for the challenges associated with invasive organisms and climate change. Prereq: NR 650 and BIOL 528. Only open to Wildlife & Conservation Biology majors.

**Grade Mode:** Letter Grading**NR 751 - Aquatic Ecosystems****Credits:** 4

Energy flow and nutrient cycling in streams, rivers and lakes, with an emphasis on understanding the control of primary productivity, decomposition and community structure by both hydrologic and biotic drivers. Role of aquatic ecosystems in carbon and nitrogen budgets at watershed, regional, and global scales. Impacts of environmental changes such as global climate change and suburbanization on aquatic ecosystems. Prereq: General Ecology. Lab. Special fee.

**Grade Mode:** Letter Grading**NR 753 - Critical Issues in Sustainability: Sustainability as an Abundance Paradigm****Credits:** 2

After 30 years in common parlance, the success of "Sustainability" still seems far from its goal. In part, this is because sustainability is typically applied as another way to manage scarcity, a paradigm informing economic and social policy for well over a century. Underlying this dominant view of sustainability, an increasing number of approaches to sustainability projects, some of longstanding are entering the mainstream as pieces of an identifiable, and distinctly novel, paradigm based on the assumption of abundance, rather than scarcity. These include ideas of the Natural Step and Natural Capital, as well as Cradle to Cradle and Biomimicry. The goals of this seminar are (1) to survey and discuss this growing literature and its application to the solution of sustainability problems; and (2) research and analysis towards transforming scarcity-based to abundance-based solutions. To be considered as a capstone option for majors in Environmental and Conservation Sustainability, students must also register for NR 754 in the Spring semester.

**Grade Mode:** Letter Grading**NR 754 - Critical Issues in Sustainability: Sense of Place****Credits:** 2

Costa Rica is the happiest country on Earth. Bhutan is a living laboratory for education. Bolivia has a Law of Mother Earth in its constitution. Cities and towns in the US create local solutions to problems of resource sustainability while the national dialogue stagnates. What drives some places to lay the foundations for sustainable futures, while others do not? Sense of Place is a powerful lens through which to view the relative achievements of places and organizations toward creating a sustainable future. The goals of this seminar are (1) to survey the Sense of Place literature and to analyze case studies of the role of Sense of Place in the success of sustainability efforts nationally and internationally; and (2) to research the role of Sense of Place in our local community environment and to relate it to stated goals in existing sustainability plans. To be considered as a capstone option for majors in Environmental and Conservation Sustainability, students must also register for NR 753 in the Fall semester.

**Grade Mode:** Letter Grading**NR 757 - Remote Sensing of the Environment****Credits:** 4

Practical and conceptual presentation of the use of remote sensing and other geospatial technologies for mapping and monitoring the environment. This course begins with the use of aerial photographs (photogrammetry, and photo interpretation) and includes measures of photo scale and area, parallax and stereo viewing, object heights, flight planning, photo geometry, the electromagnetic spectrum, camera systems and vegetation/land cover mapping. The course concludes with an introduction to other geospatial technologies including digital image analysis, global positioning (GPS), and geographic information systems (GIS). Conceptual lectures are augmented with practical homework assignments and hands-on lab exercises. Prereq: algebra. Special fee. Lab. (Also offered as GEOG 757.)

**Equivalent(s):** FOR 757, FORS 757, GEOG 757**Grade Mode:** Letter Grading**NR 759 - Digital Image Processing for Natural Resources****Credits:** 4

Introduces digital remote sensing including multispectral scanners (Landsat and SPOT) radar, and thermal imagery. Hands-on image processing including filtering, image display, ratios, classification, registration, and accuracy assessment. GIS as it applies to image processing. Discussion of practical applications. Use of ERDAS image-processing software. Knowledge of PCs required. Prereq: NR 757 or equivalent and permission. (Also offered as GEOG 759.)

**Equivalent(s):** FOR 759, FORS 759, GEOG 759**Grade Mode:** Letter Grading**NR 760 - Geographic Information Systems in Natural Resources****Credits:** 4

This course in geographic information systems (GIS), covers advanced theory, concepts, and applications of GIS for natural resource and related disciplines. Discussion of database structures, data sources, spatial data manipulation/analysis/modeling, data quality and assessment. Students conduct a project of their design exploring aspects of GIS most useful to them. Lecture emphasizes concepts and applications through a text and selected peer-reviewed articles. Lab uses the latest version of ArcGIS software and provides hands-on experience. Prereq: introductory GIS course. Permission required.

**Equivalent(s):** FOR 760, FORS 760, GEOG #760**Grade Mode:** Letter Grading

**NR 761 - Environmental Soil Chemistry****Credits:** 4

Chemical transformations in soils are the basis for soil fertility and plant productivity in natural and managed ecosystems, and also influence key ecosystem processes including soil organic matter turnover and soil-atmosphere exchange of trace gases. This class will explore soil chemistry processes and transformations related to soil nutrient cycling, plant nutrient acquisition, and other critical environmental services. Prereq: a course in soil science or instructor permission.

**Grade Mode:** Letter Grading**NR 765 - Community Ecology****Credits:** 4

Properties of biotic communities, especially biodiversity. Effects of physical stress, disturbance, competition, predation, positive interactions, and dispersal on community properties. Community dynamics, including succession and stability. Prereq: applied biostatistics and general ecology. Lecture and discussion.

**Grade Mode:** Letter Grading**NR 782 - Forest Health in a Changing World****Credits:** 4

Forests cover over 30% of the land surface of the Earth and are incredibly important ecologically, economically, and to the health of the planet. While forests show great capacity to withstand disturbance, these ecosystems are increasingly threatened worldwide by climate change, native and introduced insects and disease, poor management practices, land clearing, drought, fire, and pollution. This course offers an overview of the dominant threats to forests, their causes and consequences, and options for monitoring, management, and mitigation. Special fee.

**Grade Mode:** Letter Grading**NR 784 - Sustainable Living - Global Perspectives****Credits:** 4

The pursuit of sustainable solutions to living in our contemporary world is a global endeavor. In this course, the concept of living sustainably is explored from a broad international perspective. Global scale issues impacting sustainable resource use are considered, including population growth, economic globalization and development, social equity, and cultural values. We will expand our awareness of alternatives to those current practices that impede the sustainability of human societies as part of the earth's natural systems. We will also pursue an understanding of the interrelated socio-economic conditions, combined with social and personal ethics and values necessary to move toward a more sustainable future. And each of us will come to value what sustainable living means for our own lives. Prereq: NR 437 or NR 435.

**Equivalent(s):** EC 784**Grade Mode:** Letter Grading**NR 785 - Systems Thinking for Sustainable Solutions****Credits:** 4

This course applies systems thinking as a problem-solving approach aimed at exploring possibilities for creating a future based on sustainable relationships between healthy human societies and their natural environments. Types of systems and systems tools are utilized to describe human-environment relationships and to emphasize their resiliency or vulnerability to future unsustainable events and/or practices. We explore how systems may be restructured to create more sustainable outcomes. Pre- or Coreq: NR 437 or NR 435.

**Equivalent(s):** EC 785**Grade Mode:** Letter Grading**NR 786 - Leadership for Sustainability****Credits:** 4

In this course we review and evaluate current knowledge and practice regarding the attainment of sustainability in social and environmental relations. We particularly focus on the meaning and qualities of leadership for achieving a sustainable future. Along the way, we also reflect on our own leadership styles and qualities. Topics include the role of leaders and leadership practices in government, business, academia etc; concepts and theories for achieving social change; and case studies exemplifying a range of leaders and approaches toward sustainability. Prereq: NR 437 or NR 435. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**NR 787 - Advanced Topics in Sustainable Energy****Credits:** 4

This course engages students in advanced topics in sustainable energy. Course reviews basic structures of our energy system, energy markets and economics, and the environmental, economic and technological of energy landscape. Focus is on electricity and building use with introductions to the transportation system. Students gain the knowledge to evaluate innovations in technology, policy and financing necessary to implement sustainable energy goals from conservation and efficiency to renewables and energy storage. Special fee.

**Grade Mode:** Letter Grading**NR 791 - Preparation for Capstone****Credits:** 1

This class will require that students develop a proposal for their senior capstone experience, seek approval for that proposal from a faculty sponsor, and be prepared to complete the capstone senior year. Students will also work on resume development, on writing text introducing themselves to prospective employers, and on interviewing strategies. Cr/ F.

**Grade Mode:** Credit/Fail Grading**NR 795 - Investigations****Credits:** 1-4

Investigations in Natural Resources may include topics in environmental conservation, forestry, soil and watershed management, ecosystems, and wildlife management. Permission required. Special fee on some topics.

**Grade Mode:** Letter Grading**NR 795W - Investigations****Credits:** 1-4

Investigations in Natural Resources may include topics in environmental conservation, forestry, soil and watershed management, ecosystems, and wildlife management. Permission required. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**NR 799 - Honors Senior Thesis****Credits:** 1-4

Honor/thesis students conduct an independent research project, relevant to the student's area of specialization in the major, under the direction of a faculty sponsor. Students submit a research proposal, write a final report, and provide an oral presentation. One or two semester sequence. Restricted to Senior/Natural Resource Majors. Permission required.

**Attributes:** Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** EC 799, FOR 799, WARM 795, WILD 799**Grade Mode:** Letter Grading

## Neuropsychology (NPSY)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

### NPSY 600 - Behavioral Neuroscience

**Credits:** 4

This course is an introduction to behavioral neuroscience, with a focus on clinical applications. The course begins with an in-depth overview of the structure and function of neurons and then moves into topics such as sensory processing, psychopathology, and cognition. Students will learn about neural networks that give rise to these behaviors, and how the brain interacts with other organs. Additionally, students will learn through case studies.

**Prerequisite(s):** PSYC 401 with a minimum grade of D-.

**Grade Mode:** Letter Grading

### NPSY 700 - Neuroimaging: Theory and Application

**Credits:** 4

Neuroimaging techniques are commonly used in both clinical and research settings. This course introduces students to the fundamental principles governing neuroimaging. Topics covered include neuroanatomy and neurobiology reviewed in the context of different neuroimaging methods such as computed tomography, magnetic resonance imaging, electroencephalogram, and position emission tomography. We will review the various methods for processing structural, functional, and multimodal imaging datasets. Students will also gain hands on experience processing neuroimaging data during computer lab simulations.

**Prerequisite(s):** PSYC 531 with a minimum grade of D- or NPSY 600 with a minimum grade of D-.

**Grade Mode:** Letter Grading

### NPSY 701 - Neuropsychology Capstone Project

**Credits:** 4

Under the direction of a faculty mentor, students will perform a research project in one of the labs within the Life Sciences department. Students will work with their mentor to design a research project, which will be approved by the course instructor. During class students will present their projects and be provided resources on how to navigate setbacks. Additionally, students will learn about: research ethics, review statistical methods, poster & manuscript preparation, and careers in neuroscience.

**Prerequisite(s):** PSYC 402 with a minimum grade of D- and PSYC 502 with a minimum grade of D- and (PSYC 531 with a minimum grade of D- or NPSY 600 with a minimum grade of D-).

**Grade Mode:** Letter Grading

## Neuroscience and Behavior (NSB)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

### NSB 400 - Topics Neuroscience & Behavior

**Credits:** 1

This seminar type course is designed as an introductory experience for incoming first-year students, although it may be taken by students transferring into the major. Topics covered will include sensory biology, learning and memory, homing and navigation, neuromodulators and stress, reproductive behaviors. The format will rely heavily on discussion, prompted either by assigned readings or presentations by program faculty on their areas of expertise. Credit/fail. 1 cr.

**Grade Mode:** Credit/Fail Grading

### NSB 500 - Fundamentals of Neuroscience and Behavior I

**Credits:** 3

The course will introduce students to the fundamental neural processes underlying behavior. It will begin with a detailed examination of the properties of individual neurons and then move on to demonstrate how neurons can communicate together to produce complex behaviors. Some of the basic concepts that will be covered will include: the molecular basis of electrical and chemical communication, sensory transduction and processing, neuropharmacology, the neural basis of reflexes and simple behavior, development of the nervous system and the influence of external stimuli on neural processing. Prereq: BIOL 411 and BIOL 412 and CHEM 403 and CHEM 404.

**Co-requisite:** NSB 501

**Grade Mode:** Letter Grading

### NSB 501 - Fundamentals of Neuroscience and Behavior I Laboratory

**Credits:** 2

The course is designed to expose students to some of the classic experiments in cellular and molecular Neurobiology. They will record from sensory and motor neurons, stain and view neurons, carry out simple behavior experiments and record from muscles in freely behaving animals. The laboratory exercises will run parallel with the concepts taught in lecture and complement the lecture material in many ways. Students will conduct actual experiments, analyze the results and write lab reports as well. Prereq: BIOL 411 and BIOL 412 and CHEM 403 and CHEM 404. Special fee.

**Co-requisite:** NSB 500

**Grade Mode:** Letter Grading

### NSB 502 - Fundamentals of Neuroscience and Behavior II/Systems Neuroscience

**Credits:** 3

This course is an introduction to the questions addressed by scientists who aim to understand the biological basis of behavior and cognition. This semester we will review the major organization of the central nervous system and how these systems interact with each other to produce behavior and cognition. Major topics will include: the development and emergence of behavior; movement; the neural basis of cognition, and language, thought, affect and learning. Prereq: BIOL 411 and BIOL 412 CHEM 403 and CHEM 404, NSB 500 and NSB 501.

**Co-requisite:** NSB 503

**Grade Mode:** Letter Grading



**NSB 503 - Fundamentals of Neuroscience and Behavior II Laboratory**  
**Credits:** 2

This laboratory class with compliment the material being taught in NSB 502. The laboratory will focus on behavioral and cognitive neuroscience experiments. Students will learn about neuroanatomy and neuroscience research methods, including experimental design, data collection, statistical analysis, data interpretation, and manuscript preparation through conducting actual experiments. Students will write research reports describing their experiments and will receive some basic computer programming and research ethics training. Prereq: NSB 500, NSB 501.

**Co-requisite:** NSB 502**Grade Mode:** Letter Grading**NSB 705 - Molecular and Cellular Neurobiology****Credits:** 4

The overarching goal of this course is to examine the molecular and cellular mechanisms underlying neuronal function. This course builds on fundamental knowledge in neuroscience. Students will be exposed to primary literature regarding how different model organisms have been used to understand neurons. Prereq: BIOL 411 and BIOL 412. CHEM 403 and CHEM 404. NSB 500 and NSB 502.

**Grade Mode:** Letter Grading**NSB 727 - Animal Communication****Credits:** 4

This course examines the principles underlying how animals communicate with each other and why they communicate the way they do by using perspectives drawn from a broad range of disciplines including physics, chemistry, ecology, psychology, economics, and behavioral ecology. Students will explore the primary literature, and work in teams to conduct independent research. The course is intended for advanced undergraduate or graduate students interested in neuroscience and behavior, evolution, wildlife and conservation biology, or zoology. Prereq: BIOL 412.

**Grade Mode:** Letter Grading**NSB #728 - Research Methods in Animal Behavior****Credits:** 4

This course provides hands-on experience with modern methods for studying animal behavior in the field and laboratory, and immersion in the primary literature. Animal behavior research projects will be complemented with a sequence of technical training sessions, the goals of which are to provide students with practical expertise in modern ethological techniques. The course takes a 'learn by doing' approach, with student research teams building relevant methodological proficiencies in the context of an investigation of their own design. Special fee. Prereq: BIOL 412 Pre- or Coreq: ZOOL 613.

**Grade Mode:** Letter Grading**NSB 795 - Special Investigations****Credits:** 1-4

Independent research with any member of the NSB faculty in various areas including, but not limited to, neuroscience, neuroendocrinology, animal behavior. Prereq: Permission of faculty concerned. 795W is writing intensive.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** NSB 795W**Grade Mode:** Letter Grading**NSB 795W - Special Investigations****Credits:** 1-4

Independent research with any member of the NSB faculty in various areas including but not limited to neuroscience, neuroendocrinology, animal behavior. Prereq: Permission of faculty concerned.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** NSB 795**Grade Mode:** Letter Grading**NSB 798 - Capstone****Credits:** 0

This is a 0 credit course to indicate on the transcript that capstone requirement is fulfilled. Permission required.

**Grade Mode:** Credit/Fail Grading**NSB 799 - NSB Senior Thesis****Credits:** 2-4

Working under the direction of a faculty sponsor, the student plans and executes independent research resulting in a written thesis and public presentation. Limited to students entering their senior year. Prereq: permission. A two-semester sequence 2-4 credits each semester. IA (continuous grading) given first semester.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**NSB 799H - Honors Senior Thesis****Credits:** 2-4

Working under the direction of a faculty sponsor, the student plans and executes independent research resulting in a written thesis and public presentation. Limited to student entering their senior year or under exceptional circumstances their junior year. Required for students working toward University Honors or Honors-in-Major. Prereq: permission. A two-semester sequence 2-4 credits each semester. IA (continuous grading) given first semester.

**Attributes:** Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Nursing (NURS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**NURS 450 - Making Babies: Technology, Nature, and Social Context****Credits:** 4

Examines the process of human birth focusing on the emergent technologies of human genetics, assisted fertility technologies, prenatal diagnosis and treatment, as well as the appropriate and inappropriate use of technology through the labor, delivery, and post-partum experience.

The social, cultural, political, and historical context for the development and application of these technologies is explored.

**Attributes:** Environment, TechSociety(Disc)**Equivalent(s):** HHS 450**Grade Mode:** Letter Grading



**NURS 500 - Introduction to Professional Nursing****Credits:** 2

The course provides an overview of professional nursing with a focus on reflective thinking. A synthesis of current and projected trends in nursing practice and education, with an introduction to topics on ethical, social, and legislative issues, are explored. This course is divided into five modules: nursing as a career, nursing as a profession, nursing as art and science, nursing as communication, and nursing and relationship-centered care. Prereq: BMS 507-508; majors only. Pre- or Coreq: BMS 501. Special fee.

**Grade Mode:** Letter Grading**NURS 501 - Research for Nursing Professionals****Credits:** 4

The course focuses on the translation of current evidence into nursing practice through the identification of practice issues, appraisal and application of evidence, and the evaluation of outcomes. Development of evidence is examined using the research process. Concepts explored include research ethics and legal precepts, clinical judgment in knowledge development and application, and the integration of client values and preferences. Students learn to use reliable evidence to inform practice and make clinical judgments to promote nursing best practice.

**Equivalent(s):** HHS 598, NURS 641**Grade Mode:** Letter Grading**NURS 504 - Disease and Drugs I****Credits:** 4

The two semester course advances knowledge of human physiology and the pathophysiological variations in selected global disease states in adults and children. Student explore how the human body uses its adaptive powers to maintain a steady state and how alterations affect normal processes. Pharmacological agents used on these alterations are examined. Prereq: BMS 507 and BMS 508; majors only. Pre- or Coreq: BMS 501.

**Equivalent(s):** NURS 502**Grade Mode:** Letter Grading**NURS 505 - Diseases and Drugs II****Credits:** 0 or 4

The two semester course advances knowledge of human physiology and the pathopsychological variations in selected global disease states in adults and children. Students explore how the human body uses its adaptive powers to maintain a steady state and how alterations affect normal processes. Pharmacological agents used on these alterations are examined. Prereq: NURS 500; majors only.

**Co-requisite:** NURS 506, NURS 601**Equivalent(s):** NURS 502**Grade Mode:** Letter Grading**NURS 506 - Human Development, Interaction and Learning Across the Lifespan****Credits:** 4

The course emphasizes human development, interaction and learning across the lifespan as essential to safe, effective relationship-centered care. An exploration of selected theoretical perspectives on human development, education and learning and group development prepares students to engage in professional practice. Prereq: NURS 500; or by permission.

**Co-requisite:** NURS 505, NURS 601**Grade Mode:** Letter Grading**NURS 516 - Health Assessment and Nursing Fundamentals****Credits:** 0 or 4

Focuses on the acquisition of psychomotor and assessment skills required for the delivery of safe nursing care. Students begin by learning clinical skills in the simulation setting and then using those skills with supervision in the clinical setting. An additional focus of this course is understanding fundamental nursing concepts as they pertain to providing safe, effective care. Prereq: majors only.

**Co-requisite:** NURS 516C**Grade Mode:** Letter Grading**NURS 516C - Health Assessment and Nursing Fundamentals Clinical****Credits:** 2

This clinical course is designed to provide experiences to apply the knowledge to the skills required to perform a systematic examination of a healthy adult, to perform basic psychomotor skills and to record findings appropriately. Students implement the nursing process by obtaining health histories, performing physical and psychosocial assessments, establishing a database, and formulating initial nursing plans. Students become familiar with the nursing simulation lab. Prereq: majors only. Special fee.

**Co-requisite:** NURS 516**Grade Mode:** Letter Grading**NURS 517C - Clinical Integration****Credits:** 0 or 2

This course focuses on continued development of nursing skills necessary for promoting health in adults. Clinical practicum focuses on restorative care by providing supervised professional nursing practice for development of multidimensional assessment skills, decision-making processes, and evidence-based strategies and interventions for patients transitioning across the health care continuum. Application of evidence-based practice may include rehabilitative, end of life and palliative care. Prereq: majors only. Special fee.

**Grade Mode:** Letter Grading**NURS 535 - Death and Dying****Credits:** 4

Encompasses peoples' responses to death throughout the lifecycle. Theories of death, dying, and grieving discussed. Students explore cultural influences, legal, and ethical dilemmas; the biopsychosocial needs of people facing life-threatening situations; resources for care of the dying; death rituals; and surviving a major loss. Writing intensive.

**Attributes:** Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**NURS 601 - Function and Wellbeing of Older Adults****Credits:** 2

This course focuses on developing knowledge necessary for promoting healthy aging and wellness across the lifespan. Multidimensional assessment skills are utilized to develop appropriate evidence-based interventions to assist individuals and families to maintain wellness and promote healthy lifestyles, and enhance the quality of life for older adults with acute and chronic conditions. Students will explore nursing issues and principles of promoting wellness across the health care continuum including end of life and palliative care. Prereq: majors only.

**Grade Mode:** Letter Grading

**NURS 611 - Care of the Adult with Acute Illness I****Credits:** 0 or 4

The first of two courses focused on adult health nursing of clients with commonly occurring disease states in the acute care setting. Course builds on previously learned knowledge of physical assessment and technical skills to focus on key components of acute care nursing. Special emphasis placed on the etiology, clinical evaluation and use of evidence-based nursing interventions to manage specific health problems related to cardiovascular, hematologic, pulmonary, endocrine and renal systems. The advanced skills and techniques required to care for clients with commonly occurring disease states is included. Prereq: majors only.

**Co-requisite:** NURS 611C**Equivalent(s):** NURS 615**Grade Mode:** Letter Grading**NURS 611C - Care of the Adult with Acute Illness I Clinical****Credits:** 2

Designed to provide the student with opportunities to apply the nursing process and clinical judgment within an acute care setting to clients with commonly occurring disease states. The experience focuses on the application of knowledge and skills, evidence-based practice, clinical judgment and relationship-centered care. Prereq: NURS 505; majors only. Special fee.

**Co-requisite:** NURS 611**Equivalent(s):** NURS 615C**Grade Mode:** Letter Grading**NURS 612 - Care of the Adult with Acute Illness II****Credits:** 0 or 4

This is the second of two courses focused on adult health nursing of clients with commonly occurring disease states in acute care nursing. The course builds on previously learned knowledge of physical assessment and technical skills to focus on key components of acute care nursing. Special emphasis is placed on the etiology, clinical evaluation and use of evidence-based nursing interventions to manage specific health problems related to gastrointestinal, neurological, musculoskeletal systems and clients undergoing surgery. Complex client issues related to oncologic, immunologic and shock states are introduced. The advanced skills and interventions required to care for clients with commonly occurring disease states and those undergoing surgery are included. Prereq: NURS 611; majors only.

**Co-requisite:** NURS 612C**Equivalent(s):** NURS 615**Grade Mode:** Letter Grading**NURS 612C - Care of the Adult with Acute Illness II Clinical****Credits:** 2

Course is designed to provide the student with opportunities to apply the nursing process and clinical judgment within an acute care setting to clients with commonly occurring disease states and those undergoing surgery. The experience focuses on the application of knowledge and skills, evidence-based practice, clinical judgment and relationship-centered care. Prereq: NURS 611; majors only. Special fee.

**Co-requisite:** NURS 612**Equivalent(s):** NURS 615C**Grade Mode:** Letter Grading**NURS 616 - Living with Mental Illness****Credits:** 2

This course is designed to provide an understanding of the concepts of mental health and major factors affecting human behavior and interaction. Specific theoretical concepts guiding nurse-client interactions are utilized as a vehicle for supporting the person's and family's optimum state of well-being. Prereq: majors only.

**Co-requisite:** NURS 616C**Equivalent(s):** NURS 618**Grade Mode:** Letter Grading**NURS 616C - Living with Mental Illness Clinical****Credits:** 2

In this psychiatric nursing clinical course the nursing process and a situation-based interpretive approach serve as framework for professional nursing action. A special focus is placed on the integration of personal knowledge, therapeutic use of self and communication skills inherent in nurse-client relationships. Through a variety of clinical experiences, the student applies mental health concepts and principles of therapeutic communication in caring for people and families with alterations in mental health. Prereq: majors only.

**Co-requisite:** NURS 616**Grade Mode:** Letter Grading**NURS 621 - Maternal and Newborn Nursing****Credits:** 0 or 2

The course allows students an opportunity to develop necessary knowledge, attitudes and skills required for the provision of safe care to child bearing women and their families. Childbirth is viewed as part of the life cycle with emphasis on women and family-centered care, normal physiological childbirth, client advocacy and the provision of therapeutic nursing practice. Prereq: majors only.

**Co-requisite:** NURS 621C**Equivalent(s):** NURS 620**Grade Mode:** Letter Grading**NURS 621C - Maternal Newborn Nurs Clin****Credits:** 2

This clinical component of NURS 621, a course that has family as the focus for nursing practice, introducing the student to the care of young families throughout pregnancy, birth, and child-rearing periods. The health needs of the young family are discussed in terms of major morbidity/mortality and contemporary issues. This clinical course offers students experiences in various clinical settings in order to provide opportunities for the development of professional practice roles in maternal health.

Prereq: majors only. Special fee.

**Co-requisite:** NURS 621**Grade Mode:** Letter Grading**NURS 627 - Clinical Judgment in Nursing****Credits:** 4

This course is designed to apply and analyze clinical reasoning and judgement in a variety of situations, focusing on the ability to prioritize and individualize evidence-based nursing interventions. Prereq: majors only. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**NURS 648W - Nursing Honors Seminar I****Credits:** 1-4

Honors seminar is designed to expand the knowledge and skills to develop a research thesis or quality improvement capstone project. Literature review and methods development will be a major focus under the direction of a faculty advisor.

**Attributes:** Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 5 credits.**Grade Mode:** Letter Grading**NURS 695 - Independent Study****Credits:** 2-4

In-depth study with faculty supervision. Prereq: junior standing and approval of adviser and faculty of the area concerned. May be repeated for different topics.

**Grade Mode:** Letter Grading**NURS 702 - Child Health Nursing****Credits:** 0 or 2

The course considers the child in the context of family as the focus for nursing practice, introducing the student to the care of children using a developmental approach. Commonly occurring health transitions and alterations occurring from infancy through adolescence are examined. A survey of child health explores both professional practice roles of the pediatric nurse in health promotion and illness as well as acute and chronic conditions that impact children at various stages of development. Prereq: majors only. Special Fee.

**Equivalent(s):** NURS 620**Grade Mode:** Letter Grading**NURS 702C - Child Health in the Community Clinical****Credits:** 2

Semester long clinical course focused on the practice of pediatric nursing in the community. Prereq: majors only.

**Co-requisite:** NURS 702**Grade Mode:** Letter Grading**NURS 704 - Public Health Nursing****Credits:** 4

This course prepares the student for population-focused practice. Emphasis is placed on the synthesis of concepts, theories, knowledge and practice from nursing and public health sciences. Students explore the concepts of: community as client, community assessment, health promotion, health protection, illness prevention and vulnerability from a public health nursing perspective. Prereq: majors only.

**Equivalent(s):** NURS 624**Grade Mode:** Letter Grading**NURS 704P - Public Health Nursing Project****Credits:** 2

Semester long experience working in teams with a community organization to address a current public health issue. Learning focuses on working in teams to develop a strategic understanding of the identified public health issue and to design, implement, and evaluate a targeted intervention project. Prereq: majors only.

**Grade Mode:** Letter Grading**NURS 705 - Contemporary Leadership within Health Care Systems****Credits:** 4

The course explores the dynamic nature of the healthcare system and practice environments that impact nursing. Emphasis is placed on relationship of ethics, power, change, conflict, communication and politics in health care systems. Focus is placed on the use of models of leadership and management to effectively negotiate change, provided safe quality care, and promote professional practice in the delivery of relationship-centered care. Prereq: majors only.

**Co-requisite:** NURS 721**Equivalent(s):** NURS 703, NURS 705W**Grade Mode:** Letter Grading**NURS 711 - Clinical Judgment in Complex Illness****Credits:** 0 or 2

This course further develops and refines critical thinking skills by student participation in clinical scenarios and de-briefings. Students prepare for the care of patients with complex illness and engage in health assessment, psychomotor skills, and implementing the nursing process to develop a plan of care. May be waived with special circumstances.

Prereq: majors only. Special fee.

**Grade Mode:** Letter Grading**NURS 721 - Integrating Professional Nursing Practice****Credits:** 2

Weekly seminar provides an opportunity for the analysis, synthesis, refinement and integration of nursing knowledge. Standardized testing provides timely feedback to facilitate transition to professional practice. Prereq: majors only.

**Co-requisite:** NURS 721C**Equivalent(s):** NURS 720**Grade Mode:** Letter Grading**NURS 721C - Integrating Professional Nursing Practice Clinical****Credits:** 6

Clinical synthesis experience to refine and integrate previously learned knowledge and skills into professional practice through a cooperatively designed learning experience. Students plan, deliver and manage care under the supervision of a licensed preceptor. Prereq: majors only.

**Co-requisite:** NURS 721**Grade Mode:** Letter Grading**NURS 748W - Nursing Honors Thesis I****Credits:** 1

Honors seminar designed to expand the knowledge and skills presented in previous honors in major courses. Focuses on a project relevant to the discipline of nursing under the direction of a faculty adviser. Open to honors-in-major and senior nursing majors.

**Attributes:** Honors course; Writing Intensive Course**Prerequisite(s):** NURS 648 with a minimum grade of D-.**Equivalent(s):** NURS 797**Grade Mode:** Letter Grading**NURS 749W - Nursing Honors Thesis II****Credits:** 4

Honors seminar designed to expand the knowledge and skills presented in previous honors in major courses. Focuses on a project relevant to the discipline of nursing under the direction of a faculty adviser. Open to honors-in-major and senior nursing majors.

**Attributes:** Honors course; Writing Intensive Course**Prerequisite(s):** NURS 648 with a minimum grade of D- and NURS 748W with a minimum grade of D-.**Equivalent(s):** NURS 797**Grade Mode:** Letter Grading

**NURS 794 - Special Topics****Credits:** 1-4

Specialized courses covering information not normally presented in regular course offerings. Description of topics varies. May be repeated but not in duplicate areas of content. Prereq: permission. Special fee on some sections.

**Grade Mode:** Letter Grading**NURS 794W - Special Topics****Credits:** 1-4

Specialized courses covering information not normally presented in regular course offerings. Description of topics varies. May be repeated but not in duplicate areas of content. Prereq: permission. Special fee on some sections. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** NURS 794**Grade Mode:** Letter Grading

## Nutrition (NUTR)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**NUTR 400 - Nutrition in Health and Well Being****Credits:** 0 or 4

Addresses scientific principles of human nutrition to promote health and well-being. Overview of the biological significance of food and nutrition, specific nutrient functions, and how the supply and demand of food impacts physical health and well-being. Emphasis on scientific literacy and an appreciation of the ways in which we gain scientific knowledge and understanding. Special fee. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Equivalent(s):** ANSC 400, NUTR 400H, NUTR 475**Grade Mode:** Letter Grading**NUTR 401 - Professional Perspectives on Nutrition****Credits:** 1

Examines the many opportunities for dietitians and nutrition science professionals, from farm to fork, to health and nutrition outcomes. Students meet and interact with faculty and explore career paths and nutrition strategies in the food and nutrition science fields. Legal and ethical considerations for these professionals are discussed. Content areas for specialization in nutritional sciences, dietetics, health and wellness are reviewed, as well as the Ecogastronomy dual major.

**Grade Mode:** Credit/Fail Grading**NUTR 403 - Culinary Arts Skills Development****Credits:** 4

This laboratory class explores classical culinary and basic cooking techniques. Classical recipes for stocks, mother sauces, soups and pie crust, quick and yeast breads are featured with hands-on experiential learning using common practices and techniques of the food service industry. Students will gain an understanding of basic ingredients, fabrication, storage, cooking, hygiene and sanitation, equipment usage in modern culinary through demonstration, practice and evaluation. Special Fee.

**Equivalent(s):** CAN 403**Grade Mode:** Letter Grading**NUTR 405 - Food and Society****Credits:** 4

Consideration of the cultural significance of food, emphasizing historical, psychological, social, political, and economic aspects. (Spring semester only.)

**Attributes:** Social Science (Discovery)**Equivalent(s):** ANSC 405, NUTR 405W**Grade Mode:** Letter Grading**NUTR 476 - Nutritional Assessment****Credits:** 4

Designed for the student who plans to enter the health care profession. Introduces the concepts of nutritional assessment and the practical application of these concepts in the nutritional care of clients in clinical, community, and research settings. Prereq: NUTR 400.

**Grade Mode:** Letter Grading**NUTR 504 - Managerial Skills in Dietetics****Credits:** 4

Emphasis on the basic principles of managing clinical, community, and food service operations, including personnel management, in-service and on-the-job training, policy and procedure development, negotiation techniques, facilities, equipment selection, and financial management.

**Equivalent(s):** NUTR 503**Grade Mode:** Letter Grading**NUTR 506 - Nutrition and Wellness****Credits:** 4

Course assists students in making informed decisions affecting personal and societal wellness. Emphasis on the dimensions of wellness, including the impact of psychological, emotional and physical health, as well as environmental influences that affect behavior. Prereq: NUTR 400 or equivalent.

**Mutual Exclusion:** No credit for students who have taken EXSC 527, KIN 527.**Grade Mode:** Letter Grading**NUTR 525 - Food and Culture in Italy****Credits:** 4

Students will be introduced to the Italian culture and its traditions, with a special focus on food. Part of the course will involve out-of-class activities and tasting experiences in the city of Ascoli Piceno, Italy. Only open to students studying abroad in the UNH-in-Italy Program. Permission required.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**NUTR 530 - Critical Analysis in Food Studies****Credits:** 4

The course aims to investigate concepts and ideas that are essential to food studies. The philosophical aspects of the course are complemented by the experiential components that emphasize the particularity of the Italian environment. Only open to students studying abroad in the UNH-in-Italy Program. Permission required.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**NUTR 535 - History of Food in Italy****Credits:** 4

Students will examine the history of food in Italy and explore the interconnected sociological, cultural, political and environmental histories. Only open to students studying abroad in the UNH-in-Italy Program. Permission required.

**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading

**NUTR 546 - Nutrition in Exercise and Sports****Credits:** 4

Advanced nutritional strategies to optimize health, fitness, and athletic performance. Emphasis is on nutrition before, during, and after exercise for fitness, training, and competitions. Topics include healthy strategies for building muscle and losing body fat, as well as dietary manipulation in an effort to gain a competitive advantage. Prereq: NUTR 400 or equivalent.

**Equivalent(s):** NUTR 646**Grade Mode:** Letter Grading**NUTR 550 - Food Science: Principle and Practice****Credits:** 4

Application of scientific principles associated with the study of foods. Topics include: food composition, food additives and regulations, food safety, food biotechnology, product development and sensory evaluation. Principles of scientific inquiry as food ingredients are manipulated in a kitchen lab environment. Prereq: NUTR 400, HMG 403 or NUTR 403, CHEM 411 or CHEM 403 and CHEM 404. Special fee. Lab.

**Equivalent(s):** NUTR 500, NUTR 501**Grade Mode:** Letter Grading**NUTR 560 - Introduction to Research in Nutrition****Credits:** 2

Introduction to research methods in nutritional assessment. Students gain both conceptual knowledge and hands-on experience in a collaborative setting while working with the College Health and Nutrition Assessment Project. Prereq: NUTR 400 or equivalent.

**Grade Mode:** Letter Grading**NUTR 595 - Mediterranean Diet and Culture****Credits:** 4

Is there a diet that allows one to eat, drink, and still be healthy? While Americans struggle with rising rates of obesity and related health conditions, inhabitants of the Mediterranean region enjoy relatively low rates of heart disease, cancer, and obesity. Offers a unique on-site experience in Ascoli Piceno, Italy to investigate the cultural and scientific importance of the Mediterranean Diet. Students review basic nutrition concepts as well as the history and evolution of the Mediterranean diet. Combining lecture, discussion, and experiential activities, NUTR 595 is offered through the UNH Italy Study Abroad Program during the summer session.

**Co-requisite:** INCO 589**Grade Mode:** Letter Grading**NUTR 600 - Field Experience in Nutrition****Credits:** 1-4

Supervised field experience in public and private agencies with planned learning objectives related to clinical and community nutrition and food service management. Students are responsible for their own transportation; faculty member coordinates arrangements with fieldwork sites. Prereq: NUTR 400 or equivalent. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 6 credits.**Grade Mode:** Credit/Fail Grading**NUTR 610 - Nutrition Education and Counseling****Credits:** 4

The principles, methods and materials needed to provide nutrition education and counseling services. Emphasis on motivational interviewing, behavior change and developing skills needed to be an effective nutrition educator and counselor. Prereq: NUTR 400 and NUTR 476.

**Equivalent(s):** NUTR 510**Grade Mode:** Letter Grading**NUTR 625 - From Farm to the Italian Table****Credits:** 4

Students will gain an appreciation for food production (harvesting, processing), culinary preparation, and tasting. Hands-on experience will be emphasized through field trips and will provide a broad, informed perspective on farming and sustainable agriculture. Only open to students studying abroad in the UNH-in-Italy Program. Permission required.

**Grade Mode:** Letter Grading**NUTR 628 - Culinary Nutrition Practicum****Credits:** 4

This course builds on basic cooking techniques learned in NUTR 403 with an emphasis on the study and use of whole food ingredients to prepare and critically evaluate healthy recipes/meals. Techniques such as recipe modification and menu development will be addressed. The course culminates with the development of a multi-course menu developed, prepared and presented by the students in the class.

**Grade Mode:** Letter Grading**NUTR 650 - Life Cycle Nutrition****Credits:** 4

Comprehensive review of the nutritional issues related to the life cycle. Nutrient requirements of each life cycle stage are analyzed in the context of their metabolic functions. Practical application of theory at each stage of the life cycle through projects and discussion. Prereq: NUTR 400 or equivalent. Recommended BMS 507 and BMS 508.

**Grade Mode:** Letter Grading**NUTR 686 - UNH-in-Italy Study Abroad****Credits:** 0

Provides a unique opportunity to study abroad in Ascoli Piceno, Italy during the semester. Open only to students studying abroad in the UNH-in-Italy Program. Permission required. Cr/F. Special fee.

**Grade Mode:** Not graded**NUTR 699 - Independent Study****Credits:** 1-4

Scholarly research project in an area of the nutritional sciences under the guidance of a faculty adviser. May be repeated. Prereq: permission. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 4 times.**Equivalent(s):** NUTR 699W**Grade Mode:** Credit/Fail Grading**NUTR 700 - Career Development in Dietetics****Credits:** 1

Preparation for applying to dietetic internship programs and/or graduate school. Topics include writing resumes and personal statements, interviewing, professional skills, and navigating the online internship application.

**Grade Mode:** Letter Grading



**NUTR 709 - Nutritional Epidemiology****Credits:** 4

This course introduces basic concepts and methods in key areas of nutritional epidemiology, and discusses practical considerations related to designing, analyzing, and evaluating population-based nutrition studies. Research methods used in nutritional epidemiology will be taught to provide students with the ability to critically evaluate the nutritional epidemiological evidence. Learning will be enhanced by practical experiences in the collection, management, and analysis of nutritional epidemiological data during lab and in-class activities. Prereq: an introductory nutrition course and statistics course. Permission required.

**Grade Mode:** Letter Grading**NUTR 710 - Advanced Diabetes Care****Credits:** 2

Advanced Diabetes Care is a 2-credit course designed to build on foundational knowledge of diabetes care and education. During the semester, students will explore the pathophysiology of diabetes as well as modern medications and technology used to improve blood sugar management. Students will apply their knowledge of diabetes and nutrition to interpret data and deliver effective, compassionate care. Prereq: NUTR 400, BMS 507/BMS 508.

**Grade Mode:** Letter Grading**NUTR 720 - Community Nutrition****Credits:** 4

Identification of causes of complex public health nutrition problems (such as food insecurity and escalating obesity rates) and cost-effective community-based interventions required to solve them. Provides skills and tools needed to assess design, and evaluate community nutrition and wellness interventions. Prereq: NUTR 400 or equivalent. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ANSC 610, ANSC 720**Grade Mode:** Letter Grading**NUTR 730 - From Seed to Sea: Examining Sustainable Food Systems****Credits:** 4

Integration of diverse human and natural system interactions in a seminar-based course to understand issues in food system sustainability. Examination of food system structure and function from coupled human and natural systems perspectives. Current and topical issues of food and agriculture include: exploration of using natural resources to meeting growing population demands; conflicting views on meeting food and nutrition requirements; impacts of increased stress on natural resources; inequities and discrimination in the food system; impact on dietary guidelines on the environment. Prereq: NUTR 400 or NUTR 405 or by permission.

**Grade Mode:** Letter Grading**NUTR 740 - Nutrition for Children with Special Needs****Credits:** 4

Nutritional assessment and care of children with special needs resulting in feeding difficulties requiring medical nutrition therapy. Prereq: NUTR 400.

**Grade Mode:** Letter Grading**NUTR 750 - Nutritional Biochemistry****Credits:** 4

Digestion, absorption, transport, and utilization of food nutrients. Role of macro- and micro-nutrients as substrates and catalysts for metabolic pathways, and the role of these pathways in maintaining human health at the cellular, organ, and whole body levels. Prereq: BMS 507 and BMS 508 or ANSC 511 and ANSC 512; BMB 658 or equivalents. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** ANSC 750, ANSC 750W, NUTR 750W**Grade Mode:** Letter Grading**NUTR 751 - Nutritional Biochemistry of Micronutrients****Credits:** 4

Investigation of the nutritional and biochemical aspects of micronutrient metabolism. All essential vitamins and minerals, as well as some phytonutrients and quasi-nutrients, are explored in depth. Nutrients are examined for their molecular, cellular, metabolic and biomedical functions, as well as the biochemical and clinical consequences of their deficiency or excess. Prereq: NUTR 750 or equivalent.

**Grade Mode:** Letter Grading**NUTR 755 - Treatment of Adult Obesity****Credits:** 3

Overview of the risk factors associated with obesity; evidence-based recommendations for assessment and treatment of obesity. Counseling skills important to successful weight management and non-diet approaches are also explored. Prereq: NUTR 400, 476, and NUTR 610.

**Co-requisite:** NUTR 758**Equivalent(s):** NUTR 756**Grade Mode:** Letter Grading**NUTR 758 - Practicum in Weight Management****Credits:** 2

Assist clients in making lifestyle and dietary changes over a 10-week period and develop skills in marketing, advertising, counseling, an oral communication related to weight management. Prereq: NUTR 400 or equivalent; NUTR 476; and NUTR 610. Special fee.

**Co-requisite:** NUTR 755**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** NUTR 680**Grade Mode:** Letter Grading**NUTR #760 - Research Experience Nutrition I****Credits:** 2

Review scientific literature, formulation of research questions, testing hypotheses, analysis and interpretation of research data, and formal presentation of findings. Students gain conceptual knowledge and hands-on experience while working with established research projects. NUTR #760 focuses on the review of scientific literature and the development and testing of a research question. Prereq: NUTR 560.

**Grade Mode:** Letter Grading**NUTR #761 - Research Experience Nutrition II****Credits:** 2

Review scientific literature, formulation of research questions, testing hypotheses, analysis and interpretation of research data, and formal presentation of findings. Students gain conceptual knowledge and hands-on experience while working with established research projects. NUTR #761 focuses on understanding and communicating research findings in a collaborative setting. Prereq: NUTR #760.

**Grade Mode:** Letter Grading

**NUTR 773 - Clinical Nutrition****Credits:** 4

Principles and mechanisms of disease that result in altered nutrient requirements in humans. Prereq: NUTR 400; BMS 507 and BMS 508.

**Equivalent(s):** ANSC 773, ANSC 774, NUTR 774**Grade Mode:** Letter Grading**NUTR 775 - Practical Applications in Medical Nutrition Therapy****Credits:** 4

Combination of lecture and supervised practical experience in medical nutrition therapy in a New England hospital. Emphasizes nutritional counseling, assessment, and instruction of patients with nutrition-related disorders. Prereq: NUTR 400; BMS 507 and BMS 508 or ANSC 511 and ANSC 512; BMS 658. Special fee.

**Equivalent(s):** ANSC 775**Grade Mode:** Letter Grading**NUTR 780 - Critical Issues in Nutrition****Credits:** 4

Critical review and analysis of controversial topics in nutrition; emphasis on developing oral and written communication skills and critical thinking skills. Writing intensive. Prereq: NUTR 773 or permission.

**Attributes:** Writing Intensive Course**Equivalent(s):** ANSC 780**Grade Mode:** Letter Grading**NUTR 790 - Undergraduate Teaching Experience****Credits:** 1-2

Assist graduate teaching assistants or faculty in preparing, presenting, and executing NUTR courses/laboratories.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Letter Grading**NUTR 795 - Investigations****Credits:** 1-4

Prereq: permission.

**Equivalent(s):** NUTR 795W**Grade Mode:** Letter Grading**NUTR 795W - Investigations****Credits:** 1-4

Prereq: permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** NUTR 795**Grade Mode:** Letter Grading**NUTR 799H - Honors Senior Thesis****Credits:** 1-4

A special project conducted under faculty supervision and resulting in a written honors thesis. Students must initiate discussion of the project with an appropriate faculty member.

**Attributes:** Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 1 time.**Grade Mode:** Letter Grading

## Occupational Therapy (OT)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**OT 444 - Living and Doing with Technology****Credits:** 4

This course draws upon the knowledge from emerging product design concepts and principals and advocates for inclusiveness of all consumers regardless of their age, abilities, disabilities, and personal affinities. Students will apply critical thinking and hands-on learning to evaluate day-to-day technologies by use of various design criteria, identify usability problems, and design technology solutions. Course work will include readings, interactive activities, discussions, quizzes, and group projects.

**Attributes:** Environment,TechSociety(Disc); Inquiry (Discovery)**Grade Mode:** Letter Grading**OT 500 - Behavior and Development of Children****Credits:** 4

Introduces the biological, psychosocial, and cultural aspects of human development from birth through adolescence. Emphasizes theories that help explain human behavior; discusses implications of developmental research.

**Grade Mode:** Letter Grading**OT 501 - Developmental Tasks of Adulthood****Credits:** 4

Includes the biological and psychosocial context of development for adults. Developmental tasks relate to the accomplishment of prior tasks, physiological change, socioeconomic status, and psychosocial development. Prereq: child development course or permission.

**Equivalent(s):** OT 600**Grade Mode:** Letter Grading**OT 510 - Exploring Occupational Therapy and Occupation****Credits:** 4

Occupational therapy is introduced as a human service profession through experiential and academic activities, which illustrate the personal and professional skills required to practice in a variety of settings and roles. Basic concepts of human occupation and the therapeutic use of occupation are explored. Comparisons are made to related human service careers. Students are encouraged to do a personal assessment of their interest and potential for further study of occupational therapy.

**Grade Mode:** Letter Grading**OT 513 - Stressed Out: The Science and Nature of Human Stress****Credits:** 0 or 4

The human stress response system, research investigating the sequelae of stress on health, protective strategies for stress, managing personal stress effectively, and strategizing stress modulation as an intervention technique. Course format includes two hours of weekly lecture/discussion followed by one hour of experiential laboratory in which students research and/or apply new information. Special fee.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Grade Mode:** Letter Grading**OT 520 - Happy and Healthy at Work: Promoting Wellness, Diversity and Inclusion****Credits:** 4

Offers improved understanding and ability to effectively manage a diverse and healthy workforce. Addresses key diversity, inclusion, and wellness issues in the workplace of a general, technical, and social nature with an emphasis on disability and health promotion. Special Fee.

**Attributes:** Social Science (Discovery); Inquiry (Discovery)**Equivalent(s):** HMG 520, HMG 598, OT 598**Grade Mode:** Letter Grading

**OT 610 - Occupation, Identity, Disability****Credits:** 4

Students develop skills and knowledge for analyzing daily existence, patterns of activity and the occupational choices pursued by humans. Students explore how the self-identity of individuals with and without disability is influenced by participation in everyday activities, and contextual factors: Through reading, reflective writing and collecting personal narratives of individuals with disability, students examine the relations among engagement in daily occupations and the orchestration of routines and social participation with self identity and well-being. Majors only. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**OT 685 - Psychosocial Disorders and Everyday Life****Credits:** 4

The study of abnormal behavior in the context of its effect on everyday function. Provides background information on adult psychosocial disorders commonly seen by service providers in the mental health system. Students learn to observe and describe behavior in terms of functional impairment, diagnostic criteria, and causative factors. General psychosocial and biological treatments are studied. This course or its equivalent is a prerequisite for entry to the professional master's degree program in occupational therapy. Students are expected to bring to this course a basic knowledge of psychosocial aspects of human development. Prereq: PSYC 401. Majors only.

**Equivalent(s):** OT 683**Grade Mode:** Letter Grading**OT 695 - Independent Study****Credits:** 2-4

In-depth study with faculty supervision. Prereq: junior standing in OT major; approval of major adviser and faculty of area concerned.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**OT 710 - OT Practice and Professional Roles****Credits:** 4

Students are introduced to foundation knowledge, values and philosophy of occupational therapy practice. Students learn skills to apply professional behaviors and skills required to be ethical practitioners. They learn about various practice settings and systems within which occupational therapists practice to prepare them to begin to make decisions regarding their fieldwork site selections. They are introduced to models of OT practice. Only open to OT majors. Special fee.

**Grade Mode:** Letter Grading**OT 715 - Introduction to Group Process: Theory and Application****Credits:** 2

This course provides a theoretical foundation of group process in occupational therapy practice across practice settings. It explores several group theory perspectives and applies them to OT practice considering multiple group models, group leadership concepts, group process, therapeutic use of self, and contexts/environments. Students will learn to articulate core principles of group process and identify the role of occupational therapy practitioners in using groups as an intervention method and/or service delivery model.

**Grade Mode:** Letter Grading**OT 720 - Medical Terminology****Credits:** 2

This course provides an introduction to medical terminology. The origin, roots, prefixes and suffixes of common scientific and medical terms will be examined as well as common abbreviations and terms used in medical records documentation and within the medical, and allied health literature. Content is appropriate for students majoring in the Biological Sciences, Medical Sciences and Allied Health fields. The course is totally online, asynchronous and includes assigned online interactive material via the Canvas course website, and the e-text website.

**Grade Mode:** Letter Grading**OT #726 - Assistive Technology and Sensory, Communicative, and Cognitive Disabilities****Credits:** 4

Explores the application of various technologies for individuals with visual, auditory, cognitive and communication impairments. Included are: blind and low vision aides, assistive listening devices, alternative and augmentative communication devices, memory aides, and prompting aides. Special fee.

**Grade Mode:** Letter Grading**OT 730 - Assistive Technology for Enhancing Occupational Performance****Credits:** 3

This course provides instruction on how occupational therapy practitioners use and apply assistive technology in the context of client evaluation and intervention, to improve quality of life and functional capacities. Students learn and apply clinical reasoning skills related to the selection, procurement, modification and training in the use of assistive technology solutions. OT majors only.

**Co-requisite:** OT 730L**Grade Mode:** Letter Grading**OT 730L - Assistive Technology for Enhancing Occupational Performance Lab****Credits:** 1

Co-Requisite Laboratory for OT 730 and OT 830 Assistive Technology for Enhancing Occupational Performance. Students are provided hands-on learning experiences regarding the fabrication, identification, adaptation and training in the use of assistive technology for individuals with functional problems associated with disability or impairment. OT evaluation and interventions related to the application of assistive technology are addressed. OT majors only.

**Co-requisite:** OT 730**Grade Mode:** Credit/Fail Grading**OT 731 - Introduction to Assistive Technology Principles****Credits:** 2

This course presents an overview of the various assistive technology service delivery models, assessment tools, legislation, funding, and assistive technology across the lifespan.

**Grade Mode:** Letter Grading**OT 732 - Introduction to Assistive Technology Practices****Credits:** 2

This course presents an overview of the various service delivery models, assessment tools and teaches students how to create and modify devices. Students will conduct device demonstrations, training, reuse, and repair while acquiring skills using various fabrication tools, materials and techniques. Students will receive a materials kit they will use to fabricate eight assistive technology solutions. They will also be required to submit video clips and photos demonstrating their skills providing device demonstrations, loans and customer training. Special Fee.

**Grade Mode:** Letter Grading

**OT 733 - Assistive Technology for Physical Access I: Electronic Technologies****Credits:** 2

This course focuses on switch and computer access solutions; programming switch interfaces for computers and iPads; alternative mice and keyboards; switch access recipes; iPad mounting solutions; electronic aids for daily living, voice controlled solutions for the phone, computer, and activation of household appliances. Students will learn how to make, modify, and mount various switches on electronic devices. Intensive hands-on AT exploration will be completed on campus or virtual evidence provided will be accepted.

**Grade Mode:** Letter Grading**OT 734 - Assistive Technology for Physical Access II: Mobility, Seating, and Transportation****Credits:** 2

This course focuses on assistive technology solutions to maximize independence at home, in the community, and on the job for individuals who experience physical disabilities. Students will acquire skills in conducting accessibility assessments. Topics explored include wheelchair seating and mobility; ergonomic hand tools, independent living aids; ramps and lifts; vehicle modifications; and modifications for canes, crutches, walkers, and wheelchairs. Intensive hands-on AT exploration will be completed on campus or virtual evidence provided will be accepted.

**Grade Mode:** Letter Grading**OT 735 - Assistive Technology for Communication and Cognition****Credits:** 2

This course focuses on alternative and augmentative communication devices and devices that benefit individuals who experience cognitive impairments. This course explores assistive technology solutions for note taking, devices and apps for self-regulation, organization, and reminders. Students will learn how to conduct cognitive demand analysis for devices and apps to help users select appropriate accommodations and assistive technology solutions. Intensive hands-on AT exploration will be completed on campus or virtual evidence provided will be accepted.

**Grade Mode:** Letter Grading**OT 736 - Assistive Technology for Vision and Hearing****Credits:** 2

This course focuses on assistive technology for blind and low vision; deaf and hard of hearing; and deaf/blindness. Students will use an assortment of magnification devices; amplification systems; and assistive listening devices as well as learn how to create a variety of approaches to accommodate for vision and hearing impairments. Intensive hands-on AT exploration will be completed on campus or virtual evidence provided will be accepted.

**Grade Mode:** Letter Grading**OT 741 - Human Occupation****Credits:** 4

This course introduces students to the broad concept of occupation by exploring ways people acquire skills for occupational performance. Students develop an understanding of the relations between health and occupation, disability and occupation, and explore how humans find meaning in their lives through occupational engagement. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**OT 744 - Fieldwork and Professionalism - Level 1****Credits:** 1

This course prepares students to enter level 1 fieldwork with confidence and working knowledge of expectations for a full-time two-week level 1 fieldwork experience. Cr/F. Special Fee.

**Equivalent(s):** OT 736**Grade Mode:** Credit/Fail Grading**OT 745 - Administration and Management for Occupational Therapy Practice****Credits:** 4

This course aims to increase the student's understanding of systems of practice, and to business fundamentals associated with occupational therapy service delivery. Specific topics covered include and analysis of practice settings, reimbursement, supervision of professional and non-professional staff, program evaluation methods, ethics, OT management practices, marketing, health policy including medicare, Human Rights and Education Legislation, and the impact of policy decisions for the delivery of OT services. OT majors only.

**Grade Mode:** Letter Grading**OT 746 - Fieldwork & Prof Level II****Credits:** 1

This course is designed to deepen understanding of professionalism needed for success on Level II fieldwork. We will explore role changes that accompany leaving the academic world and entering the larger realm of professional practice. Students analyze factors that contribute to successful professional development and ethical practice. Students use the results of their analyses to plan their individual transition to fieldwork and entry-level practice. Prereq: OT 744 & OT 792.

**Grade Mode:** Letter Grading**OT 750 - Neuro-Occupation: The Relationship Between Occupation and the Brain****Credits:** 3

The course explores brain development, neuroplasticity and occupation across the lifespan. Following a contextual review of the neuroanatomy and physiology, the students will explore the mind-body relationship across multiple domains of occupational therapy practice. There are four primary content areas: Applied neurology, nature with nurture: occupational engagement and the development of the brain, the brain, occupation and behavior, and neuroplasticity as the basis for improving motor behavior. Prereq: Human Development, Neurology, Psychology.

**Grade Mode:** Letter Grading**OT #751 - Mind Body Systems/Neurologically Based Function and Dysfunction****Credits:** 4

Students study most significant occupational-related disorders commonly seen by occupational therapists. A self-directed method is used to examine the perceptual, cognitive, biopsychosocial basis of these disorders. A basic overview of human body-mind systems is provided with an emphasis on pathology, the recognition of symptoms, their causes and the occupational implications of the disorders. The course is a prerequisite for courses in specific occupational therapy assessment and intervention. OT majors only.

**Grade Mode:** Letter Grading



**OT 752 - Human Movement and Environmental Effects on Everyday Occupations****Credits:** 3

Integrates the student's prerequisite knowledge of occupation. Develops skills required for interpretation of biomechanical analysis for creating successful occupational performance for individuals with varied musculoskeletal, cardiac and respiratory dysfunction. Integration of the occupational therapy clinical reasoning process and the use of occupations as a therapeutic mechanism for change are emphasized. The analysis of environment as it relates to human movement and participation in desired occupations is explored. Special fee.

**Co-requisite:** OT 752L**Grade Mode:** Letter Grading**OT 752L - Human Movement Lab****Credits:** 1

OT majors only. Cr/F.

**Co-requisite:** OT 752**Grade Mode:** Credit/Fail Grading**OT 753 - Mind Body Systems: Neurologically-based Function and Dysfunction--Pediatric Conditions****Credits:** 4

This course applies an occupational science perspective to study disease, illness, medical conditions, and impairments to human body structures and functions that typically emerge and/or present themselves in childhood. The emphasis is on how disease, and impairments in physical and mental functioning interact with the human condition, the uniqueness of individuals, and the environments within which they live to impact occupational performance, and one's overall health, well-being, and life quality. This course is a prerequisite for all occupational therapy assessment and intervention courses including OT 762/OT 862, OT 763/OT 863, and OT 760/OT 860.

**Grade Mode:** Letter Grading**OT 757 - Mind Body Systems: Neurologically-based Function and Dysfunction--Adult Conditions****Credits:** 4

This course is the second course in a two-part course sequence that uses a life span approach, drawing on occupational science perspectives to study conditions typically diagnosed during adulthood (ages 21 and up). The emphasis is on the interaction of the individual (the mind), the body and the psychosocial environment as related to occupational performance. Students will work in pairs to examine selected disorders, and will further develop their presentation skills. This course is a prerequisite for courses in occupational therapy assessment and intervention for adults. Prereq: KIN 706; OT 753/OT 853.

**Grade Mode:** Letter Grading**OT 760 - Psychosocial Evaluation and Intervention****Credits:** 3

Examines the evaluation of psychosocial and psycho-emotional areas of occupational performance and the planning and implementation of occupation-based interventions across domains of practice and client populations. Course addresses developing a client's occupational profile, narrative reasoning and therapeutic use of self, behavioral change, illness representation, and adjustment to chronic disorders. A specific focus of the course is evaluation of and intervention for clients' presenting with mental health disorders. Open to OT majors only.

**Co-requisite:** OT 760L, OT 760R**Grade Mode:** Letter Grading**OT 760L - Psychosocial Evaluation and Intervention Lab****Credits:** 1

This is the co-requisite lab for OT 760. Lab provides hands-on experiences regarding the evaluation and intervention of psychological and psycho-emotional areas of occupational performance. Course focuses on the evaluation and intervention for clients presenting with mental health disorders and also addresses narrative reasoning, therapeutic use of self, behavioral change, illness representation and adjustment to chronic disorders. Special fee. OT majors only. Cr/F.

**Co-requisite:** OT 760**Grade Mode:** Credit/Fail Grading**OT 760R - Psychosocial Evaluation & Intervention Recitation****Credits:** 0

Psychosocial Evaluation and Intervention Recitation provides additional hands-on and experiential learning opportunities in an established community program for all students enrolled in OT 760. This recitation allows students the opportunity to develop the skills needed to work in mental/behavioral health settings. Cr/F.

**Co-requisite:** OT 760**Grade Mode:** Credit/Fail Grading**OT 762 - Occupational Therapy Evaluation and Intervention for Children****Credits:** 3

In this course, students will develop entry-level practice skills for conducting occupational therapy (OT) evaluations and interventions for children. Organized around the OT Practice Framework, students will learn how to collaborate with families and other professionals, develop clinical observation skills, and learn frequently used standardized assessments. Additionally, students will use primary OT frames of reference to plan and implement interventions. Students will apply their understanding of typical and atypical child development, and extend their clinical reasoning skills in order to develop competencies for providing OT services for children and with a variety of conditions across common practice settings.

**Co-requisite:** OT 762L, OT 762R**Repeat Rule:** May be repeated up to 0 times.**Grade Mode:** Letter Grading**OT 762L - Occupational Therapy Evaluation and Intervention for Children Lab****Credits:** 1

The co-requisite labs provide hands-on experiences to compliment lecture material from OT 762, and to provide opportunities for the practical application of knowledge. Special fee. Cr/F.

**Co-requisite:** OT 762**Grade Mode:** Credit/Fail Grading**OT 762R - Occupational Therapy Evaluation and Intervention for Children Recitation****Credits:** 0

The recitation provides hands-on experiences to compliment lecture material from OT 762 and OT 762L, and to provide opportunities for the practical application of knowledge. Cr/F.

**Grade Mode:** Credit/Fail Grading



**OT 763 - Occupational Therapy Evaluation and Intervention for Adults**  
**Credits:** 3

Students will develop entry-level practice skills related to the synthesis of evaluation, intervention planning and goal writing. The student will be introduced to a variety of standardized evaluation tools and implement OT interventions within various contexts of practice through case studies. Specific intervention techniques based on accepted frames of reference and research evidence that helps clients engage successfully in the daily occupations will be emphasized. Prereq: OT 752, OT 757.

**Co-requisite:** OT 763L

**Grade Mode:** Letter Grading

**OT 763L - Occupational Therapy Evaluation and Intervention for Adults Lab**

**Credits:** 1

This lab is a co-requisite course to accompany OT 763 Occupational Therapy Evaluation and Intervention for Adult Dysfunction. The lab course provides opportunity for the students to engage in experiential learning and application of principles and techniques learned in the lecture course. Special fee. Cr/F.

**Co-requisite:** OT 763

**Grade Mode:** Credit/Fail Grading

**OT 763R - Occupational Therapy Evaluation and Intervention for Adults Recitation**

**Credits:** 0

The recitation provides hands-on experiences to compliment lecture material from OT 763 and OT 763L, and to provide opportunities for the practical application of knowledge. Cr/F.

**Co-requisite:** OT 763, OT 763L

**Grade Mode:** Credit/Fail Grading

**OT 771 - Enabling Participation in Community Groups**

**Credits:** 3

Students will work in an organization, learn about the people served by this organization, and conduct therapeutic groups within the organization. Emphasis of content includes group process, clinical documentation, intervention planning and OT services with adults with cognitive impairments. Special Fee.

**Grade Mode:** Letter Grading

**OT 771L - Enabling Participation in Community Groups Lab**

**Credits:** 2

Students will work in an organization, learn about the people served by this organization and conduct therapeutic groups. This lab serves as a Level I Fieldwork placement. OT majors only. Special fee.

**Grade Mode:** Credit/Fail Grading

**OT 781 - Introduction to Research and Evidence-Based Practice**

**Credits:** 3

This course introduces students to basic principles of scientific inquiry that contribute to OT evaluation and intervention evidence base. Students will explore quantitative, qualitative and mixed research methods and will learn the fundamental steps in conducting research such as formulating research questions and identifying appropriate research designs, instruments for measurement and outcomes. Students will have hands-on experience in identifying a research topic, reviewing the literature, retrieving, reading and synthesizing research articles. Prereq: Statistics.

**Grade Mode:** Letter Grading

**OT 782 - Research Methods and Application**

**Credits:** 3

The course provides students an in depth understanding of quantitative, qualitative, and mixed methods designs. The students will learn the necessary knowledge and skills required to critically appraise research evidence. Emphasis will be given to various analytical approaches used to examine qualitative/quantitative evidence, such as understanding differences between experimental and quasi-experimental study designs. Students will work in teams to identify a research topic, review and appraise pertinent evidence, identify and describe gaps in existing knowledge. Students will further use this information to develop a research proposal that addresses the identified gaps. Prereq: Statistics, OT 781.

**Grade Mode:** Letter Grading

**OT 785 - Research Methods and Application to Practice**

**Credits:** 4

Qualitative, quantitative, and mixed methods types of research are introduced and applied to relevant occupational therapy questions. Students acquire the fundamental skills of conducting research such as formulating research questions and identifying appropriate research designs and/or methods. Students also develop the ability to critically analyze research studies and apply the outcome to evidence-based practice in occupational therapy. OT majors only.

**Grade Mode:** Letter Grading

**OT #789 - Using iPads to Support Children with Disabilities**

**Credits:** 3

The iPad is changing the way we teach and learn. This technology embraces Universal design principles (UDL) and enables children with significant disabilities to learn in ways never thought possible five years ago. It is a tool for delivering multimedia content and embraces the use of Multi modal learning. This technology finally levels the playing field to support all students including students with disabilities.

**Grade Mode:** Letter Grading

**OT 791 - Senior Honors Thesis**

**Credits:** 4

Completion of a research proposal based on a topic of relevance to the occupational therapy profession. Development of knowledge and skills in receiving and critiquing research and professional literature; research design and methodology; and the development of a research proposal. Required for graduation with honors in the major. Prereq: Completion of OT 741. Open to OT majors only.

**Attributes:** Honors course

**Equivalent(s):** OT 691

**Grade Mode:** Letter Grading

**OT 792 - Level I Fieldwork**

**Credits:** 1

Provides occupational therapy students an opportunity to experience occupational therapy in a clinical setting. Students attend a seminar prior to beginning their placement. The Level I placement is scheduled between the fall and spring semesters of the senior year. During fieldwork, students observe an occupational therapist as well as participate in the planning and implementing of the occupational therapy assessment or intervention process for a client. OT majors only. Cr/F.

**Grade Mode:** Credit/Fail Grading

**OT 795 - Special Topics****Credits:** 1-4

Formal courses given on selected topics or special interest subjects. Work may be directed in one of the following areas: A) Administration; B) Clinical Education; C) Pediatrics; D) Physical Disabilities; E) Mental Health; F) Gerontology/Geriatrics; G) School-based Practice, and others. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading

## Ocean Engineering (OE)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**OE 400 - Ocean Engineering Seminar****Credits:** 1

A seminar based course considering contemporary topics involved in ocean exploration. Faculty and guest speakers will describe thematic ocean engineering subareas through weekly presentations. The presentations will provide examples of engineering applications and ocean exploration. Class participation credit can be earned through oral discussions, presentation of contemporary OE topics, or hands on projects.

**Repeat Rule:** May be repeated for a maximum of 2 credits.**Grade Mode:** Credit/Fail Grading**OE 401 - Ocean Engineering Seminar****Credits:** 1

A seminar based course considering contemporary topics involved in ocean exploration. Faculty and guest speakers will describe thematic ocean engineering subareas through weekly presentations. The presentations will provide examples of engineering applications and ocean exploration. Class participation credit can be earned through oral discussions, presentation of contemporary OE topics, or hands on projects.

**Repeat Rule:** May be repeated for a maximum of 2 credits.**Grade Mode:** Credit/Fail Grading**OE 490 - Introduction to Ocean Engineering****Credits:** 4

Survey of engineering applications in the ocean environment. Topics vary and include hydrodynamics, waves, tides, underwater sound, instrumentation, marine geomechanics, and naval architecture. Includes guest lectures by faculty members from the Engineering departments.

Prereq: PHYS 407.

**Grade Mode:** Letter Grading**OE 521 - Power of the Sea: Scientific Discovery in the Ocean****Credits:** 4

This course considers the struggle to understand the physics of the sea to help predict when the sea will unleash its fury. The scientific discovery of ocean engineering topics such as tides, waves, and tsunamis are introduced through their human historical introduction. The historical significance and preliminary resolution of each physical mechanism provide context for the fundamental formulations and contemporary predictive models. The course also considers the role of ocean disasters and geopolitical conflict in motivating scientific exploration of the oceans.

**Attributes:** Physical Science(Discovery)**Grade Mode:** Letter Grading**OE 610 - Ocean Instrumentation Lab****Credits:** 4

An investigation of the discrete and integrated electronics typically used in the design and implementation of ocean instruments. Topics include both passive and active analog electronic elements typically used for signal conditioning of common oceanographic sensors (e.g., thermistors, pressure sensors, acoustic transducers); A/D and D/A conversion, sensor sampling criteria and rules, with examples from contemporary ocean instruments; embedded micro-controller/microcomputer modules for autonomous or remote sensing in ocean environments; inter-instrument communications methods typically used in ocean instruments (e.g., serial and network communications). Laboratory time will be used to develop practical experience in specification, design, development and testing of various ocean instrument components based on the material presented. Prereq: MATH 527; MATH 528; ECE 537 ; IAM 550.

**Grade Mode:** Letter Grading**OE 677 - Seamanship and Marine Weather for Ocean Engineers and Scientists****Credits:** 2

A survey of basic principles of seamanship and marine weather intended for ocean engineers and ocean scientists. Reviews ship and vessel nomenclature, shipboard safety, techniques for equipment handling and instrument deployment, common shipboard evolutions associated with scientific cruises, navigation principles, and marine weather phenomena and products. Includes field trips and practical applications.

**Grade Mode:** Credit/Fail Grading**OE 717 - Marine Robotics and Applications****Credits:** 3

The purpose of this course is to cover (in lecture and lab format) the broad spectrum of marine vehicles and applications, as well as what is involved in designing and building robotic vehicles for specific missions. Course topics include: marine applications, sensors for marine environments, vehicle subsystems, ocean and open water environment, dynamic modeling and control, and design/fabrication/testing. Various invited speakers (both scientists and engineers) provide learning modules on various marine robotic related topics.

**Co-requisite:** ME 670**Equivalent(s):** ME 717**Grade Mode:** Letter Grading**OE 753 - Ocean Hydrodynamics****Credits:** 3

Fundamental concepts of fluid mechanics as applied to the ocean, continuity, Euler and Navier-Stokes equations, Bernoulli equation, stream function, potential function, moment theorem, turbulence and boundary layers are developed with ocean applications. Prereq: MATH 527; CEE 650 or ME 608.

**Grade Mode:** Letter Grading**OE 754 - Ocean Waves and Tides****Credits:** 4

Small amplitude, linear wave theory, standing and propagating waves, wave energy, refraction, diffraction, transformation in shallow water, statistics of random seas, spectral energy density, generating wave time series using the random phase methods forces on structures, Froude scaling of wave tank experiments, nonlinear effects. Description of tides as long waves, equilibrium tide, mathematical modeling including friction, nonlinear effects, and Coriolis forces, tidal analysis, the Great Bay Estuarine System as a case study. Prereq: PHYS 407; MATH 527, and MATH 528.

**Equivalent(s):** EOS 754**Grade Mode:** Letter Grading

**OE 757 - Coastal Engineering and Processes****Credits:** 3

Introduces small amplitude and finite amplitude wave theories. Wave forecasting by significant wave method and wave spectrum method. Coastal processes and shoreline protection. Wave forces and wave structure interaction. Introduction to mathematical and physical modeling. Prereq: fluid dynamics or permission.

**Equivalent(s):** CEE #757, CIE 757, ME #757**Grade Mode:** Letter Grading**OE 758 - Design of Ocean Structures****Credits:** 3

The foundational information necessary for the design of ocean structures. Topics include analysis and design of floating body, fixed body and moored line hydrostatics; wave forces on small and large bodies; dynamic response of floating bodies; and pile and gravity foundation geotechnics. Prereq: ME 526; ME 608; ME 627, OE 754; MATH 527; or permission.

**Grade Mode:** Letter Grading**OE 764 - Spectral Analysis of Geophysical Time Series Data****Credits:** 4

This course considers basic exploratory techniques and in-depth spectral analysis for estimation with geophysical time series data, including calculations of confidence intervals and significance testing. This course prepares students for interpreting time series data with science and engineering applications. Topics include sampling theory, filtering, statistics, probability, spectral analysis, and empirical orthogonal functions. Students gain experience in code-writing for the analysis of time series data. Prereq: MATH 426.

**Equivalent(s):** ESCI 764**Grade Mode:** Letter Grading**OE 765 - Underwater Acoustics****Credits:** 3

An introduction to acoustics in the ocean. Fundamental acoustic concepts including the simple harmonic oscillator, waves on strings, and the acoustic wave equation; the sonar equation; sound generation and reception by underwater acoustic transducers and arrays; basics of sound propagation; reflection and scattering from ocean boundaries. Spring semester offered every year; satisfies core course requirement in Ocean Engineering. Prereq: PHYS 407/408, MATH 527 or equivalent.

**Grade Mode:** Letter Grading**OE 771 - Geodesy and Positioning for Ocean Mapping****Credits:** 4

The science and technology of acquiring, managing, and displaying geographically-referenced information; the size and shape of the earth, datums and projections; determination of precise positioning of points on the earth and the sea, including classical terrestrial-based methods and satellite-based methods; shoreline mapping, nautical charting and electronic charts. Prereq: MATH 426, PHYS 408. (Also listed as ESCI 771.)

**Equivalent(s):** ESCI 771**Grade Mode:** Letter Grading**OE 774 - Integrated Seabed Mapping Systems****Credits:** 4

Overview of typical applications that involve mapping the sediment-water interface in the ocean and adjacent waters. Emphasis on defining the task-specific resolution and accuracy requirements. Fundamentals of acoustics relevant to seabed mapping. Progression through typical configurations involving single beam, sidescan, phase differencing and multibeam systems. Integration of asynchronous 3D position, orientation and sound speed measurements with sonar-relative acoustic travel time and angles. Analysis of impact of offsets, mis-alignments and latency in all integrated sensors.

**Grade Mode:** Letter Grading**OE 795 - Special Topics****Credits:** 2-4

New or specialized courses and/or independent study. May be repeated for credit.

**Grade Mode:** Letter Grading**OE #797 - Honors Seminar****Credits:** 1

Course enrichment and/or additional independent study in subject matter pertaining to 600- or 700-level OE courses.

**Attributes:** Honors course

**Repeat Rule:** May be repeated for a maximum of 3 credits. May be repeated up to 3 times.

**Grade Mode:** Letter Grading

## Outdoor Education (OUT)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**OUT #407B - Introduction to Outdoor Education & Leadership - Three Season Experiences****Credits:** 2

An exploration of three-season adventure programs and career opportunities in the outdoor field. Students will be introduced to a variety of on-campus outdoor pursuits programming in spring, summer, and fall, including hiking, orienteering, climbing, and watersports. An emphasis on experiential teaching and learning will help students understand essential elements in program planning, administration and risk management. You will examine current trends in public participation in three-season outdoor activities and employment in the outdoor field. No experience required.

**Equivalent(s):** KIN 407B**Grade Mode:** Letter Grading**OUT 444A - Risk and the Human Experience****Credits:** 4

Explores the construct of risk in two phases: 1) knowledge building, focusing on the historical development of risk and its current manifestations in contemporary society; and 2) knowledge application, which focuses on applying conceptions of risk to various case study examples. The second phase of the course employs a problem-based learning approach with four distinct modules that ask students to apply, experience, and evaluate risk in a variety of contexts. Each module includes: a) a case study description, b) an experiential exercise, and c) a collaborative debriefing of the experience and reflective application to broader societal issues.

**Attributes:** Social Science (Discovery); Inquiry (Discovery)**Equivalent(s):** KIN 444A**Grade Mode:** Letter Grading

**OUT 444C - AMPED UP: Social and Psychological Perspectives on Adventure****Credits:** 4

Interest in the topic of adventure has exploded in recent years; with enough money, almost any adventure is available to anyone. The widespread rise in popularity of adventure brings questions, however. What is the role of adventure in modern society? What is its value to individuals? Through lectures, written assignments, group projects, multimedia, and experiential learning, this course surveys psychological, sociological, and anthropological perspectives on these and students' own questions. Special fee.

**Attributes:** Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course

**Equivalent(s):** KIN 444C

**Grade Mode:** Letter Grading

**OUT 515 - History of Outdoor Pursuits in North America****Credits:** 4

Voluntary pursuits in the outdoors have defined American culture since the early 17th century. Over the past 400 years, activities in outdoor recreation and education have reflected Americans' spiritual aspirations, imperial ambitions, social concerns, and demographic changes. This course will give students the opportunity to learn how Americans' experiences in the outdoors have influenced and been influenced by major historical developments of the 17th, 18th, 19th and 20th, and early 21st centuries. This course is cross-listed with RMP 515.

**Attributes:** Historical Perspectives(Disc)

**Equivalent(s):** KIN 515, RMP 515

**Grade Mode:** Letter Grading

**OUT 539 - Artificial Climbing Wall Management****Credits:** 2

The primary purpose of this course is an introduction to the procedures, methods, and techniques of artificial climbing wall management. Within the scope of this course, students will be introduced to operations, supervision, equipment and facility use/maintenance, risk management strategies, routesetting, individual and group programming/facilitation/teaching, technical skills and rescues/emergency procedures. A variety of teaching styles will be used to familiarize students with each topic area. Special fee. Optional certification fee. Lab.

**Equivalent(s):** KIN 539

**Grade Mode:** Letter Grading

**OUT 540 - Top Rope Rock Climbing****Credits:** 4

Provides students with an understanding of the equipment, techniques, and procedures necessary for the setup and management top rope rock climbing and rappelling sites, including advanced rescue skills. Students also develop basic climbing movement techniques and skills, an understanding of the pedagogical techniques used in climbing, and the requisite knowledge/skill development to conduct safe top rope experiences in multiple settings. The format of this course is a combination of demonstration/lecture and "hands-on" learning with the emphasis upon student interaction and practical skill development. Special fee. Lab.

**Equivalent(s):** KIN 540

**Grade Mode:** Letter Grading

**OUT 541 - Management of Challenge Courses****Credits:** 4

Provides students with an introduction to the basic facilitation/technical skills to manage a challenge course program. Exposure to intermediate technical skills usually required for lead facilitators. Specific topics include group process, framing, and sequencing, belay methods, participant and instructor equipment, operating procedures for low and high challenge course elements, and industry standards. Special fee. Lab.

**Equivalent(s):** KIN 541

**Grade Mode:** Letter Grading

**OUT #542 - Sea Kayaking****Credits:** 2

An introduction to the technical, teaching, and leadership skills required to lead inland kayaking programs and to assist with coastal canoeing programs. Emphasis on individual kayaking skills, self- and group-assisted rescues, safety and group management in a marine environment, and tactics for ocean travel and navigation. Special fee. Lab.

**Equivalent(s):** KIN 542

**Grade Mode:** Letter Grading

**OUT 543 - Winter Adventure Programming****Credits:** 2

An introduction to winter programming and back country travel, including snowshoeing and skiing, winter interpretation activities, backpacking, and winter camping. Emphasis on teaching of introductory winter programs and trips. Prereq: OUT 551 or instructor permission. Special fee. Lab.

**Equivalent(s):** KIN 543

**Grade Mode:** Letter Grading

**OUT 545 - High Angle Rescue****Credits:** 2

Provides students with the skills necessary to perform self and group rescues in a variety of steep terrain and high angle environments. Students also gain the basic skills necessary for the implementation of self- and partner-rescues while in a technical climbing environment. The skills learned from this class will adapt readily to climber rescue, crevasse rescue, big wall rescue, cave rescue, and vertical urban rescue. Prereq: OUT 547 or instructor permission. Special fee. Lab.

**Equivalent(s):** KIN 545

**Grade Mode:** Letter Grading

**OUT 546 - Whitewater Canoeing****Credits:** 3

Introduces white water canoeing skills. Students gain a basic understanding of the equipment, techniques, and procedures to conduct canoeing activities in flat water, moving water, and white water environments. Emphasizes development of individual paddling skills, safe and conscientious paddling, and group management on moving water and white water. Prereq: Previous canoeing experience or OUT 552. Special fee. Lab.

**Equivalent(s):** KIN 546

**Grade Mode:** Letter Grading



**OUT 547 - Lead Rock Climbing****Credits:** 3

Advanced climbing course designed to provide students with a structured environment to transition from top rope rock climbing or sport climbing to multi-pitch traditional lead climbing. Focuses on the development of the technical skills and judgment associated with leading in a multi-pitch environment. Specific topics include use of artificial protection, belay anchor construction, multi-pitch rappelling, knots, rope/belay station management, climbing technique, and multi-pitch leading considerations. Prereq: OUT 540 or instructor permission. Special fee. Lab.

**Equivalent(s):** KIN 547**Grade Mode:** Letter Grading**OUT 548 - Winter Expedition Programming****Credits:** 4

Introduces methods and techniques of winter expedition travel including camping, snowshoeing, alpine climbing skills, technical skiing and ice climbing skills. A variety of teaching styles are used to familiarize students with each topic area, and occur in classroom, basecamp, and wilderness settings. Prereq: OUT majors, OUT 551. Special fee. Lab.

**Equivalent(s):** KIN 548**Grade Mode:** Letter Grading**OUT 549 - Wilderness Navigation****Credits:** 4

Introduces the methods and techniques of wilderness navigation. Topics include map interpretation, compass use, global positioning systems, and other navigation methods. A variety of teaching styles are used to familiarize the students with each topic area, and occur in both classroom and wilderness settings. Special fee. Lab.

**Equivalent(s):** KIN 549**Grade Mode:** Letter Grading**OUT 550 - Outdoor Education Philosophy and Methods****Credits:** 4

Explores the philosophical basis for experiential and outdoor education. Experiential exercises and readings focus on risk, traditional vs. progressive education, role of nature, ethics, models of learning and facilitation, and developing a personal philosophy of outdoor education. Includes full-day outdoor education laboratory experiences.

**Attributes:** Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** KIN 550**Grade Mode:** Letter Grading**OUT 551 - Adventure Programming: Backcountry Based Experience****Credits:** 4

Introduces the leadership of land-based backpacking programs. Students develop an understanding of backpacking equipment, trip planning and organization, instruction of basic camping skills, implementation of safety procedures and group management on backpacking trips. Special fee. Lab.

**Equivalent(s):** KIN 551**Grade Mode:** Letter Grading**OUT 552 - Adventure Programming: Water Based Experiences****Credits:** 4

Introduces the leadership of canoe expeditions. Students develop an understanding of necessary canoeing equipment, trip planning and organization, instruction of basic canoeing strokes, implementation of safety procedures, and group management on canoe expeditions. Special fee. Lab.

**Equivalent(s):** KIN 552**Grade Mode:** Letter Grading**OUT 650B - Internship in Outdoor Education & Leadership****Credits:** 4-8

Experiential learning in a setting appropriate to the student's objectives. A 4 credit internship requires a minimum of 400 hours experience. Provides an appropriate transition from undergraduate education to future employment in the field of outdoor education. Generally done after students have completed all other requirements for the option. Prereq: permission. Cr/F. (IA continuous grading).

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** KIN 650B**Grade Mode:** Credit/Fail Grading**OUT 681 - Foundations of Adventure Education****Credits:** 4

Through experiential activities, personal reflections, readings, and group and independent projects, students will gain an understanding of models and theories underpinning adventure education. The course includes content such as adventure education history, outdoor leadership, personal growth, group development, risk taking and risk management, educational philosophy, and learning theory. Students learn to apply theoretical principles to practice in a variety of settings.

**Attributes:** Writing Intensive Course**Equivalent(s):** KIN 681**Grade Mode:** Letter Grading**OUT 682 - Experiential Teaching and Leadership****Credits:** 4

This class is an orientation to experiential learning, teaching, and leadership in an interactive environment. Students develop and implement lesson and program plans for internal and external agencies. Emphasis on learning methods, teaching and leadership styles, and risk management for youth and adult programs. Prereq: OUT 541, OUT 550, OUT 686.

**Equivalent(s):** KIN 682**Grade Mode:** Letter Grading**OUT 686 - Wilderness Emergency Medical Care****Credits:** 4

Standards of practice for professional providing emergency medical care in remote areas. Consideration of prolonged transport times, severe environments, and the use of portable and improvised equipment. Topics include wilderness trauma and illness, search and rescue operations, and environmental emergencies.

**Equivalent(s):** KIN 686**Grade Mode:** Letter Grading**OUT 687 - Career and Professional Development Practicum****Credits:** 4

Explores professional competencies required in long-term careers in the outdoors. Includes job shadowing, teaching, and leadership experiences at external agencies. Students focus their learning experience in areas of the field that interest them and develop professional identity through self-assessment, resume development, job search processes, interview techniques, and negotiation strategies. Students co-design and focus their learning in specific areas of the field.

**Equivalent(s):** KIN 687**Grade Mode:** Letter Grading



**OUT 693 - Teaching Assistantship****Credits:** 2

Students serve as teaching assistants in assigned class activities. Assignments to be made by the class instructor may include teaching assistants' and administrative duties. May take two different sections. Prereq: junior standing; Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Credit/Fail Grading**OUT 696 - Independent Study****Credits:** 2-4

An advanced, individual scholarly project under the direct supervision of a faculty member. Prereq: junior or senior; departmental approval.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**OUT 696W - Independent Study****Credits:** 2-4

An advanced, writing-intensive, individual scholarly project under the direct supervision of a faculty member. Student and Faculty Adviser will prepare a written proposal that outlines: the questions to be pursued, the methods of investigation, the student's qualifications to conduct the research, the nature of the finished written product (e.g. case study, position paper, extended lab report). This proposal must be approved by major faculty and the department chair prior to the student's registration for OUT 696 WI. All OUT 696 WI projects must include: Some forms of informal, ungraded writing such as a journal, reading summaries, draft chapters, or invention activities. Regular writing interaction between student and faculty adviser (i.e. at least weekly or biweekly), to include written feedback from the adviser. A finished product that is polished via revision. Faculty sponsors and students should consult the resources and guidelines of the UNH Writing Program. Prereq: junior or senior; departmental approval.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**OUT #699H - Honors Project****Credits:** 4

Project first involves tutorial sessions to introduce the student to the experimental design, after which a research question is developed. After an appropriate literature review, the student collects and analyzes data, forms conclusions, and prepares a written report on the findings.

**Attributes:** Honors course**Grade Mode:** Letter Grading**OUT 782 - Therapeutic Applications of Adventure Programming****Credits:** 4

A study of theory, practice, and research of adventure experiences in therapeutic settings. Incorporates theoretical seminars and associated practical experiences.

**Equivalent(s):** KIN 782**Grade Mode:** Letter Grading**OUT 786 - Organization and Administration of Outdoor Education Programs****Credits:** 4

Study of administration of outdoor education programs using a variety of organizational models. Students use simulated exercises and work with outdoor agencies on special projects to learn key factors necessary to manage a program. Outdoor Education majors. Special Fee.

**Attributes:** Writing Intensive Course**Equivalent(s):** KIN 786**Grade Mode:** Letter Grading

## Paul College Business & Economics (PAUL)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**PAUL 405 - Freshman Academic Experience I****Credits:** 0 or 1

This course is an introduction to the nature of academic knowledge, academic standards and academic management skills essential for success in the University and the Paul College. This course, along with PAUL 406 which follows in the spring term, provides academic foundation for the FIRE (First-year Innovation and Research Experience Program). PAUL 405 and 406 are required of all first-year students in Paul College.

**Equivalent(s):** ADMN 405**Grade Mode:** Credit/Fail Grading**PAUL 406 - Freshman Academic Experience II****Credits:** 0 or 1

This course is the second part of Freshman Academic Experience for all first-year students in Paul College. The second part of the course reviews academic skills and begins to focus on the student's academic career as a student in Paul College including: major choices, opportunities for enrichment, networking, internships and career paths as well as grand challenge research and presentations. This course, along with PAUL 405 which follows the spring term, provides the academic foundation for the FIRE (First-year Innovation and Research Experience Program). PAUL 405 and 406 are required of all first-year students in Paul College.

**Equivalent(s):** ADMN 406**Grade Mode:** Credit/Fail Grading**PAUL 407 - Paul Scholars Seminar****Credits:** 1

Weekly seminar curriculum is designed to guide academically talented students to achieve their full potential, enhancing their overall educational experience at UNH. The course will expose the Paul Scholars to the high-impact opportunities available at UNH (study abroad, study away, research, etc.) and guide students in evaluating current and desired skillsets leading to the identification of experiences to close their skills gap. Students are responsible for attending and participating in all class sessions and other activities as assigned throughout the course.

**Grade Mode:** Credit/Fail Grading**PAUL 440A - Honors/Design Thinking for Social Justice, Change, and Innovation****Credits:** 4

Utilizing the powerful, application-oriented methodology of human-centered design (design thinking), the course will enable students to become change makers and transformational leaders, by helping them understand the context and develop creative solutions to problems characterized by multiple forms of inequality (economic, social, racial, and gender-based), thus working toward social justice, change, and innovation.

**Attributes:** Honors course; Social Science (Discovery)**Grade Mode:** Letter Grading

**PAUL 450 - Personal Finance****Credits:** 4

This course will provide an overview of the personal financial planning process, including the establishment of goals and objectives, forecasting of lifetime income and expenditures, evaluation of investment options, money management, and understanding of all the many ways a person can achieve their financial goals through various strategies. The course covers the concepts, theories and analytical methods used in professional personal financial planning. Students analyze the effects of inflation, changing interest rates and taxation (high level taxation) on their investment decisions. The course is designed to expose students to all of the directly applicable mathematical formulas involved in the finance world that we utilize on a daily basis.

**Attributes:** Quantitative Reasoning(Disc)**Grade Mode:** Letter Grading**PAUL 520 - Topics I****Credits:** 1-4

Special Topics, vary by semester.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**PAUL #535A - Professional Culture in the European Union - Case Study: Germany****Credits:** 4

This English-language course will provide an introduction to doing business with the countries of the European Union, with an emphasis not only on political and economic issues of Europe, but also on the varied professional values that constitute it. Professional culture will be the primary focus of this course. The second half of the course will take Germany as a case study for an in-depth analysis of professional culture. We will compare German and American business practices, and will investigate various aspects of the German professional world. Of primary importance will be a study of communication with potential German business partners, employers, and customers. Also listed as LLC 535A.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** LLC 535A**Grade Mode:** Letter Grading**PAUL #535C - Professional Culture in Asia - Case Study: China and Japan****Credits:** 4

This course, taught in English, will provide students with an introduction to doing business in Asia, with an emphasis not only on political and economic issues of the region, but also on the varied professional value systems and interactional styles that characterize it. This course will take China and Japan as case studies for an in-depth analysis of professional culture. We will compare Chinese, Japanese, and American business practices, and will investigate various aspects of the Asian professional world. Of primary importance will be a study of communication with potential Asian business partners, employers, and customers. In addition, the growing influence of Asian companies in the U.S. and the so-called Asian Market will be examined.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** LLC #535C**Grade Mode:** Letter Grading**PAUL 620 - Topics****Credits:** 4

Special topics, vary by semester.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**PAUL 626 - Supervised Student Teaching****Credits:** 2-4

Participants are expected to perform such functions as leading discussion groups, assisting faculty in undergraduate courses that they have successfully completed. For juniors and seniors with 3.0 or better cumulative GOA. No more than four credits may be earned a a teaching assistant in any one course. Permission of instructor and undergraduate programs office required.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Grade Mode:** Credit/Fail Grading**PAUL 660 - BiP-Social Intelligence Topics****Credits:** 2

Business in Practice: Social Intelligence develops students' abilities to navigate complex social relationships and environments. An emphasis is placed on experiential learning and instruction from business professionals. Rotating topic courses are offered to meet the needs of the ever-changing business environment. Cr/F, unless noted as letter graded in the section or additional course details.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**PAUL 670 - BiP-Analytical Intelligence Topics****Credits:** 2

Business in Practice: Analytical Intelligence develops students' abilities to analyze ideas, solve problems and make decisions. An emphasis is placed on experiential learning and instruction from business professionals. Rotating topic courses are offered to meet the needs of the ever-changing business environment. Cr/F, unless noted as letter graded in the section or additional course details.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**PAUL 680 - BiP-Competitive Intelligence Topics****Credits:** 2

Business in Practice: Competitive Intelligence develops students' abilities to gather, analyze, and distribute information and ideas about products, customers, competitors or the external environment. An emphasis is placed on experiential learning and instruction from business professionals. Rotating topic courses are offered to meet the needs of the ever-changing business environment. Cr/F, unless noted as letter graded in the section or additional course description.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**PAUL 690 - BiP-Professional Intelligence Topics****Credits:** 2

Business in Practice: Professional Intelligence develops students' abilities to achieve professional success. An emphasis is placed on experiential learning and instruction from business professionals. Rotating topic courses are offered to meet the needs of the ever-changing business environment. Cr/F, unless noted as letter graded in the section or additional course details.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**PAUL 705 - Supervised Student Teaching: Peer Advisor****Credits:** 0-2

Training course for peer advisors to prepare for leading student FIRE Teams. For Paul College juniors and seniors with 3.0 or better cumulative GPA. Permission from Undergraduate Programs Office required.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Credit/Fail Grading

**PAUL 720 - Topics II****Credits:** 4

Special topics, vary by semester.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**PAUL 725 - Independent Study****Credits:** 1-4

Individual research projects that are student designed. Initial sponsorship of a Paul College faculty member must be obtained followed by approval of Paul advisor and Dean's Office. Special permission required to earn more than 4 credits in one semester. For Paul College Juniors and Seniors with 3.0 or better cumulative GPA.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**PAUL 725W - Independent Study****Credits:** 1-4

Individual research projects that are student designed. Initial sponsorship of Paul College faculty member must be obtained followed by approval of Paul advisor and Dean's Office. Special permission required to earn more than 4 credits in one semester. For Paul College Juniors and Seniors with 3.0 or better cumulative GPA.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**PAUL 790 - Honors/The Workshop****Credits:** 2

Open to students enrolled in the Paul Honors Program, this workshop is specifically designed for honors students starting the program in their junior year. It is designed to enable students to share the work they are doing for the honors designated course. The workshop will also include guest speakers and other programming of interest to Paul Honors Students. Permission required. Cr/F.

**Attributes:** Honors course**Equivalent(s):** ADMN 790**Grade Mode:** Credit/Fail Grading**PAUL 792 - Honors/The Consulting Project****Credits:** 2

Open to students enrolled in the Paul Honors Program, this course is designed to broaden perspectives and build bridges to the external business community. Students will work across all of the disciplines offered by Paul College on consulting projects developed in conjunction with the NH SBDC (Small Business Development Center). Permission required. Cr/F.

**Attributes:** Honors course**Equivalent(s):** ADMN 792**Grade Mode:** Credit/Fail Grading**PAUL 794 - Honors/The Research Process****Credits:** 2

Open to students enrolled in the Paul Honors Program, this course is designed to help students formulate a thesis topic, learn the skills needed to write a thesis and serve as a mechanism for pairing students with a faculty thesis advisor. In addition, students will be expected to attend several research seminars. Permission required. Cr/F.

**Attributes:** Honors course**Equivalent(s):** ADMN 794**Grade Mode:** Credit/Fail Grading**PAUL 795 - Internship****Credits:** 1-4

The internship is designed to provide practical experience in a major related field (organizations may include: business, industry, health, public service, non-profit). Supervision to be provided by a qualified individual in the organization, with student consultation by a faculty sponsor. Written report required. Initial sponsorship of an Paul College faculty member must be obtained followed by approval of PAUL advisor and Dean's Office. Special permission required to earn more than 4 credits in one semester. For Paul College Juniors and Seniors with 3.0 or better cumulative GPA.

**Repeat Rule:** May be repeated for a maximum of 12 credits. May be repeated up to 4 times.**Equivalent(s):** ADMN 795**Grade Mode:** Credit/Fail Grading**PAUL #796 - International Internship****Credits:** 1-4

The International Internship is designed to provide practical experience in a major related field (organizations may include: business, industry, health, public service, non-profit). Supervision to be provided by a qualified individual/program in the organization, with student consultation by a faculty sponsor. Written report required. Initial sponsorship of an Paul College faculty member must be obtained followed by approval of PAUL advisor and Dean's Office. Special permission required to earn more than 4 credits in one semester. Must also register for INCO 588 (co-requisite). For Paul College Juniors and Seniors with 3.0 or better cumulative GPA.

**Co-requisite:** INCO 588**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Credit/Fail Grading

## Philosophy (PHIL)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**PHIL 401 - Introduction to Philosophy****Credits:** 4

This course gives a basic grounding in Philosophy. We explore enduring questions that we have all grappled with: Does God exist? Do we have free will? How can we lead fulfilling lives? No background in philosophy is needed, only an open and inquiring mind.

**Attributes:** Humanities(Disc)**Equivalent(s):** PHIL 401H, PHIL 401W**Grade Mode:** Letter Grading**PHIL 401H - Honors/Introduction to Philosophy****Credits:** 4

This course gives a basic grounding in Philosophy. We explore enduring questions that we have all grappled with: Does God exist? Do we have free will? How can we lead fulfilling lives? No background in philosophy is needed, only an open and inquiring mind.

**Attributes:** Honors course; Humanities(Disc); Writing Intensive Course**Equivalent(s):** PHIL 401, PHIL 401W**Grade Mode:** Letter Grading

**PHIL 401W - Introduction to Philosophy****Credits:** 4

This course gives a basic grounding in Philosophy. We explore enduring questions that we have all grappled with: Does God exist? Do we have free will? How can we lead fulfilling lives? No background in philosophy is needed, only an open and inquiring mind. Writing intensive.

**Attributes:** Humanities(Disc); Writing Intensive Course**Equivalent(s):** PHIL 401, PHIL 401H**Grade Mode:** Letter Grading**PHIL 405 - Critical Thinking****Credits:** 4

One of the most salient features of our culture is that there is so much BS. Most people are overconfident about their ability to avoid being taken in by it. This course aims to sharpen your BS detection skills and help you to diagnose errors in reasoning. You will learn how to check your (often unreliable) gut reactions, improve your critical thinking skills, and identify specious arguments across a range of topics.

**Attributes:** Humanities(Disc); Inquiry (Discovery)**Grade Mode:** Letter Grading**PHIL 405W - Critical Thinking****Credits:** 4

One of the most salient features of our culture is that there is so much BS. Most people are overconfident about their ability to avoid being taken in by it. This course aims to sharpen your BS detection skills and help you to diagnose errors in reasoning. You will learn how to check your (often unreliable) gut reactions, improve your critical thinking skills, and identify specious arguments across a range of topics.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 410 - Happiness, Well-Being, and a Good Life****Credits:** 4

A sustained exploration of happiness, well-being, and a good life. Are they the same? If not, do any include the others, and can they conflict? What sorts of things might contribute to or detract from happiness, well-being, and having a good life? Comparing work on these topics in philosophy and psychology will be a key theme in the course.

**Attributes:** Humanities(Disc); Inquiry (Discovery)**Grade Mode:** Letter Grading**PHIL 412 - Beginning Logic****Credits:** 4

Principles of reasoning and development of symbolic techniques for evaluating arguments.

**Attributes:** Quantitative Reasoning(Disc)**Equivalent(s):** PHIL 412H**Grade Mode:** Letter Grading**PHIL 417 - God, Religion, and the Meaning of Life****Credits:** 4

An introductory philosophical exploration of the relationship between reason and religious experience, particularly as this relationship has developed in and in response to, the great world religions.

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 419 - Race, Gender and Social Justice****Credits:** 4

We are in the midst of a social reckoning in the United States. Black Lives Matter and #Me Too have turned a spotlight on the murder of black people by police officers and the sexual assault of women. Public health events reveal racialized health care inequities and unfair domestic and care work for women. This course provides philosophical tools that help us to understand our social world, its history, and to consider how to contribute solutions.

**Attributes:** Humanities(Disc); Inquiry (Discovery)**Equivalent(s):** PHIL 419W**Grade Mode:** Letter Grading**PHIL 419W - Race, Gender and Social Justice****Credits:** 4

We are in the midst of a social reckoning in the United States. Black Lives Matter and #Me Too have turned a spotlight on the murder of black people by police officers and the sexual assault of women. Public health events reveal racialized health care inequities and unfair domestic and care work for women. This course provides philosophical tools that help us to understand our social world, its history, and to consider how to contribute solutions.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** PHIL 419**Grade Mode:** Letter Grading**PHIL 420 - Introduction to Philosophy of Law and Justice****Credits:** 4

Introduction to debates regarding how ethical values relate to law and justice. Is justice universal or relative? Are laws making progress toward justice? How should we balance liberty and equality? Should freedom of speech be an absolute right? Does the state have too much power, or too little? Are laws applied fairly by police and the justice system? Why do we punish? What is the relationship between wealth, race, and justice? Discussion.

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 421 - Philosophy and the Arts****Credits:** 4

Contemporary philosophic concerns and perspectives as reflected in one or more of the arts (literature, theatre, film, music, plastic art). Writing intensive.

**Attributes:** FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** PHIL 421H**Grade Mode:** Letter Grading**PHIL 424 - The Future of Humanity: Science, Technology, and Society****Credits:** 4

Consideration of the impacts of science and technology on humanity from a philosophical perspective. Topics often include genetic engineering, automated labor, advanced weaponry, artificial intelligence, social media and data extraction, space exploration, alien contact, virtual realities, transhumanism, and the future of humanity as an interplanetary species.

**Attributes:** Environment,TechSociety(Disc)**Equivalent(s):** PHIL 424H**Grade Mode:** Letter Grading



**PHIL 424H - Honors/The Future of Humanity: Science, Technology, and Society****Credits:** 4

Consideration of the impacts of science and technology on humanity from a philosophical perspective. Topics often include genetic engineering, automated labor, advanced weaponry, artificial intelligence, social media and data extraction, space exploration, alien contact, virtual realities, transhumanism, and the future of humanity as an interplanetary species.

**Attributes:** Environment, TechSociety(Disc); Honors course**Equivalent(s):** PHIL 424**Grade Mode:** Letter Grading**PHIL 430 - Ethics and Society****Credits:** 4

Critical study of principles and arguments advanced in discussion of current moral and social issues. Possible topics: violence, rules of warfare, sexual morality, human rights, punishment, abortion.

**Attributes:** Humanities(Disc)**Equivalent(s):** PHIL 430H, PHIL 430W**Grade Mode:** Letter Grading**PHIL 430W - Ethics and Society****Credits:** 4

Critical study of principles and arguments advanced in discussion of current moral and social issues. Possible topics: violence, rules of warfare, sexual morality, human rights, punishment, abortion. Writing intensive.

**Attributes:** Humanities(Disc); Writing Intensive Course**Equivalent(s):** PHIL 430, PHIL 430H**Grade Mode:** Letter Grading**PHIL 431 - Business Ethics****Credits:** 4

An interdisciplinary study of ethical issues in business. This course, taught collaboratively by business school and philosophy department faculty, applies philosophical perspectives, critical thinking, and analysis to ethical decision-making and implementation in the workplace as well as the broader context of other businesses, customers, society, and the environment.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**PHIL 435 - Human Nature and Evolution****Credits:** 4

Philosophy of biology and the evolutionary process. Readings of scientists and philosophers' commentary on scientists. Examination of the differences between scientific debate and philosophic debate. Philosophical study of scientific theory stressing humans' place in the natural world and the ethical implication of humans as natural beings in the evolutionary process.

**Attributes:** Environment, TechSociety(Disc)**Equivalent(s):** PHIL 435H**Grade Mode:** Letter Grading**PHIL 435H - Honors\Human Nature and Evolution****Credits:** 4

Philosophy of biology and the evolutionary process. Readings of scientists and philosophers' commentary on scientists. Examination of the differences between scientific debate and philosophic debate. Philosophical study of scientific theory stressing humans' place in the natural world and the ethical implication of humans as natural beings in the evolutionary process.

**Attributes:** Environment, TechSociety(Disc); Honors course**Equivalent(s):** PHIL 435**Grade Mode:** Letter Grading**PHIL 436 - Social and Political Philosophy****Credits:** 4

Examines social and political thought that may include texts from ancient through contemporary times, addressing topics such as natural rights, revolution, law, freedom, justice, power. Questions may include: What is a community, and how are individuals related to communities? Can any particular form of government be morally justified, and if so, what kind of government? Can anarchism work? Is there something wrong with a society in which there is private ownership of property? What is oppressive? What is freedom, and are we free? What roles should different forms of power play in a society? Could and should there be a genderless society? Is ethnic diversity valuable?

**Attributes:** Humanities(Disc); Inquiry (Discovery)**Equivalent(s):** PHIL 436H, PHIL 436W, PHIL 437**Grade Mode:** Letter Grading**PHIL 436H - Honors/Social and Political Philosophy****Credits:** 4

Examines social and political thought that may include texts from ancient through contemporary times, addressing topics such as natural rights, revolution, law, freedom, justice, power. Questions may include: What is a community, and how are individuals related to communities? Can any particular form of government be morally justified, and if so, what kind of government? Can anarchism work? Is there something wrong with a society in which there is private ownership of property? What is oppressive? What is freedom, and are we free? What roles should different forms of power play in a society? Could and should there be a genderless society? Is ethnic diversity valuable? Writing intensive.

**Attributes:** Honors course; Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** PHIL 436, PHIL 436W, PHIL 437**Grade Mode:** Letter Grading**PHIL 436W - Social and Political Philosophy****Credits:** 4

Examines social and political thought that may include texts from ancient through contemporary times, addressing topics such as natural rights, revolution, law, freedom, justice, power. Questions may include: What is a community, and how are individuals related to communities? Can any particular form of government be morally justified, and if so, what kind of government? Can anarchism work? Is there something wrong with a society in which there is private ownership of property? What is oppressive? What is freedom, and are we free? What roles should different forms of power play in a society? Could and should there be a genderless society? Is ethnic diversity valuable? Writing intensive.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** PHIL 436, PHIL 436H, PHIL 437**Grade Mode:** Letter Grading



**PHIL #440 - Just Business: The Ethics of Markets and Money****Credits:** 4

Critical study of business ethics and scandals. Questions may include: Is ethics irrelevant in the cutthroat world of money making? How can one be a good person - for example honest, loyal, and caring - while attempting to maximize profits? Must employers treat workers with dignity? Does anything have more value than money? Is money closer to the "root of all evil" or the "root of all good"? Should everything be for sale? To what extent are unregulated markets fair? How should we punish corporate wrongdoers?.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**PHIL 440A - Honors/Who Are You? Personal Identity and Humanity****Credits:** 4

What makes you you? Are you the same person over time? What does it mean to be a person? How is being a person related to being a human being? This course is part of an Honors Symposium on the nature of personhood and humanity. We will explore a number of philosophical questions related to personal identity over time, the social construction of the self, and the relationship between being a member of homo sapiens and being a person.

**Attributes:** Honors course; Humanities(Disc)**Grade Mode:** Letter Grading**PHIL 440B - Honors/Who's Human Now?****Credits:** 4

When we call someone human or a person, what do we mean, and what are we trying to do? How has the concept of personhood expanded or contracted to include more or fewer beings and why? Are fetuses persons? Are corporations persons? Are chimps persons? Who counts as a person now, and who will count as a person in the future? How and why are human persons subject to dehumanization? Readings and texts will draw from historical sources and contemporary philosophy. No credit if credit earned for PHIL 780.

**Attributes:** Honors course; Humanities(Disc)**Equivalent(s):** PHIL 780**Grade Mode:** Letter Grading**PHIL 440C - Honors/The Copernican Lens: Finding a Place for Humanity****Credits:** 4

How do humans fit into the cosmos? Once, we thought we were central players; most human societies believed they played a starring role, second only to the gods. Developments in the sciences have led modern humanity to a far more modest view: our existence is full of contingency and without cosmic significance. Humanity's self-conception is now recognized to be deeply culturally conditioned: is an objective view of humanity's place even possible?.

**Attributes:** Honors course; World Cultures(Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 444 - Remaking Nature/The Ethics and Politics of Genetic Engineering****Credits:** 4

Examines the biological, ethical, social, and political issues raised by genetic engineering and by human enhancement techniques. Issues may include: cloning humans, selection of embryos on the basis of lack of genetic defects, genetic modification of plants and animals for food, gene therapy on humans, cognitive and athletic enhancement. Depending on instructor other topics may include human modification of the environment and engineering responses to global warming. Writing intensive.

**Attributes:** Environment,TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**PHIL #444A - Who Am I? Concepts of Self****Credits:** 4

An inquiry into the nature of the self and into the conditions under which it may best flourish. Is the self fundamentally biological, spiritual, or social?. Draws on a variety of perspectives in an attempt to answer these questions, including East Asian as well as Western philosophical ideas, feminist theory, Existentialism, and others. Writing intensive.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 447 - Artificial Intelligence, Robots, and People****Credits:** 4

The historical origins of the science of computation. The implications of the nature of information-processing for understanding the mind-body relation. Examines the possible social, economic, and educational consequences of the computer revolution.

**Attributes:** Environment,TechSociety(Disc)**Equivalent(s):** PHIL 447H**Grade Mode:** Letter Grading**PHIL 450 - Environmental Ethics****Credits:** 4

Thoughtful people cannot help escape considering hard questions about our relationship to the natural world and what it means for the future of life on earth. In this course we think philosophically about these crucial concerns. We try to answer questions about our responsibilities to the environment and to future generations.

**Attributes:** Environment,TechSociety(Disc)**Equivalent(s):** PHIL 450H**Grade Mode:** Letter Grading**PHIL 495 - Tutorial Reading****Credits:** 1-4

Basic introductory reading under faculty direction on topics of philosophical importance. Books offered for tutorial reading may be in any area the instructor chooses or on independent study basis.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**PHIL 500 - Workshop****Credits:** 4

Introduces methods of studying philosophical texts. Emphasizes reading philosophical texts and arguments for comprehension, and on writing philosophically with accuracy and clarity. Open to PHIL majors (PHIL minors may enroll if they receive permission). Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**PHIL 510 - Philosophy and Feminism****Credits:** 4

Focuses on philosophical issues in feminism primarily through the work of historical and contemporary philosophers. Topics include the question of the nature of women, feminism as an ethical and political theory, feminism as an exploration and transformation of the self, feminism as a philosophical methodology, and the institutions of marriage and motherhood. Writing intensive.

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 520 - Introduction to Eastern Philosophy****Credits:** 4

Major Eastern traditions of philosophy. Concentration on Indian, Chinese, and Japanese systems may vary from semester to semester.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**PHIL 525 - Existentialism****Credits:** 4

Readings from existential philosophy and literature. Selections may be drawn from the works of Kierkegaard, Nietzsche, Heidegger, Sartre, Camus, de Beauvoir, Buber, Bultman, Merleau-Ponty, Tillich, Kafka, and others.

**Attributes:** Humanities(Disc); Inquiry (Discovery)**Equivalent(s):** PHIL 475, PHIL 525H**Grade Mode:** Letter Grading**PHIL 530 - Ethics****Credits:** 4

Critical examination of the development of philosophical thinking regarding human values, rights, and duties.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 531 - Topics in Professional and Business Ethics****Credits:** 4

Content variable. Examines a topic or topics related to ethical issues in professional and business situations. Some variations of the course will look in-depth at a specific issue, such as consumer behavior, medical ethics, discrimination, or the theory of the film. Alternatively, the course may examine, from one or more ethical perspectives, a wide range of issues related to business activity, workplace culture, regulation, and economic practices.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**PHIL #531W - Professional & Business Ethics****Credits:** 4

Content variable. Examines a topic or topics related to ethical issues in professional and business situations. Some variations of the course will look in-depth at a specific issue, such as consumer behavior, medical ethics, discrimination, or the theory of the film. Alternatively, the course may examine, from one or more ethical perspectives, a wide range of issues related to business activity, workplace culture, regulation, and economic practices.

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 560 - Philosophy Through Fiction****Credits:** 4

Philosophical implications of representative literary works, read in tandem with philosophical literature. The content will vary. The literary works explored may be drawn from ancient times through modern times. For examples, the classic Greek tragedy "Antigone" might be explored for its implications regarding moral, political, and feminist philosophy, or the philosophical implications of an anti-utopian contemporary work like "Brave New World" might be explored, or short stories drawn from science fiction and other speculative fiction might be used to explore the possibility of time travel or of machines with mental lives. Writing intensive.

**Attributes:** Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 565 - Philosophy Through Film****Credits:** 4

Philosophical exploration of film as a medium for developing philosophical ideas and for stimulating philosophical thinking about various issues reflected in film, from traditional philosophical issues to the pressing social and cultural issues of our time. The content will vary. Philosophical texts are read in tandem with screenings of a range of movies from Hollywood blockbusters and art house films to films made for TV. Philosophical issues such as the nature of consciousness, appearance and reality, God and evil, the good life, and time and memory might be explored. Film might also be used to examine representations of race and gender or violence in society; and the power of movies to influence society might be explored through documentaries and propaganda films. Required evening film screenings in addition to regular class meetings. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 570 - Ancient Philosophy****Credits:** 4

Development of Western philosophy from its beginnings in Greece to the Roman period, with particular emphasis on the thought of Plato and Aristotle. Attention is paid to the historical context and the development of ideas in culture.

**Attributes:** Humanities(Disc)**Equivalent(s):** PHIL 570H**Grade Mode:** Letter Grading**PHIL 580 - Modern Philosophy from Descartes to Kant****Credits:** 4

The birth and development of distinctively modern philosophy in the thought of such creative minds as Galileo, Descartes, Hobbes, Leibniz, Spinoza, Locke, Berkeley, Hume, Rousseau, Reid, Kant, and others.

**Grade Mode:** Letter Grading**PHIL #620 - 20th Century European Philosophy****Credits:** 4

Major figures or philosophical movements such as phenomenology, existentialism, critical social theory, and post-modernism. Content will vary. Consult Time and Room Schedule for topics.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

**PHIL 630 - Neuroscience and Philosophy****Credits:** 4

This course has a double focus. It investigates theories concerning the nature of the mind/brain relation, especially in light of recent work in the neurosciences. It also considers the particular presuppositions of and methodological challenges endemic to the neurosciences, along with the relations neuroscience bears to neighboring disciplines.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PHIL #635 - Advanced Topics in Philosophy of Law and Justice****Credits:** 4

Advanced topics in law and justice may include: the nature of law; the duty to obey the law; justifications for punishment; liberty and law equality and economic justice; freedom of expression; privacy; immigration; race and law; police ethics and conduct; legal responsibility and related concepts (for example, legal cause, harm, mens rea, negligence, strict liability, legal insanity); restorative justice; artificial intelligence and law.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 660 - Law, Medicine, and Ethics****Credits:** 4

Critical examination of the diverse legal and moral issues facing the profession of health care. Variable topics may include: duty to provide care; nature of informed consent to treatment; problems of allocating limited health-care resources (e.g., withdrawal of life-support systems, quality-of-life decisions, etc.); patient's right to confidentiality. Problems relating to involuntary preventive care (e.g., involuntary sterilization, psycho-surgery, etc.). Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 701 - Topics in Value Theory****Credits:** 4

Philosophical inquiry into the nature of value. Topics may include the grounds of right and wrong, various conceptions of morality, the nature of good and evil, theories about the meaning of life, the nature of the beautiful. Content will vary. Consult the Time and Room Schedule for topics. Course may be taken twice for credit (a third time with permission of the chair of the department) so long as the topic is different. May not be repeated to improve grade without approval from the department chair. Repeatable with permission.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to 2 times.**Grade Mode:** Letter Grading**PHIL 702 - Topics in Metaphysics and Epistemology****Credits:** 4

Advanced study in one or more of the following topics: nature of reality, relationship of thought and reality, nature of knowledge and perception, theories of truth. Content will vary. Consult the Time and Room Schedule for topics. Course may be taken twice for credit (a third time with permission of the chair of the department) so long as the topic is different. May not be repeated to improve grade without approval of the chair of the department. Prereq: PHIL 500 and one course in history of philosophy, or permission. Writing intensive. Repeatable with permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 730 - Topics in Theories of Justice****Credits:** 4

The idea of justice is central to social, political, and legal theory. Considerations of justice are appealed to in assessing the legitimacy of governments, and the fair distributions of goods, and opportunities both with nation-states and globally, and to address specific social concerns such as racial or gender discrimination or access to health care. Examine both historical sources and contemporary debates about the nature of justice.

**Grade Mode:** Letter Grading**PHIL 780 - Special Topics****Credits:** 4

Advanced study of special topics: a problem, figure, or movement in the history of philosophy, or selected issues, thinkers, or developments in contemporary philosophy. Repeatable with permission.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to 4 times.**Grade Mode:** Letter Grading**PHIL 795 - Independent Study****Credits:** 1-8

For students who are adequately prepared to do independent, advanced philosophical work; extensive reading and writing. Before registering, students must formulate a project and secure the consent of a department member who will supervise the work. Conferences and/or written work as required by the supervisor.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**PHIL 798 - Senior Thesis****Credits:** 4

Two-course sequence (798, then 799) open only to senior philosophy majors in the University Honors Program, the philosophy department honors-in-major program, or by special permission from the department. All senior thesis candidates must have a proposal approved in the spring of their junior year and a thesis adviser assigned by the chair of the department before registering for 798. Students must orally defend their theses before the department. (See department guidelines for further details).

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PHIL 799 - Senior Thesis****Credits:** 4

Two-course sequence (798, then 799) open only to senior philosophy majors in the University Honors Program, the philosophy department honors-in-major program, or by special permission from the department. All senior thesis candidates must have a proposal approved in the spring of their junior year and a thesis adviser assigned by the chair of the department before registering for 799. Students must orally defend their theses before the department. (See department guidelines for further details).

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

## Physics (PHYS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**PHYS 400 - Physics Seminar I****Credits:** 1

An informal reading and discussion course to introduce students to the general culture of physics, including career possibilities, historical and philosophical aspects of physics, current research at UNH and elsewhere, and physics in the news. Topics vary based on interests of the class.

Students in their first year as physics majors (either as freshmen or transfers) are strongly encouraged to take this class. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 2 credits.

**Grade Mode:** Credit/Fail Grading

**PHYS 401 - Introduction to Physics I****Credits:** 0 or 4

Broad survey of classical and modern physics. Designed to enable students to appreciate the role of physics in today's society and technology. Emphasizes the fundamental laws of nature on which all science is based, with some examples of interest to biologists. Knowledge of high school algebra, geometry, and trigonometry essential. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)

**Mutual Exclusion:** No credit for students who have taken .

**Grade Mode:** Letter Grading

**PHYS #401J - Introductory Physics Review I****Credits:** 4

This course is for those who want to improve their understanding and their grade from Physics 401 before taking PHYS 402. Students must have passed the lab in PHYS 401 at UNH. This course will review all the topics from PHYS 401: motion, forces, energy, momentum, rotation, and fluids. Pre-req: PHYS 401.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)

**Equivalent(s):** PHYS 401

**Grade Mode:** Letter Grading

**PHYS 402 - Introduction to Physics II****Credits:** 0 or 4

Broad survey of classical and modern physics. Designed to enable students to appreciate the role of physics in today's society and technology. Emphasizes the fundamental laws of nature on which all science is based, with some examples of interest to biologists. Knowledge of high school algebra, geometry, and trigonometry essential. Prereq: PHYS 401 or the equivalent. Special fee. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)

**Mutual Exclusion:** No credit for students who have taken .

**Grade Mode:** Letter Grading

**PHYS 405 - Intro to Modern Astronomy****Credits:** 4

Starting with a survey of the night sky and the daily motions of the stars and planets, this course surveys our current understanding of the Universe. It traces the development of the tools of the modern astronomer and how those tools have led to our theories of the solar system, the life cycle of stars, the formation of elements, the formation of galaxies and the evolution of the universe. Students explore in depth an astronomical topic of their choice through a term paper. The course includes direct experience with astronomical techniques and concepts through the use of the UNH Observatory and Small Radio Telescope, and a visit to a planetarium. Recommended for liberal arts and beginning science students. Knowledge of high school algebra is assumed. Note that this is the same course as PHYS 406, except for the substitution of a term paper instead of a lab. Cannot be taken for credit if credit received for PHYS 406. Special fee.

**Attributes:** Physical Science(Discovery)

**Equivalent(s):** PHYS 406

**Grade Mode:** Letter Grading

**PHYS 406 - Introduction to Modern Astronomy****Credits:** 0 or 4

Descriptive coverage of contemporary astronomical and astrophysical techniques with a review of current knowledge and theories concerning the solar system, galaxies, and the universe. Recommended for liberal arts and beginning science students. Knowledge of high school algebra is assumed. Note that this is the same course as PHYS 405, except for the substitution of a lab instead of a term paper. Cannot be taken for credit if credit received for PHYS 405. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)

**Equivalent(s):** PHYS 406H

**Grade Mode:** Letter Grading

**PHYS 407 - General Physics I****Credits:** 0 or 4

Introductory course emphasizing motion, forces, energy, momentum, rotation, and oscillations. Recommended for the student specializing in science and engineering. This version is the traditional format with three lectures, one recitation (problem solving section), and one lab each week. Students in this version must also register for a particular recitation and lab. Prereq: thorough knowledge of algebra, geometry, and trigonometry. Pre- or Coreq: MATH 425. Special fee. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)

**Equivalent(s):** PHYS 407H, PHYS 407J, PHYS 407S

**Mutual Exclusion:** No credit for students who have taken .

**Grade Mode:** Letter Grading

**PHYS 407H - Honors/General Physics I****Credits:** 0 or 4

Introductory course emphasizing motion, forces, energy, momentum, rotation, and oscillations. Recommended for the student specializing in science and engineering. The honors version covers the same material as the traditional lecture course, but with three two-hour classes per week, most of which is spent working on activities in groups (rather than lecture). Students in the Honors section must be co-enrolled in MATH 425H so that strong connections can be made between math and physics. 407H students work in groups in every class meeting. Students in this version do not register for a recitation or lab, since these activities are integrated into the regular class meetings. Prereq: thorough knowledge of algebra, geometry, and trigonometry. Pre- or Coreq: MATH 425. Special fee. Lab.

**Co-requisite:** MATH 425H**Attributes:** Discovery Lab Course; Honors course; Physical Science(Discovery)**Equivalent(s):** PHYS 407, PHYS 407S**Mutual Exclusion:** No credit for students who have taken .**Grade Mode:** Letter Grading**PHYS 407J - General Physics Review I****Credits:** 4

This course is for those students who want to improve their understanding and their grade from PHYS 407 before taking PHYS 408. Students must have passed the lab in PHYS 407 at UNH. This course will review all the topics from PHYS 407: motion, forces, energy, momentum, rotation, and oscillations. Pre-req: PHYS 407.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Equivalent(s):** PHYS 407**Grade Mode:** Letter Grading**PHYS 407S - General Physics I Studio****Credits:** 4

Introductory course emphasizing motion, forces, energy, momentum, rotation, and oscillations. Recommended for the student specializing in science and engineering. The Studio version covers the same material as the traditional lecture course, but with three two-hour classes per week, most of which is spent working on activities in groups (rather than lecture). Students in this version do not register for a recitation or lab since these activities are integrated into the regular class meetings. Prereq: thorough knowledge of algebra, geometry, and trigonometry. Pre- or coreq: MATH 425. Special fee. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Equivalent(s):** PHYS 407, PHYS 407H**Mutual Exclusion:** No credit for students who have taken .**Grade Mode:** Letter Grading**PHYS 408 - General Physics II****Credits:** 0 or 4

Introductory course emphasizing waves, sound, heat, electricity and magnetism. Recommended for students specializing in science and engineering. This version is the traditional format with three lectures, one recitation (problem solving section), and one lab each week. Students in this version must also register for a particular recitation and lab. Prereq: PHYS 407. Pre- or Coreq: MATH 426. Special fee. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Equivalent(s):** PHYS 408H, PHYS 408S**Mutual Exclusion:** No credit for students who have taken .**Grade Mode:** Letter Grading**PHYS 408H - Honors/General Physics II****Credits:** 0 or 4

Introductory course emphasizing waves, sound, heat, electricity and magnetism. Recommended for students specializing in science and engineering. The honors version covers the same material as the traditional lecture course, but with three two-hour classes per week, most of which is spent working on activities in groups (rather than lecture). Students in the Honors section must be co-enrolled in MATH 426H so that strong connections can be made between math and physics. 408H students work in groups in every class meeting. Students in this version do not register for a recitation or lab, since these activities are integrated into the regular class meetings. Prereq: PHYS 407H, MATH 425H. Special fee. Lab.

**Co-requisite:** MATH 426H**Attributes:** Discovery Lab Course; Honors course; Physical Science(Discovery)**Equivalent(s):** PHYS 408, PHYS 408S**Mutual Exclusion:** No credit for students who have taken .**Grade Mode:** Letter Grading**PHYS 408S - General Physics II Studio****Credits:** 4

Introductory course emphasizing waves, sound, heat, electricity and magnetism. Recommended for students specializing in science and engineering. The Studio version covers the same materials as the traditional lecture course, but with three two-hour classes per week, most of which is spent working on activities in groups (rather than lecture). Students in this version do not register for a recitation or lab since these activities are integrated into the regular class meetings. Prereq: PHYS 407. Pre- or coreq: MATH 426. Special fee. Lab.

**Attributes:** Discovery Lab Course; Physical Science(Discovery)**Equivalent(s):** PHYS 408, PHYS 408H**Mutual Exclusion:** No credit for students who have taken .**Grade Mode:** Letter Grading**PHYS 409 - Investigating Physics****Credits:** 4

Elementary physics course where students develop a conceptual understanding of topics such as the solar system, phases of the moon, seasons, electrical circuits, electromagnets, light and color, sound and simple machines. The course is based on hands-on-activities, small groups, and discussions. This course is intended for students with little or no previous experience in physics who do not intend to take any other physics course. Cannot be taken for credit if credit received for PHYS 401, 402, 407 or 408. Not open to Physics majors.

**Attributes:** Discovery Lab Course; Physical Science(Discovery); Inquiry (Discovery)**Equivalent(s):** PHYS 401, PHYS 402, PHYS 407, PHYS 408**Grade Mode:** Letter Grading**PHYS 440A - Hon/Searching for Our Place in the Universe: Foundation and Limits of Certainty in Physical Science****Credits:** 4

We explore models of the universe and our place in it. We discuss the foundation of ideas about motion on Earth and in space, as well as the history of modern physics and astronomy, which have changed how we understand space and time. We consider the sources and limitations of human knowledge concerning the origin of the universe, the mystery of the origin of life and evidence that our description of reality is incomplete.

**Attributes:** Honors course; Physical Science(Discovery); Writing Intensive Course**Grade Mode:** Letter Grading



**PHYS #444B - Into the Final Frontier: America's Journey into Space****Credits:** 4

One of the greatest accomplishments of the twentieth century is the human advance into space. For the first time ever, travel beyond the Earth is more than just the subject of adventurous science fiction tales - it is a reality. The purpose of this course is to trace the development of space flight from the late 1800's to the present time and to discuss the future of the United States human space flight program.

**Attributes:** Environment, TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**PHYS 501 - Peer-Led Team Learning in Physics****Credits:** 1

This course provides students with their initial experience as a peer instruction leader. In this course peer leaders will deepen their knowledge of introductory physics, be introduced to pedagogical theories. Pedagogical topics covered include questioning techniques, learning theory, cooperative learning, student epistemologies, and the nature of science. Students in this course are asked to reflect on their work as peer leaders through the lens of the required readings. Prereq: PHYS 401/PHYS 402 or PHYS 407/PHYS 408. Permission required. Cr/F.

**Grade Mode:** Credit/Fail Grading

**PHYS 505 - General Physics III****Credits:** 3

Electromagnetic waves, geometrical and physical optics, relativity, atomic physics, elementary quantum mechanics, molecular physics, and nuclear physics. Prereq: PHYS 408.

**Grade Mode:** Letter Grading

**PHYS 506 - General Physics III Laboratory****Credits:** 1

Structured laboratory experience in optics and modern physics. Coreq: PHYS 505. Special fee. Lab.

**Co-requisite:** PHYS 505

**Grade Mode:** Letter Grading

**PHYS 508 - Thermodynamics and Statistical Mechanics****Credits:** 4

Classical and statistical approach to thermodynamics, kinetic theory. Pre- or Coreq: PHYS 505. MATH 525 or MATH 527.

**Grade Mode:** Letter Grading

**PHYS 601 - Computational Physics Recitation I****Credits:** 1

This course bridges students' computer science class and their physics classes by applying computational tools to basic physics problems. Students will write, check, and document two physics codes. This course focuses on solving differential equations. The course will support students as they work on computational assignments from their core physics courses. Prereq: CS 410 or IAM 550. Coreq: PHYS 505 or PHYS 508.

**Grade Mode:** Credit/Fail Grading

**PHYS 602 - Computational Physics Recitation II****Credits:** 1

This course bridges students' computer science class and their physics classes by applying computational tools to basic physics problems. Students will write, check, and document two physics codes. This course focuses on data processing. The course will support students as they work on computational assignments from their core physics courses. Prereq: CS 410 or IAM 550; PHYS 601. Coreq: PHYS 605 or PHYS 615.

**Grade Mode:** Credit/Fail Grading

**PHYS 605 - Experimental Physics I****Credits:** 5

Circuit design with passive and active elements including transistors and operational amplifiers; electrical measurements for experimental physics; digital electronics, microprocessors, and interfacing techniques. Prereq: PHYS 408. MATH 525 or 527. Lab. Special fee.

**Grade Mode:** Letter Grading

**PHYS 615 - Classical Mechanics and Mathematical Physics I****Credits:** 4

Analytical treatment of classical mechanics covering the dynamics of particles and rigid bodies at an intermediate level. Advanced mathematical analysis (complex numbers, differential equations, Fourier series, multiple integrals) are reviewed or introduced as needed to analyze physical situations. Prereq: PHYS 407, MATH 527 and MATH 528, or MATH 525 and MATH 526, and IAM 550 or CS 410P. Pre- or Coreq: MATH 527 and MATH 528 or MATH 525 and MATH 526.

**Grade Mode:** Letter Grading

**PHYS 616 - Classical Mechanics and Mathematical Physics II****Credits:** 4

Analytical treatment of classical mechanics covering the dynamics of particles and rigid bodies, at an intermediate level. Advanced mathematical analysis (complex numbers, differential equations, Fourier series, multiple integrals) are reviewed or introduced as needed to analyze physical situations. Prereq: PHYS 615 and PHYS 505.

**Grade Mode:** Letter Grading

**PHYS 701 - Quantum Mechanics I****Credits:** 4

Non-relativistic Schroedinger equation, the hydrogen atom, applications to atomic and nuclear structure. Prereq: PHYS 505, PHYS 615, PHYS 616.

**Grade Mode:** Letter Grading

**PHYS 702 - Quantum Mechanics II****Credits:** 4

Non-relativistic Schroedinger equation, the hydrogen atom, applications to atomic and nuclear structure. Prereq: PHYS 701.

**Grade Mode:** Letter Grading

**PHYS 703 - Electricity and Magnetism I****Credits:** 4

Foundation of electromagnetic theory; electrostatics, dielectric theory, electromagnetism, magnetic properties of matter, alternating currents, Maxwell's field theory. Prereq: PHYS 408, PHYS 615, MATH 527 and MATH 528 or MATH 525 and MATH 526.

**Grade Mode:** Letter Grading

**PHYS 704 - Electricity and Magnetism II****Credits:** 4

Foundation of electromagnetic theory; electrostatics, dielectric theory, electromagnetism, magnetic properties of matter, alternating currents, Maxwell's field theory. Prereq: PHYS 703.

**Grade Mode:** Letter Grading

**PHYS 705 - Experimental Physics II****Credits:** 4

Modern physics experiments and special project problems assigned to individual students. Prereq: PHYS 605, PHYS 505, CS 410P or IAM 550. Lab.

**Attributes:** Writing Intensive Course

**Grade Mode:** Letter Grading

**PHYS 708 - Optics****Credits:** 4

Geometrical optics, electromagnetic theory of light, interference, diffraction, polarization, related phenomena and nonlinear optics. Prereq: PHYS 505, PHYS 615, PHYS 616. Lab.

**Equivalent(s):** PHYS 607**Grade Mode:** Letter Grading**PHYS 710 - Astrophysics I****Credits:** 4

A comprehensive review of modern astrophysics. Topics covered include the celestial sphere, celestial mechanics, the tools of the modern astronomer (including different types of telescopes for studying the electromagnetic radiation from space), stellar spectra, stellar atmospheres, stellar interiors, the formation of stars, stellar evolution, and the stellar graveyard (white dwarfs, neutron stars, and black holes). Prereq: MATH 525/MATH 526 or MATH 527/MATH 528, PHYS 505/PHYS 506.

**Grade Mode:** Letter Grading**PHYS 711 - Astrophysics II****Credits:** 4

A continuation of the comprehensive review of modern astrophysics. Topics covered include the degenerate stellar remnants (white dwarfs, neutron stars, black holes), the interstellar medium, the Milky Way Galaxy, the nature of galaxies, the evolution of galaxies, the structure of the Universe, active galaxies, cosmology, and the early Universe. Prereq: MATH 525/MATH 526 or MATH 527/MATH 528, PHYS 505/PHYS 506, PHYS 710.

**Grade Mode:** Letter Grading**PHYS 712 - Space Plasma Physics****Credits:** 4

Introduces space plasma physics, including solar physics, heliospheric physics, magnetospheric physics, and ionospheric physics. An overview of the basic phenomena and processes (e.g., particle acceleration and transport, shock formation, magnetic structures and reconnection, wave propagation, wave-particle interactions, instabilities), theoretical techniques (e.g., single-particle orbits, kinetic and fluid descriptions), and experimental techniques. (Alternate years only.). Prereq: PHYS 408, PHYS 508, PHYS 616.

**Equivalent(s):** EOS 712**Grade Mode:** Letter Grading**PHYS 718 - Condensed Matter Physics****Credits:** 4

Theory and experiment underlying the behavior of solids. Transport theory, surface studies, and the interaction of radiation and matter. Operation of semiconducting and superconducting devices and lasers. Prereq: PHYS 508. Pre- or Co-req: PHYS 701.

**Grade Mode:** Letter Grading**PHYS 720 - Nuclear Physics****Credits:** 4

Nuclear phenomenology, reactions, models, radiation, interaction of radiation with matter; accelerators; properties and interactions of elementary particles; symmetries and symmetry breaking; standard model. Pre- or Co-req: PHYS 702, PHYS 703.

**Grade Mode:** Letter Grading**PHYS 764 - General Relativity and Cosmology****Credits:** 4

Review of special relativity, and the motivation for considering gravity in terms of curvature of space time. Introduction to Riemannian geometry, general relativity and Einstein's equations. Application of general relativity in the study of black holes, gravitational waves, cosmology, as well as recent results on inflation and quantum gravity. (Alternate years only.). Prereq: PHYS 505, PHYS 508, PHYS 616, CS 410P or IAM 550, MATH 645 or MATH 545 or MATH 525.

**Grade Mode:** Letter Grading**PHYS 795 - Independent Study****Credits:** 1-8

Individual project under direction of a faculty adviser. Prereq: department permission.

**Grade Mode:** Letter Grading**PHYS 797 - Senior Design Project****Credits:** 2

Four credits of this course is the required Senior Design Project for BSEP majors and fulfills their capstone requirement; the course is taken for two credits in each of the last two semesters before graduation. Students work under the direction of a faculty sponsor on the design aspect of a specific project, which might include trade studies, design reviews, cost-benefit analyses, etc. all leading to an optimal design solution. Acceptable designs can include detailed hardware aspects of a system or sub-system, numerical modeling of a system, or paper studies of a system concept. Students are required to submit a final report and to present their work at a public forum. Restricted to BSEP seniors. Writing intensive.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Letter Grading**PHYS 798 - Senior Project****Credits:** 2-4

Students complete an independent project and submit a written report. Students can choose from a range of projects, including (but not limited to) a research or numerical project, and extensive literature review on an advanced physics topic, building an apparatus, or developing a new or existing experiment in Physics 705. A student intending to take Physics 798 must arrange to have a faculty advisor for the project and should work with this advisor to develop a one-page project proposal. The student must submit this proposal to the Physics Undergraduate Curriculum Committee by the tenth week of the semester preceding the semester in which the student takes Physics 798. This course satisfies the capstone requirement in Physics.

**Grade Mode:** Letter Grading**PHYS 799 - Thesis****Credits:** 4

Students work under the direction of a faculty sponsor to plan and carry out independent research resulting in a written thesis. Required for honors-in-major. Restricted to seniors. Prereq: PHYS 795 or INCO 790.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Political Science (POLT)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**POLT 401 - Politics and Society****Credits:** 4

Introduces the nature of politics and political institutions. Emphasizes political behavior and continuing issues of modern politics, such as power, authority, legitimacy, freedom, and order.

**Attributes:** Humanities(Disc)**Equivalent(s):** POLT 401H**Grade Mode:** Letter Grading**POLT 402 - American Politics and Government****Credits:** 4

Foundational course to help students understand the institutions and actors of American politics and government, the decision-making process of government, and the political considerations that drive American government.

**Attributes:** Social Science (Discovery)**Equivalent(s):** POLT 402H**Mutual Exclusion:** No credit for students who have taken PS 402.**Grade Mode:** Letter Grading**POLT 403 - United States in World Affairs****Credits:** 4

Introduces students to key concepts, actors, and events in U.S. foreign policy. After examining the early foundations of American foreign policy, this course concentrates on the United States' international engagement from the Cold War to the present. Students develop the analytical skills they need to form their own opinions on contemporary issues in U.S. foreign policy, and defend these opinions articulately based on a solid knowledge of historic and current events.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** POLT 403H, POLT 403W**Grade Mode:** Letter Grading**POLT #407 - Law and Society****Credits:** 4

Introduces the ways in which law operates in modern society: its forms, functions, underlying values, and the consequences of its application in particular regimes. Topics include the psychological bases for legal obligation, the evolution of particular legal doctrines, the philosophical underpinnings of legal responsibility, the relationship of law to social structures, the relationship of law to morality, the nature of legal reasoning, and critiques of law.

**Equivalent(s):** POLT 407H, PS #407**Grade Mode:** Letter Grading**POLT 440A - Honors/Global Justice****Credits:** 4

The course exposes students to different understandings of global justice and the institutions and approaches used to address genocide and mass human suffering. Students explore several modern conflicts and different cultural understandings of these conflicts and views on justice. The class also examines the political dynamics of international and domestic institutions, power politics, and international activism. Students also examine the globalization of accountability and post-conflict transitions from violence to peace.

**Attributes:** Honors course; World Cultures(Discovery)**Grade Mode:** Letter Grading**POLT #444 - Politics and Policy in a Warming World****Credits:** 4

Uses the issue of climate change to explore the relationships between scientific and technical research and debate, policymaking at the international and domestic (U.S.) levels, and public understanding and interpretation of complex technical issues. The course is interdisciplinary. Writing intensive.

**Attributes:** Environment,TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**POLT 444B - Cruel and Unusual in a Federal System****Credits:** 4

This course is an exploration of the US/state constitutional language of 'cruel and unusual' as an important limitation on governmental power. Students study its historical origins, interpretations, and applications across time periods and types of regimes. Particular attention will be paid to its association with the death penalty in the contemporary United States.

**Attributes:** Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**POLT 500 - American Public Policy****Credits:** 4

Foundational public policy course examining policy choices and conflicts, how policy decisions are made, how policies are assessed, the development of potential policy solutions, and the politics of policy making. Students engage in a task force project that simulates public policy processes and culminates in a policy recommendation at the end of the semester. Writing intensive.

**Attributes:** Writing Intensive Course**Mutual Exclusion:** No credit for students who have taken PS 500.**Grade Mode:** Letter Grading**POLT 502 - State and Local Government****Credits:** 4

Examines power, policies, political culture, and constitutional settings of state and local governments in the United States. Students study how state legislatures, governors, courts, political parties, and interest groups interact to shape political outcomes at the state and local levels.

**Grade Mode:** Letter Grading**POLT 504 - American Presidency****Credits:** 4

The President as administrator, policy maker, and political leader. The relationship between the President and the public, the media, and other governmental institutions. Historical and constitutional background of the Presidency, role, and powers of the President in domestic and foreign affairs.

**Grade Mode:** Letter Grading**POLT 505 - American Congress****Credits:** 4

Role and powers of Congress as national lawmaker and check on the executive branch: committee structure, concepts of representation, legislative oversight and party cleavage, federal budget control, and foreign policy involvement.

**Grade Mode:** Letter Grading

**POLT 506 - Parties, Interest Groups, and Voters****Credits:** 4

Role of political parties as organizers and managers of social conflict. Role of voters in controlling parties and government. Influence of interest groups in the electoral process and in governmental decision making.

**Grade Mode:** Letter Grading**POLT 507 - Politics of Crime and Justice****Credits:** 4

Criminal justice in theory and practice; contemporary role of police, prosecutors, judges, juries, counsel, and interest groups in the administration of criminal justice. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 508 - Supreme Court and the Constitution****Credits:** 4

Supreme Court treated as a political institution whose historic mission is to decide all controversies arising under the Constitution between the nation and the states, the President and Congress; the role of the judiciary in defining its own powers, rights, and duties. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** PS #508**Grade Mode:** Letter Grading**POLT 509 - Managing Bureaucracy in America****Credits:** 4

Growth and development of the bureaucratic state. Roles and powers of administrative officials, decision making in bureaucratic settings, citizen participation, and the influence of interest groups on bureaucratic policymaking.

**Grade Mode:** Letter Grading**POLT 510 - Media and Politics****Credits:** 4

Contemporary review of media in politics; major roles of media today in providing news, setting public agenda, influencing public opinion; government regulations vs. media responsibility; future developments and consequences for American democracy.

**Equivalent(s):** POLT 610**Grade Mode:** Letter Grading**POLT 511 - Women & Politics****Credits:** 4

This class provides a survey of the intersection of women, sex, and gender with politics.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 512 - Public Opinion in American Politics****Credits:** 4

Relationship of mass and elite opinion within the context of American political culture. Impact of public opinion on American governmental policies, especially with respect to major issues facing the President and Congress. Appraisal of responsiveness to influence and responsibility to lead.

**Attributes:** Social Science (Discovery)**Grade Mode:** Letter Grading**POLT 513 - Civil Rights and Liberties****Credits:** 4

Analysis of four major areas of constitutional rights and liberties, political freedom, equal protection of the laws, and due process with particular attention to their impact on such problems as political protest, discrimination, school segregation, students' rights and the relationship between government and religion.

**Grade Mode:** Letter Grading**POLT 520 - Politics, Justice, and Morality****Credits:** 4

Origin of the idea of justice; relationship between politics, justice, and morality; selections from Plato, Aristotle, Roman, Islamic, and Christian political philosophers.

**Grade Mode:** Letter Grading**POLT 521 - Rights and the Political Community****Credits:** 4

Human rights and the quality of communities as expressed in Hobbes, Locke, Mandeville, Rousseau, and others.

**Grade Mode:** Letter Grading**POLT 522 - Dissent and the Political Community****Credits:** 4

Current political ideologies and controversies in America and abroad; liberal democracy and its critics since the 19th century.

**Grade Mode:** Letter Grading**POLT 523 - American Political Thought****Credits:** 4

Introduces the student to the key questions about politics and government asked and answered by American thinkers and actors, as well as the ways in which those "answers" have shaped our institutions and political processes. Emphasizes the idea of property. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** POLT 623**Grade Mode:** Letter Grading**POLT 524 - Politics and Literature****Credits:** 4

This course examines classical and contemporary works of literature to explore perennial issues in the study of politics, such as: exceptionalism, individualism, justice, and equality.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**POLT #524W - Politics and Literature****Credits:** 4

This course examines classical and contemporary works of literature to explore perennial issues in the study of politics, such as: exceptionalism, individualism, justice, and equality. Writing intensive.

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading

**POLT 544 - Of Dictators and Democrats****Credits:** 4

Why are some countries democratic, while others are ruled by dictators? This course answers this question by examining leading theories of democratization, then testing these theories empirically through case studies of ancient Greece, the United States, Germany, Chile, and South Africa. The course concludes with an overview of contemporary political change in the Middle East, and the potential for popular protest to culminate into democratic practices.

**Attributes:** Writing Intensive Course**Equivalent(s):** POLT 644**Grade Mode:** Letter Grading**POLT 545 - People and Politics in Asia****Credits:** 4

This course is an introduction to Northeast Asia, with special emphasis on the politics of the region's major actors. Will China be the next global hegemon? Is Japan moribund? Is Taiwan an independent country? Is Hong Kong a democratic bastion? Why does Kim Jong-un keep threatening to attack the United States? This is a mid-level, writing intensive course that will prepare students for more advanced courses on the nations and issues of the Asia-Pacific rim.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 546 - Wealth and Politics in Asia****Credits:** 4

Different paths to modernization, industrialization, and development in nations of the Asia-Pacific Rim. In-depth examinations of the challenges faced by Japan, China, Hong Kong/Macao, Taiwan, and the Koreans in their search for the correct path to economic growth and prosperity, with special emphasis on each nation's distinct society and history. Companion course to POLT 545, but either may be taken separately. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 548 - Drug Wars****Credits:** 4

The Americas have hosted several wars against drugs, but these militarized campaigns have not curtailed the global consumption of opiates, cocaine, and cannabis. Perhaps even more sobering, the drug wars have coincided with spiraling rates of violent crime. Given this track record, policymakers have begun to reevaluate drug policies in the US and abroad. This course evaluates these contemporary changes, particularly in light of the successes and failures of past drug control policies.

**Grade Mode:** Letter Grading**POLT 549 - The Politics of Markets****Credits:** 4

This course surveys some major debates in comparative political economy, focusing especially on the creation, evolution, and reform of market institutions. The course emphasizes the ways in which the market is embedded in social and political institutions. Main topics include: 1) Theoretical foundations of political economy, 2) Patterns of industrialization, 3) Capitalist institutions in contemporary industrialized countries, 4) Challenges of development, 5) Transitions from communism to a market economy, and current challenges facing capitalism.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 550 - Comparative Government and Society****Credits:** 4

Introduces students to key concepts and themes in comparative politics through the study of revolutions, ideologies, institutions, and/or social movements. This course compares interactions between citizens and their governments in various types of democracies as well as authoritarian regimes, and spans industrialized and developing countries.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**POLT 551 - Ethnicity, Violence, Democracy****Credits:** 4

What is ethnic identity and why do ethnic differences result in violence? Are diverse societies prone to conflict? The course provides a broad perspective to these questions by examining diversity and conflict in the Middle East, Europe, Africa, Asia, Latin America and the US. Racial and ethnic politics in the US, while not a primary focus, are compared to identity and conflict in other countries. Students will understand how identity evolves and shapes the world.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 552 - Contemporary European Politics****Credits:** 4

Analyzes politics, governments, and societies in contemporary Europe; focuses on basic characteristics of political life in different countries as well as pressing economic, political, and social issues.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 554 - Revolution and Protest in Latin America****Credits:** 4

Throughout Latin American history, economic and political models have been heavily contested. Advocates of state intervention in the economy have clashed with free market forces, and these clashes have often spilled into the political arena where they have been further complicated by divisions between dictators and democrats. This course examines these twin processes in Latin American politics, tracing economic and political development from the time of independence to the present. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 556 - Politics in China****Credits:** 4

Dynamics of China's domestic political and economic policy processes - from massive starvation of the Great Leap Forward and the ideological upheavals of the Great Proletarian Cultural Revolution to the "Opening of China to the Outside World." Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 559 - Comparative Politics of the Middle East****Credits:** 4

Examines the dynamics of political and economic change in states and societies of the Middle East. Covers state formation, nationalism and colonialism, authoritarianism and opposition movements, and the origins of the Israeli-Palestinian conflict.

**Grade Mode:** Letter Grading



**POLT 560 - World Politics****Credits:** 4

The course explores the primary issues of world politics with a focus on conflict, cooperation and development. Students are introduced to the principal theories and concepts in the analysis of world politics and encouraged to apply these theories and concepts to contemporary global issues. Writing intensive.

**Attributes:** Social Science (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**POLT #561 - Introduction to International Political Economy****Credits:** 4

Designed for students with little or no knowledge of economics; the course develops the relationships between political and economic policy and behavior in international affairs. A major focus is on the conflict between the primary values of the international economic system (efficiency and growth) and other societal and political values. Among the topics are: international trade and finance, economic and non-economic globalization, growth and human development, illicit trade, and economic governance.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 562 - Strategy and National Security Policy****Credits:** 4

This course develops an understanding of: 1) strategy and its relationship to national security policy and 2) American national security issues and the process of creating and implementing American national security policies. A primary theoretical and practical consideration is the relationship between the use of force and diplomacy. Among the specific issues are: the nuclear world, the U.S. defense posture, military interventions, and the broadening definition of security.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT #563 - The Global Information Grid's Disruptive Impact on Government, Politics, and Society****Credits:** 4

Disruptive networking technologies, collectively called the Global Information Grid or GIG, are facilitating revolutionary changes in government, politics, and society. The course is designed to provide students with a framework for understanding and addressing issues that spring from the application of technology.

**Equivalent(s):** POLT 592B**Grade Mode:** Letter Grading**POLT 565 - United States Policy in Latin America****Credits:** 4

Frequently U.S. policymakers portray the United States as a benevolent neighbor, seeking to help the countries in their "backyard". Many Latin Americans disagree with this view, and think more critically about the motivations and legacies of U.S. intervention in the Western Hemisphere. To understand these disagreements, this course applies theories of international relations to analyze pivotal events in the history of U.S. - Latin American relations from the time of independence to the present, including Spanish-American War, creation of Panama Canal, Cuban Missile Crisis, Iran Contra Affair, War Against Drugs, Washington Consensus.

**Equivalent(s):** POLT 665**Grade Mode:** Letter Grading**POLT 566 - Asian Challenge to Global Order****Credits:** 4

Asian international relations continue to challenge global power structures. As the world's most vital region, Asia is characterized by explosive economic growth, diverse political systems, modernizing militaries, and advanced technologies. This course explores the regional political and economic dilemmas, starting with the breakdown of the old imperialist order, Japan's expansion, the Asian Cold War, Korean and Chinese unification, China's post-1978 emergence, North Korea nuclear weapons, and the growing conflict over the Pacific Ocean's marginal seas. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 568 - International Security****Credits:** 4

Explores central issues related to security in international politics, including: intelligence collection, emerging technologies, the rise and fall of major interstate wars, nuclear weapons, climate change, terrorism, civil wars, and coercion. Prereq: POLT 403.

**Grade Mode:** Letter Grading**POLT 569 - The Rise of China****Credits:** 4

Analysis of China's struggle for political and economic power in Asia and the world. Examines the legacy of China's historical encounters with the outside world, interactions with the international system since 1949, domestic determinants of foreign political and economic policies, and theories of decision making. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** POLT 660**Grade Mode:** Letter Grading**POLT #570 - Counterterrorism: Nation states' responses to terrorist activity****Credits:** 4

This course explores nation states' responses to terrorism or "counterterrorism." Students learn to define terrorism and use models to understand responses. Case studies are used to highlight the challenges and successes resulting from different response strategies. Students analyze questions facing government counterterrorism decision makers. For example, what is the risk of a terrorist organization acquiring and detonating a nuclear weapon and what response could governments deliver following such an event?.

**Grade Mode:** Letter Grading**POLT 580 - Selected Topics Am Politics****Credits:** 4

Special topics such as politics and public affairs in New Hampshire, women in politics, and civil liberties. Not offered every semester. See departmental listings for semester offerings. Writing intensive. 4 cr.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 12 credits.**Equivalent(s):** POLT 600**Grade Mode:** Letter Grading**POLT 584 - Selected Topics in Political Thought****Credits:** 4

Special issues in political theory, such as liberalism and conservatism, radical political thought, the American character, and others. Not offered every semester. See departmental listings for semester offerings. Writing intensive. 4 cr.

**Attributes:** Writing Intensive Course**Equivalent(s):** POLT 620**Grade Mode:** Letter Grading

**POLT #588 - Selected Topics in Comparative Politics****Credits:** 4**Attributes:** Writing Intensive Course**Equivalent(s):** POLT 651**Grade Mode:** Letter Grading**POLT 592 - Selected Topics in International Politics****Credits:** 4

Examines specialized issues in international politics. Topics may include ethnic conflict, non-proliferations and global security, economic and political globalization, etc. Not offered every semester. See departmental listings for semester offerings. Writing Intensive. 4 crs.

**Attributes:** Writing Intensive Course**Equivalent(s):** POLT 660**Grade Mode:** Letter Grading**POLT 595 - Smart Politics****Credits:** 4

An introduction to empirical research methods in political science, both qualitative and quantitative. Students study all aspects of the research process, including hypothesis-building, concepts and variables, measurement, research design, sampling, and empirical observations. Special attention paid to the use of statistical software. Writing intensive.

**Attributes:** Inquiry (Discovery); Writing Intensive Course**Mutual Exclusion:** No credit for students who have taken PS 595.**Grade Mode:** Letter Grading**POLT 602A - Internship****Credits:** 4

Field experience in a governmental or nongovernmental organization at the local, state, national, or international level. Arrangements must be made through the political science department. Open to juniors and seniors with at least a 3.2 GPA. Permission of the undergraduate curriculum committee of the department is required prior to the internship.

**Grade Mode:** Letter Grading**POLT 602B - Washington Center Internship****Credits:** 4

A four-credit independent study designed to work in conjunction with the University's Washington Center Internship program. Requirements: major in political science. Junior or senior research component to be discussed with faculty sponsor. For details on the Washington Center Internship, please contact Paula DiNardo, Coordinator National Student Exchange and Washington Center Internships, 114 Hood House, 603-862-3485 (V/TTY 862-2607), email: paula.dinardo@unh.edu. Prereq: POLT 402.

**Grade Mode:** Letter Grading**POLT 602C - Concord Internship Program****Credits:** 12

Provides students with field experience in state government in Concord (State Senate, House of Representatives, Office of the Governor, etc.). Students will spend three days weekly in Concord and attend a weekly practicum in Durham. Open to juniors and seniors with a 3.2 or better GPA. Applications accepted in the fall semester and can be found on department's website. Permission required. Students may sign up any four (4) credit course along with 602C for a total of 16 credits. Cr/F.

**Grade Mode:** Credit/Fail Grading**POLT 602D - Internship****Credits:** 2-12

Field experience in governmental or nongovernmental organization at the local, state, national, or international level. Arrangements must be made through the political science department. Open to juniors and seniors with at least 3.2 GPA. Permission from the undergraduate curriculum committee of the department is required. From 2 to 12 credits maybe taken. Cr/F.

**Grade Mode:** Credit/Fail Grading**POLT 695 - Independent Study****Credits:** 2-4

Designed to meet special interests of students and instructors in exploring issues in political science. Upon satisfying eligibility requirements set forth by departmental guidelines (in departmental office and online), students must have the approval of a faculty sponsor. Students submit the form and all supporting evidence by mid-semester prior to the planned semester of independent study for departmental approval. Does not meet the major's four field-course requirement; maximum of eight (8) credits can be counted toward the non-field major requirements. Prereq: at least one upper-level course in field of independent study. Majors only.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**POLT 696 - Independent Study****Credits:** 2-4

Designed to meet special interests of students and instructors in exploring issues in political science. Upon satisfying eligibility requirements set forth by departmental guidelines (in departmental office and online), students must have the approval of a faculty sponsor. Students submit the form and all supporting evidence by mid-semester prior to the planned semester of independent study for departmental approval. Does not meet the major's four field-course requirement; maximum of eight (8) credits can be counted toward the non-field major requirements. Prereq: at least one upper-level course in field of independent study. Only open to Political Science majors.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**POLT #701 - Courts and Public Policy****Credits:** 4

Impact of judicial decisions on public policy and influences on judicial decision making at the federal, state, and local levels. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 705 - Elections in the United States****Credits:** 4

Students will study various aspects of elections in the United States while observing and analyzing case studies during campaign season.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 709 - Reforming American Government****Credits:** 4

Why is American government designed the way that it is (and how does it change?)? Whose interests are protected and whose interests are limited by its design? What do successful reforms tell us about the future of reform?

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**POLT 721 - Feminist Political Theory****Credits:** 4

Familiarizes students with trends feminist political thinking; exploring issues of race, ethnicity, class, religion/spirituality, sexual orientation, ability, age as they relate to gender and the development of feminist political theory. Attention is paid to critical thinking and analysis using the paradigm of gender as a prism through which to view our lives and ideas.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 740 - States and Societies in the Middle East****Credits:** 4

This seminar explores the comparative politics of selected countries and conflicts in the contemporary Middle East and North Africa. We focus on understanding the causes and consequences of popular uprisings, civil wars, and protracted conflicts. The class is taught through discussion, with students taking active, participatory roles. Themes include changing forms of governance, changing practices of warfare, gender and minority rights, economic and environmental problems, protest and activism, state-society relations, and migration and refugees. Students read memoir, journalistic accounts, and theoretical articles in comparative politics to understand important developments. Specific country and issue cases change each year; recent seminars have addressed Israel-Palestine, Syria, Egypt, Iran, and Iraq. Writing, reading, and discussion intensive class. Designed as follow-on course to POLT 559, Comparative Politics of the Middle East, counts as capstone course for the Middle East Minor. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 742 - Politics of Afghanistan, Pakistan, and India****Credits:** 4

Afghanistan, Pakistan, and India are strategically important states and potential flashpoints of conflict. Nuclear neighbors, India and Pakistan have been in conflict for 70 years while Afghanistan remains internally unstable. The politics of these countries are also intimately involved with each other. The class will focus both on the internal politics of these states and their foreign relations with each other and the United States. Students will develop expertise in a crucial world region.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 748 - Food and Wine Politics****Credits:** 4

Food and wine politics provides a lens through which to analyze contrasting perspectives on production organization, market structures, quality constructs, consumer preferences, and health and safety regulation. This course draws upon texts from economic history, political economy, economic sociology, and public policy to shed light on comparative political and market organization across Europe, the United States, and emerging market economies. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 750 - Politics of Poverty****Credits:** 4

Why are some countries rich while others are so poor? This course answers this question by examining several theories of economic development: political culture, modernization, dependency, regime types, urban bias, rent-seeking institutions, and international aid. The immediate goal of this course is for students to understand the causes of international inequality in the distribution of wealth. Students also improve their ability to evaluate theoretical arguments and empirical evidence critically, and develop reading and writing skills. Writing intensive.

**Attributes:** Writing Intensive Course**Mutual Exclusion:** No credit for students who have taken PS 750.**Grade Mode:** Letter Grading**POLT 751 - Comparative Environmental Politics and Policy****Credits:** 4

Environmental politics and policy across national boundaries and at different levels of governance. Comparison of the U.S. and European Union environmental policies to build a foundation for comparisons across national boundaries and sub-national authorities. Students improve their understanding of how and why comparative methods are used to gain insight into politics and policymaking. Central concepts and debates addressed include the roles of expertise, sustainability, precautionary principle, the use of market mechanisms in policy, environmental justice, policy devolution and flexibility, environmental performance assessment, NGO roles, activism, and social movements. Using a range of theoretical approaches and historical and contemporary events and case studies, evaluating the claims and explanatory power of various concepts and theories. Includes ethical issues emerging from the theory and practice of environmental politics. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 760 - Theories of International Relations****Credits:** 4

Theoretical approaches of international politics, international organization, and international political economy with particular emphasis on systems theories, domestic determinants of foreign policy and theories of decision making. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 762 - International Political Economy****Credits:** 4

This course has been designed to introduce advanced undergraduates and graduate students to the current theoretical discussions in international political economy. The course analyzes the development of current international economic regimes, as well as looks at systemic theories (interdependence, hegemonic stability), domestic determinants (bureaucratic, interest group), and decision-making theories (rational choice). By monitoring current economic and political news, students are challenged to apply these ideas to explain the current problems in political economy.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**POLT #765 - Security Intelligence Study****Credits:** 4

The goal of the Security Intelligence Study course is to provide an opportunity for students to apply research and analysis models used by intelligence professionals to a real world problem. Using unclassified public sources, students research and present an analytical product to help limit risk for a government decision maker. Participants learn about and use publicly available data and intelligence analysis models. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 778 - International Organization****Credits:** 4

This course is about cooperation at the international level. With a focus on international organizations, we examine what roles international institutions (both IGOS and NGOS) play in global governance and their effects in various issue areas. We examine their historical origins, functions, and the international and domestic political forces that impact their effectiveness. The course also considers the role of international organizations on world order including conflict resolution, peacekeeping, development, and human rights. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 795 - Advanced Study****Credits:** 1-4

Senior POLT majors, with a cumulative average of 3.20 or greater, may undertake advanced study (political science), in an area of their choice, in consultation with member(s) of the faculty. Normally, the result of the project is a significant written product of a quality comparable to that done at the 700 course level. Student must initiate the project discussion and obtain approval of the undergraduate curriculum committee of the department before undertaking the project. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 796 - Advanced Study****Credits:** 4

Senior POLT majors, with a cumulative average of 3.20 or greater, may undertake advanced study (political science), in an area of their choice, in consultation with member(s) of the faculty. Normally, the result of the project is a significant written product of a quality comparable to that done at the 700 course level. Student must initiate the project discussion and obtain approval of the undergraduate curriculum committee of the department before undertaking the project. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 797B - Seminar in American Politics****Credits:** 4

Advanced analysis and individual research. Prereq: senior standing. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 797C - Seminar in Comparative Politics****Credits:** 4

Advanced analysis focusing on government and politics in foreign nations or regions. Areas of interest may include: constitutional structures, political parties and interest groups, legislatures, bureaucracy, and public policy. Topics address such concerns as religion and politics, patterns of economic development, ethnic strife, and political leadership. Prereq: senior standing. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 797E - Seminar in International Politics****Credits:** 4

Advanced analysis focusing on problems of theory and contemporary issues in international politics. Areas of interest may include: democratic norms in international relations, NATO expansion and European security, the peace process in the Middle East, etc. See department listings for semester offerings. Prereq: senior standing. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT #797I - Seminar in Political Thought****Credits:** 4

Advanced treatment and individual research. Prereq: senior or graduate standing. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 798B - Seminar in American Politics****Credits:** 4

Advanced analysis and individual research. Prereq: senior standing. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT #798C - Seminar in Comparative Politics****Credits:** 4

Advanced analysis focusing on government and politics in foreign nations or regions. Areas of interest may include constitutional structures, political parties and interest groups, legislatures, bureaucracy, and public policy. Topics address such concerns as religion and politics, patterns of economic development, ethnic strife, and political leadership. Prereq: senior standing. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**POLT 799 - Honors Thesis****Credits:** 4

Senior POLT honors-in-major students (see department for honors-in-major requirements), with a cumulative average of 3.20 or greater, may undertake a special honors project in an area of their choice. The result of this special project is a significant written product constituting an honors thesis, under the supervision of a faculty sponsor. Students must initiate the project discussion and obtain approval of the undergraduate curriculum committee before undertaking the project. The honors thesis constitutes the tenth course in the major. Writing intensive.

**Attributes:** Honors course; Writing Intensive Course**Grade Mode:** Letter Grading

## Politics and Society (PS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**PS 402 - Practical Politics****Credits:** 4

With particular attention to the development and evolution of US political institutions over time, this course seeks to help students understand how national politics affects them and their communities and how they can, in turn, use that insight to affect national politics. We will work to develop not just new knowledge, but to foster tools and practices of civic engagement.

**Attributes:** Historical Perspectives(Disc)**Mutual Exclusion:** No credit for students who have taken POLT 402.**Grade Mode:** Letter Grading**PS #407 - Politics, Law and Contemporary Society****Credits:** 4

This course examines the foundation and structure of the American legal system and the complex relationship between law, politics, and contemporary social structures, including the philosophical and historical origins of law and the concept of sovereignty. Using case studies and United States Supreme Court decisions, the course considers the philosophical, historical, economic, environmental, and sociological underpinnings of contemporary legal and politics issues.

**Attributes:** Social Science (Discovery)**Equivalent(s):** POLT #407, POLT 407H**Grade Mode:** Letter Grading**PS 425 - Exploring Leadership****Credits:** 1-4

Exploring Leadership is an introductory course on the foundations of student development and leadership, with an emphasis on applying the formal literature on leadership to help students develop and articulate their own personal philosophy of leadership and enact a leadership action plan for their club/organization/leadership position. no credit for students who have taken.

**Equivalent(s):** UMST 525**Grade Mode:** Letter Grading**PS 426 - Social Justice & Leadership****Credits:** 1-4

An exploration of social justice through personal and institutional lenses to analyze power and privilege, discrimination and prejudice, inclusion and equity through the intersections of multiple social identities to develop student leaders who will promote an equitable and inclusive environment and serve as social change agents in the college and community.

**Equivalent(s):** UMST 526**Grade Mode:** Letter Grading**PS 430 - The Mindful Leader****Credits:** 2

Research has shown that mindfulness and emotional intelligence positively impact leadership, job performance and satisfaction, and work-life balance. This course will introduce students to mindfulness and emotional intelligence through research, discussion, and personal experience. Students will explore how to lead mindfully and develop their emotional intelligence to better manage personal and professional stress and support a culture of vulnerability, non-judgment, and being in the present moment. This course is open to all undergraduate students. Credit cannot be earned if taken UMST 599: The Mindful Leader.

**Grade Mode:** Letter Grading**PS 500 - Wicked Problems: Puzzles in Public Policy****Credits:** 4

Meaningful change in the US is difficult under the best of circumstances, and it's almost never the best of circumstances. As a result, the richer your understanding of the complex and often irrational US policy-making system, the better the chance that you will be able to understand why certain policies are made (or not made), why they take the form that they do, and how to alter them.

**Attributes:** Social Science (Discovery); Writing Intensive Course**Mutual Exclusion:** No credit for students who have taken POLT 500.**Grade Mode:** Letter Grading**PS 501 - Social and Political-Economic Theory****Credits:** 4

Classics of sociological and political economic theory, as well as contemporary thinking in conservative, classical liberal, modern liberal, and radical political economy. Emphasis on the historical context in which these ideas emerge, and the links among them. Readings and discussions include such thinkers as Comte, Spencer, Weber, Durkheim, Locke, Marx, Smith, Riccardo, J.S. Mill, Shumpeter, Keynes, Hayek.

**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading**PS #502 - Political Psychology****Credits:** 4

Political opinion, identity, and belief-formation and reinforcement. The roles of cognition and emotion in how political identities, opinions and beliefs form, change and resist change. The implications of idea-framing in the acceptance and rejection of political concepts and ideologies. The role of social contexts and the media in creating conceptual boundaries in contemporary politics.

**Attributes:** Social Science (Discovery)**Grade Mode:** Letter Grading**PS #502W - Political Psychology****Credits:** 4

Political opinion, identity, and belief-formation and reinforcement. The roles of cognition and emotion in how political identities, opinions and beliefs form, change and resist change. The implications of idea-framing in the acceptance and rejection of political concepts and ideologies. The role of social contexts and the media in creating conceptual boundaries in contemporary politics.

**Attributes:** Social Science (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**PS 506 - Civil Society and Public Policy****Credits:** 4

Explores how grassroots advocacy organizations and social movements mobilize human and material resources in order to shape public policy and what tactics and organizational and communication strategies lead to success. Provides students with hand-on learning through service learning project at a local organization. Policy areas may include immigration, environmental conservation, women's issues and more.

**Grade Mode:** Letter Grading**PS 507 - Justice, Law and Politics****Credits:** 4

This course examines the relationships among law, politics, and social structures and how much relationships shape our conceptions of justice. We explore philosophical and historical origins of US law and such concepts as due process and sovereignty. We examine the foundations and economic, environmental, and sociological underpinnings of contemporary legal and political issues.

**Attributes:** Social Science (Discovery)**Grade Mode:** Letter Grading



**PS #508 - Supreme Court in US Society****Credits:** 4

This course examines Supreme Court legal holdings from the creation of the American Republic to the present, with attention to the social and historical contexts in which holdings have been made. We examine Constitutional issues, the process by which the Court examines such issues, the ways in which political and social context has framed and influenced Court decisions, as well as how the Court has influenced politics and the broader society.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** POLT 508**Grade Mode:** Letter Grading**PS 509 - Political and Social Change in Developing Countries****Credits:** 4

Overview of the pressing social, political, and economic issues in the developing world. Analysis includes: political development, including different forms of authoritarianism and democracy; international political economy and models of macro-economic development; international and national aid programs aimed at reducing poverty. Case studies include China, India, Iraq and more.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** POLT 553**Grade Mode:** Letter Grading**PS 510 - Politics of Food****Credits:** 4

This course examines the politics of how food is produced, marketed and distributed in the United States, with attention to how the American food system has changed since World War II. The ethics and nutritional and public health implications of current agricultural policies and practices are looked at carefully, as are the environmental impacts of current practices. The impact on international food prices and markets and world hunger are also examined.

**Attributes:** Environment,TechSociety(Disc)**Grade Mode:** Letter Grading**PS 511 - Women and War****Credits:** 4

Explores impact of war on women as both victims (i.e. refugees, rape victims) and participants (i.e. warriors). Covers issues such as women in combat as soldiers and terrorists, women's rights, sexual violence and rape during warfare, women's roles during peace-building etc. Case studies include Bosnia, Liberia, Afghanistan, USA, Colombia, and more.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**PS #513 - Politics of Red Tape: Bureaucracy & Policy****Credits:** 4

Bureaucrat, someone is reported to have once said, is the only word in the English language that can be hissed even though it has no "s." The labyrinthine workings of government itself—the bureaucracy—are a seemingly constant source of fear, anger, frustration and indignation. Why does the public sector seem to generate such antipathy? We will explore this question, and examine how administrative agencies can be effectively and democratically managed. No credit if taken POLT 509.

**Grade Mode:** Letter Grading**PS 515 - New Hampshire Politics in Action****Credits:** 4

A hands-on course on New Hampshire politics and policymaking, in which students will identify a Bill currently active in the NH General Court and develop and execute a step-by-step plan for helping get it enacted or defeated. Periodic travel to the State Capitol in Concord will be required. Writing intensive.

**Attributes:** Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**PS 520 - Globalization: Politics, Economics and Culture****Credits:** 4

Globalization is a complex web of interwoven processes that affect virtually all facets of our daily lives, from pop culture to economics to politics and everything in between. But what exactly is globalization, anyway? And does increased interconnectedness and interdependence do more harm than good? What are the effects of globalization on our society and on others around the world? How can we solve problems, such as climate change, that transcend national boundaries? This course covers different dimensions of globalization, exploring everything from free trade and global supply chains in business to the global hip-hop phenomenon to the problem of international terrorism, and many other issues.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**PS 595 - Research for Political and Policy Action****Credits:** 4

This course offers an overview of how the social sciences—political science especially—decide which questions to ask and how to design the research projects that will help them develop answers to those questions. As we explore these methods of inquiry and analysis, students undertake their own multi-methods research project to better understand something that interests or puzzles them while experiencing first hand the challenges inherent in sound research.

**Attributes:** Inquiry (Discovery); Writing Intensive Course**Mutual Exclusion:** No credit for students who have taken POLT 595.**Grade Mode:** Letter Grading**PS #599 - Peer Educator Development****Credits:** 1 or 4

Preparing students to be leaders on their campus and in their community. Upon completion, students will be eligible to take the BACCHUS Certified Peer Educator (CPE) exam to become a nationally-certified peer educator. No credit for students who have taken UMST 599 - Peer Educator Development.

**Grade Mode:** Letter Grading**PS #651 - Selected Topics: Public Service****Credits:** 4

Interdisciplinary treatment of selected topics in politics and society. Topics may include democracy, empire and war, gender roles in electoral process, the sociology and psychology of terrorism, the political economy of hunger and poverty, the social origins of dictatorship and democracy, and others. Topic: Empire, Democracy, and War is Writing intensive.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**PS #695 - Public Service Independent Study****Credits:** 1-4

Independent study on specific topics in Politics and Society. Project must be approved by the project supervisor Politics and Society Program.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading

**PS 701 - Senior Seminar/Internship in Public Service****Credits:** 4

Students undertake internships or other approved field projects with organizations such as political campaigns, media organizations, government offices, business or community groups. The seminar component enables students to share and analyze these experiences, employing readings, discussions, collective behavior games, and speakers. Permission required. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PS 731 - Community Leadership - Capstone****Credits:** 4

Culminating experience for the Community Leadership Minor, but open to other students with instructor's permission. Working alone or in groups, students will design and execute a project of benefit to a community partner.

**Equivalent(s):** UMST 531, UMST 701**Grade Mode:** Letter Grading**PS 750 - Poverty & Inequality Past and Present****Credits:** 4

This course will help students develop the knowledge and tools, using the best available data and research from across disciplines, to describe the scale and scope of need in the US. It will also help you develop understanding of the causes of poverty, inequality, and homelessness, and the consequences of them too – not just upon individuals and families, but ultimately upon entire neighborhoods, communities, and the nation as a whole.

**Attributes:** Writing Intensive Course**Mutual Exclusion:** No credit for students who have taken POLT 750.**Grade Mode:** Letter Grading

## Portuguese (PORT)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**PORT 401 - Elementary Portuguese I****Credits:** 4

Conducted in Portuguese, this immersive introduction to Portuguese and the cultures of the Portuguese-speaking world (Brazil, Lusophone Africa, and Portugal) is intended for students without previous exposure to the language. Focuses on conversational and cultural competence while presenting fundamentals of grammar. Students who have taken Portuguese in secondary school must contact the program regarding placement. Students possessing advanced proficiency in Spanish or another Romance language may seek instructor permission to enroll directly in PORT 402. PORT 401 and PORT 402 jointly satisfy the foreign language requirement for the Bachelor of Arts degree.

**Grade Mode:** Letter Grading**PORT 402 - Elementary Portuguese II****Credits:** 4

Conducted in Portuguese, this course introduces Portuguese and the cultures of the Portuguese-speaking world. Focuses on conversational and cultural competence while presenting fundamentals of grammar. Students with prior exposure to Portuguese must contact the program regarding placement. Students possessing advanced proficiency in Spanish or another Romance language may directly enroll in PORT 402 with instructor permission. PORT 401 and PORT 402 jointly satisfy the foreign language requirement. Prereq: PORT 401.

**Attributes:** Foreign Language Requirement**Grade Mode:** Letter Grading**PORT #503 - Intermediate Portuguese I****Credits:** 4

Conducted in Portuguese, this course emphasizes development of reading, writing, speaking, and listening skills, essential grammar, and continued exploration of Portuguese-speaking cultures. Students who have taken Portuguese in secondary school are encouraged to contact the program regarding placement. Satisfies the foreign language requirement. Counts as an elective for the major in Spanish.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**PORT #504 - Intermediate Portuguese II****Credits:** 4

Conducted in Portuguese, this course emphasizes development of reading, writing, speaking, and listening skills, advanced grammar, and continued exploration of Portuguese-speaking cultures. Students who have taken Portuguese in secondary school are encouraged to contact the program regarding placement. Satisfies the foreign language requirement. Counts as an elective for the major in Spanish.

**Grade Mode:** Letter Grading**PORT 795 - Independent Study in Portuguese****Credits:** 1-4

Guided individual study in language, literature, and culture from the Portuguese-speaking world. Topics selected by instructor and student in conference. Barring duplication of content, may be repeated. Prereq: permission of instructor.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Professional and Technical Communication (PTC)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**PTC 500 - Business Communication****Credits:** 4

This course focuses on writing skills used in the business world. Frequent writing assignments include letters, emails, reports and resumes. The drafting, feedback and revision method is used. Required for the BUS degree and should be taken within the first 2 semesters. No credit if ENGL 595 "Literary Topics: Business Communications" taken. Prereq: ENGL 401 or ENGL 401A.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

## Psychology (PSYC)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

### PSYC 400 - Psychology Freshmen Advising Seminar

**Credits:** 1

This course is an introduction to our program, the various areas of Psychology and faculty research, some employment opportunities after graduation, academic standards, and management skills essential for success as a declared psychology major in the University. The goal of this course is to help students make a positive academic transition into UNH. Students will learn about the resources UNH has to offer to support their success and how to navigate UNH academic planning tools. This course will introduce students to the different areas of psychology and expectations for a psychology major. This course is required for all first-year declared Psychology majors.

**Grade Mode:** Credit/Fail Grading

### PSYC 401 - Introduction to Psychology

**Credits:** 4

Psychology as a behavioral science; its theoretical and applied aspects. Includes research methods, behavioral neuroscience, sensation and perception, cognition, learning, development, personality, psychopathology, and social psychology. To experience actively the nature of psychological research students have an opportunity to participate in a variety of studies as part of a laboratory experience.

**Attributes:** Social Science (Discovery)

**Equivalent(s):** PSYC 401H

**Grade Mode:** Letter Grading

### PSYC 402 - Statistics in Psychology

**Credits:** 4

Design, statistical analysis, and decision making in psychological research. Probability, hypothesis-testing, and confidence intervals. Conceptualization, computation, interpretation, and typical applications for exploratory data analysis (including measures of central tendency, variability), t-tests, correlations, bivariate regression, one-way analysis of variance, and chi square. Introduction to computer methods of computation.

**Attributes:** Quantitative Reasoning(Disc)

**Equivalent(s):** PSYC 402H

**Mutual Exclusion:** No credit for students who have taken ADM 430, ADMN 420, ADMN 510, BIOL 528, EREC 525, HHS 540, MATH 439, MATH 539, MATH 644, SOC 402, SOC #402H, SOC 502, SOC 502H.

**Grade Mode:** Letter Grading

### PSYC 405 - Introduction to Happiness

**Credits:** 4

Introduction to Happiness is a multidisciplinary course grounded in the social and behavioral science. This class will introduce you to the science and philosophies of human happiness, explore the elements of human health and well being. While heavily grounded in psychology, faculty from a variety of other disciplines including sociology, philosophy, human development and occupational therapy will discuss their research and scholarship that addresses happiness.

**Grade Mode:** Letter Grading

### PSYC 440A - Honors/Understanding the Human Brain

**Credits:** 4

First, we will examine the evolution of the brains of hominids to understand what are characteristics are uniquely human and what are conserved across species. We then explore selected topics in neuroscience that alter neural functioning, for example, the impact of neuro-prosthetics, cognitive enhancement, racial discrimination. Finally, we will discuss the benefit and limitations of using animal models to understand human neural functioning.

**Attributes:** Biological Science(Discovery); Honors course

**Grade Mode:** Letter Grading

### PSYC 502 - Research Methods in Psychology

**Credits:** 4

Research design, including experimental and correlation design; internal versus external validity; measurement; writing a research report; graphic and statistical methods for summarizing data; sampling; and special problems such as experimenter effects, reactivity of measurement, and others. The use of hypothesis testing and data analysis in research.

**Prereq:** PSYC 401 and PSYC 402.

**Attributes:** Inquiry (Discovery); Writing Intensive Course

**Equivalent(s):** SOC 601, SW 601, SW 601W

**Grade Mode:** Letter Grading

### PSYC 511 - Sensation and Perception

**Credits:** 4

The study of how humans (and some other animals) sense and perceive their environment. Topics include seeing (vision), hearing (audition), tasting (gustation), smelling (olfaction), feeling (somatosensation), and the variety of state-of-the-art methods used by psychologists to study these senses. Illusions and other sensory and perceptual phenomena are treated. **Prereq:** PSYC 401.

**Grade Mode:** Letter Grading

### PSYC 512 - Psychology of Primates

**Credits:** 4

A comparative analysis of primate cognitive, linguistic, and social processes. The origins of human behavior are explored from the perspectives of history, evolution, and contemporary work in neuropsychology, linguistic, sociobiology, and related fields. **Prereq:** PSYC 401.

**Grade Mode:** Letter Grading

### PSYC 513 - Cognitive Psychology

**Credits:** 4

The study of human cognition, its basic concepts, methods, and major findings. Human knowledge acquisition and use. Attention, perception, memory, imagery, language, reading, problem solving, and decision making. **Prereq:** PSYC 401.

**Grade Mode:** Letter Grading

### PSYC 521 - Behavior Analysis

**Credits:** 4

Principles derived from the experimental study of human and animal learning and their theoretical integration. Respondent and operant conditioning. Reinforcement and punishment, stimulus control, choice and preference, conditioned reinforcement. **Prereq:** PSYC 401.

**Grade Mode:** Letter Grading

**PSYC 522 - Behaviorism****Credits:** 4

Introduction to behaviorism as a philosophy of science. Some historical background, but concentration on modern behaviorism as exemplified in the works of B. F. Skinner. No credit for students who have completed PSYC 722. Offered only in Manchester. Prereq: PSYC 401.

**Grade Mode:** Letter Grading**PSYC 531 - Psychobiology****Credits:** 4

Introduces the behavioral neurosciences. Surveys research conducted by psychologists to learn about the biological basis of behavior: development, sensation, perception, movement, sleep, feeding, drinking, hormones, reproduction, stress, emotions, emotional disorders, learning, and memory. Prereq: PSYC 401.

**Grade Mode:** Letter Grading**PSYC 552 - Social Psychology****Credits:** 4

Behavior of individuals as affected by other individuals, groups, and society. Topics include attitude change and social influence, conformity, social interaction, interpersonal attraction, impression formation, research. Prereq: PSYC 401.

**Grade Mode:** Letter Grading**PSYC 553 - Personality****Credits:** 4

Major theories, methods of assessment, and research. Prereq: PSYC 401.

**Grade Mode:** Letter Grading**PSYC 561 - Abnormal Behavior****Credits:** 4

Causes, diagnosis, and treatment of abnormal behavior. Implications of varying theoretical viewpoints. Prereq: PSYC 401.

**Equivalent(s):** PSYC 761**Grade Mode:** Letter Grading**PSYC 571 - Pioneers of Psychology****Credits:** 4

An introduction to the development and evolution of psychology as an academic discipline and applied science. The lives and works of innovators in psychology are placed in socio-political context.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** PSYC 571H**Grade Mode:** Letter Grading**PSYC 581 - Child Development****Credits:** 4

The developing child in the context of his/her society. Current problems in, and influences on, development of the child. Personality and cognitive development; exceptional children. Prereq: PSYC 401.

**Grade Mode:** Letter Grading**PSYC 595 - Applications of Psychology****Credits:** 1-4

Arranged by the student or offered by psychology faculty for supervised field, academic, or research experience related to psychology. A) Field experience: supervised internship at a business or human services setting, B) Academic experience: specialized classroom experience or supervised teaching assistance, C) Research experience: supervised research experience or laboratory work. Psychology instructors sponsor academic credit for appropriate experience combined with a relevant academic component. Requires a signed learning agreement prior to registration. Prereq: permission. May be taken for 1-4 credits in a semester. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**PSYC 705 - Tests and Measurement****Credits:** 4

Testing intelligence, creativity, achievement, interests, and personality. Test construction; evaluation; relation to psychological theory, research, and practice. Prereq: PSYC 402; PSYC 502;/or permission.

**Equivalent(s):** PSYC 705H**Grade Mode:** Letter Grading**PSYC 710 - Visual Perception****Credits:** 4

The study of how humans (and some other animals) see. Topics include color vision, depth perception, form and pattern vision, visual learning and development, eye movements, diseases of the visual system, illusions, and other visual phenomena. Prereq: PSYC 402, PSYC 502, PSYC 511, or PSYC 531; or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 712 - Psychology of Language****Credits:** 4

Theories of language structure, functions of human language, meaning, relationship of language to other mental processes, language acquisition, indices of language development, speech perception, reading. Prereq: PSYC 402; PSYC 502; PSYC 512; or PSYC 513; or permission.

**Equivalent(s):** PSYC 712W**Grade Mode:** Letter Grading**PSYC 712W - Psychology of Language****Credits:** 4

Theories of language structure, functions of human language, meaning, relationship of language to other mental processes, language acquisition, indices of language development, speech perception, reading. Prereq: PSYC 402; PSYC 502; PSYC 512; or PSYC 513; or permission. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** PSYC 712**Grade Mode:** Letter Grading

**PSYC 713 - Psychology of Consciousness****Credits:** 4

Explores questions of consciousness What is it? How does it develop? Are infants and animals conscious? Why did consciousness evolve? Includes a review of historical background, including the ideas of Jaynes, Paiget, James, Freud, and others. Contemporary topics may include the role of language and other representational systems, blindsight, subliminal perception, priming and other implicit cognitive phenomena, hypnosis, confabulation and attribution, dreaming, multiple personality and conceptions of self and free will, from simultaneous perspectives of phenomenology, behavior, and neuroscience. Specific topics governed by class interests. Prereq: PSYC 402; PSYC 502; PSYC 513.

**Equivalent(s):** PSYC 713H**Grade Mode:** Letter Grading**PSYC 713W - Psychology of Consciousness****Credits:** 4

Explores questions of consciousness What is it? How does it develop? Are infants and animals conscious? Why did consciousness evolve? Includes a review of historical background, including the ideas of Jaynes, Paiget, James, Freud, and others. Contemporary topics may include the role of language and other representational systems, blindsight, subliminal perception, priming and other implicit cognitive phenomena, hypnosis, confabulation and attribution, dreaming, multiple personality and conceptions of self and free will, from simultaneous perspectives of phenomenology, behavior, and neuroscience. Specific topics governed by class interests. Prereq: PSYC 402; PSYC 502; PSYC 513.

**Attributes:** Writing Intensive Course**Equivalent(s):** PSYC 713, PSYC 713H**Grade Mode:** Letter Grading**PSYC 716 - Cognitive Neuroscience****Credits:** 4

Cognitive Neuroscience is a rapidly expanding scientific discipline that probes classical questions of human cognitive psychology via a broad array of cutting-edge methodological approaches, which include but are not limited to brain imaging (e.g., functional MRI and electroencephalography), lesion studies, single-cell recording, and examinations of brain injuries and other neurological disorders. This course will survey the results of these approaches, which have thus far generated fundamental insights about how the brain supports motor control, attention, memory, emotion processing, social cognition, language, executive function and decision making. Prereq: PSYC 402, PSYC 502, PSYC 513, or PSYC 531; or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 720 - Animal Cognition****Credits:** 4

Do animals use language or have a culture? Can birds count? Do animals use tools and understand how they function? How do ants navigate their environment to find food and then return to their nest? How animals perceive, attend to, process, store, and represent information from their environment. Research on animal learning and behavior as a framework for investigating cognitive processes in animal learning. Quantitative versus qualitative nature of differences between people and non-human animals. Multidisciplinary approach including the fields of anthropology, physiology, philosophy and biology. Prereq: PSYC 401; PSYC 402; PSYC 502; PSYC 513 or PSYC 521; or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 722 - Behaviorism, Culture, and Contemporary Society****Credits:** 4

Introduces behaviorism as a philosophy of science. Concentration on modern behaviorism as exemplified in the works of B.F. Skinner. Implications of behaviorism for the development and evolution of cultures. Consideration of societal issues (for example pollution, overpopulation, conflict, drug abuse) from a behavioral framework. Prereq: PSYC 402; PSYC 502; PSYC 521; or permission. No credit for students who have completed PSYC 522. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** PSYC 522**Grade Mode:** Letter Grading**PSYC 731 - Brain and Behavior****Credits:** 4

Neuropsychology, the study of brain/behavior relationships including clinical topics related to the analysis of neurological diseases in humans and more basic experimental topics related to integrative functions of the brain. The main focus is on cerebral cortex and functions related to perception, movement, attention, memory, and language. Prereq: PSYC 402; PSYC 502; PSYC 531; or permission. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 733 - Drugs and Behavior****Credits:** 4

Introduces the principles of psychopharmacology and the effects of psychoactive substances on behavior. Focuses on the therapeutic and recreational use of drugs and the mechanisms of drug action, that is how the drugs affect the brain. Neuropsychiatric function and dysfunction are discussed as they relate to the use or abuse of particular drugs. Prereq: PSYC 402; PSYC 502; PSYC 531; or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 735 - Neurobiology of Mood Disorders****Credits:** 4

Neurobiological and neurochemical substrates underlying various psychopathologies, using both animal models and human data. Study of disorders from the field of biological psychiatry including aggression, anxiety, panic disorder, obsessive-compulsive disorder, unipolar depression, bipolar affective disorder, schizophrenia, and post-traumatic stress disorder. The effectiveness of current behavioral and pharmacological therapy. Prereq: PSYC 402; PSYC 502; PSYC 531; or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 736 - Attention Disorders****Credits:** 4

Attention encompasses several cognitive functions including, but not limited to, the ability to select relevant from irrelevant stimuli, to maintain goal-directed behavior over time, and to process multiple streams of information at once. This course explores how the normal brain "attends", and the consequences of dysfunction in neurochemical systems hypothesized to mediate these abilities including dementia, attention-deficit hyperactivity disorder (ADHD) and schizophrenia. Prereq: PSYC 402; PSYC 502; PSYC 531; or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading



**PSYC 737 - Behavioral Medicine****Credits:** 4

Behavioral, physiological, and neurochemical alterations, associated with health-promoting behaviors (low-fat diet, exercise) as well as health-impairing behaviors (eating disorders, smoking, excessive alcohol consumption). Topics include stress, coping, type-A behavior, hypertension, and the interface of brain, behavior, and immunity (psychoimmunology, cancer, AIDS). Treatment/therapy are discussed from behavioral and pharmacological perspectives. Prereq: PSYC 402; PSYC 502; PSYC 531;/or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 741W - Special Topics****Credits:** 4

New or specialized courses are presented under this listing. Advanced material not normally covered in a regular course in which instructor has specialized knowledge through research and study. May be repeated for different topics. Prereq: PSYC 402, PSYC 502, and other prerequisites when offered.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** PSYC 741, PSYC 741A, PSYC 741B, PSYC 741C, PSYC 741D**Grade Mode:** Letter Grading**PSYC 755 - Psychology and Law****Credits:** 4

Applications of psychology to the study of the law, including theories of legal and moral judgment, participants in the legal system (judges, police, victims, witnesses), the trial process, and plea bargaining. Special focus on the death penalty, the insanity plea, and child witnesses. Prereq: PSYC 402; PSYC 502;/or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** PSYC 755H**Grade Mode:** Letter Grading**PSYC 756 - Psychology of Crime and Justice****Credits:** 4

Examines the psychological aspects of crime and justice, including the following origins and causes of crime: developmental, biological, biopsychological, learning, and mental disorder. Focuses on issues related to homicide, profiling, and serial killers. Examines aggression and violence as well as causes and consequences of criminal homicides. Discussion of the future of crime. Prereq: PSYC 402; PSYC 502; or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 757 - Psychology of Happiness****Credits:** 4

Overview of empirical research in Positive Psychology. We will discuss factors that may influence happiness and subjective well-being; and effects that well-being may have on other life outcomes such as physical health. Learning involves reading and writing about evidence from research and also experimental exercises (such as doing an act of kindness). Prereq: PSYC 402, PSYC 502 or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 758 - Health Psychology****Credits:** 4

Survey of current topics in health psychology, including social stress and the etiology of disease, Type A and other personality factors related to health, modification of risk factors, the practitioner-patient relationship, chronic pain, and the emotional impact of life-threatening illness. Prereq: PSYC 402; PSYC 502; or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 762 - Counseling****Credits:** 4

Theories of counseling, ethical considerations, professional and paraprofessional activities in a variety of work settings. Prereq: PSYC 402; PSYC 502; PSYC 553; or PSYC 561; or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 780 - Prenatal Development and Infancy****Credits:** 4

Psychological development of infants from conception through second year of life. Factors and potential influences on reproductive health and prenatal physical and behavioral development. Transition to parenthood, infant temperament and parent-infant relationships. Developmental patterns of specific capabilities. Prereq: PSYC 402; PSYC 502; PSYC 581 or FS 525; or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 783 - Cognitive Development****Credits:** 4

Theories of cognitive development. Comparison among major theorists on how knowledge, thought, and development are defined and studied. Current research, including cognitive development; memory; perceptual processes; language. Prereq: PSYC 402; PSYC 502; PSYC 581; or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 785 - Social Development****Credits:** 4

Examines development of social interactions. Emphasizes important social relationships for the child (e.g., attachment to parents and friendships with peers). Considers other topics of relevance to social developmentalists, such as temperament, aggression, social cognition, and sex roles. Prereq: PSYC 402; PSYC 502; PSYC 581; or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**PSYC 791 - Special Topics****Credits:** 4

New or specialized courses are presented under this listing. Advanced material not normally covered in a regular course in which instructor has specialized knowledge through research and study. May be repeated for different topics. Prereqs: PSYC 402, PSYC 502, and other prerequisites when offered.

**Repeat Rule:** May be repeated up to 4 times.**Equivalent(s):** PSYC 791W**Grade Mode:** Letter Grading

**PSYC 791W - Special Topics****Credits:** 4

New or specialized courses are presented under this listing. Advanced material not normally covered in a regular course offering in which instructor has specialized knowledge through research and study. May be repeated for different topics. Prereqs: PSYC 402, PSYC 502, and other prerequisites when offered.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to 4 times.**Equivalent(s):** PSYC 791**Grade Mode:** Letter Grading**PSYC 793 - Internship****Credits:** 4-8

Supervised practicum in one of several cooperating New Hampshire mental health/rehabilitation facilities. Coursework knowledge applied to meaningful work and team experience. Commitment includes a negotiated number of weekly work hours and weekly seminars. Supervision by institution personnel and the instructor. A maximum of 4 credits may be applied to the Psychology major. Course applications accepted beginning in March for fall term and October for spring term. Prereq: permission; PSYC major; PSYC 402; 502; 561 Pre- or coreq: PSYC 762.

**Grade Mode:** Letter Grading**PSYC 794 - Advanced Internship****Credits:** 1-8

Supervised advanced practicum experience in co-operating New Hampshire mental health/rehabilitation facilities. Expands and builds on experiences and skills acquired in PSYC 793. Commitment includes a negotiated number of hours of work per week and participation in weekly seminars. Supervision done by institution personnel and instructor. Prereq: PSYC 793; permission. 1 to 8 credits.

**Grade Mode:** Letter Grading**PSYC 795 - Independent Study****Credits:** 1-4

A) Physiological, B) Perception, C) History and Theory, D) Behavioral Analysis, E) Social, F) Cognition, G) Statistics and Methods, H) Experimental, I) Personality, J) Developmental, K) Counseling, L) Psychotherapy, M) Research Apprenticeship, N) Teaching of Psychology, O) Advanced Externship (content area to be determined). Arranged by the student with a psychology faculty sponsor. Learner/sponsor contract required. Minimum time commitment: three hours per credit per week. Enrollment by permission only. Prereq: PSYC 402; 502; or permission.

**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** PSYC 795H, PSYC 795W**Grade Mode:** Letter Grading**PSYC 797 - Senior Honors Tutorial****Credits:** 4

For senior psychology honors students. Students propose honors theses under the supervision of psychology faculty. Theses proposed and begun in this course are completed in PSYC 799. Prereq: admission to psychology honors program. (Typically offered in fall.)

**Attributes:** Honors course**Grade Mode:** Letter Grading**PSYC 798 - Capstone****Credits:** 0

This is a zero credit course to indicate on the transcript that the capstone requirement is fulfilled. PSYC majors only.

**Grade Mode:** Credit/Fail Grading**PSYC 799 - Senior Honors Thesis****Credits:** 4

Under supervision of psychology department faculty members, students complete the honors projects proposed and begun in PSYC 797. The honors project, which should be empirical in nature, culminates in an oral presentation at the end of the semester. Prereq: admission to psychology honors program; PSYC 797. (Typically offered in spring).

**Grade Mode:** Letter Grading

## Public Administration (PA)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**PA 700 - Foundations and Theories of Public Administration****Credits:** 4

The foundations and Theories of Public Administration will explore the theoretical foundations of public administration and their practical applications. It will look to the early literature that helped shape the field along with a contemporary perspective of public administration. Students will understand the theoretical foundations of public administration, understand the different roles of the public sector, understand the historical roots of public administration, and understand the applied aspects of public administration.

**Grade Mode:** Letter Grading**PA 709 - Organization and Management in Public and Nonprofit Sectors****Credits:** 4

This course is about management theory and practice. It provides the opportunity to acquire the theoretical knowledge as well as the practical methods necessary to manage organizations in the public and nonprofit sectors. Embedded in this idea of management learning is the proposition that theory and practice of management are closely connected.

**Grade Mode:** Letter Grading**PA #718 - Nonprofit Management****Credits:** 4

Nonprofits play a major role in our lives although we may not be aware of their influence. The nonprofit sector in the United States has grown exponentially over the past twenty-five years, more rapidly than the government and for-profit sectors, making it the fastest growing segment of our economy. This course provides students with a practical hands-on approach to the non-profit sector, its governance and management including finance, fundraising, personnel management, strategic planning, and risk management.

**Grade Mode:** Letter Grading

## Public Policy (PPOL)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**PPOL 706 - Fundamentals of Policy Analysis****Credits:** 4

This foundational course in public policy analysis will introduce students to the policymaking process. Students will learn about the connection between research and policy, and develop fundamental skills in research design. Tools and techniques for policy analysis will be explored. The importance of effectively conveying results to stakeholders will be discussed, and students will work in teams to design and present a substantial policy research and analysis project.

**Grade Mode:** Letter Grading**PPOL 712 - Strategies for Policy Impact****Credits:** 4

This course explores how to develop and implement strategies that drive policy change. You will learn how to analyze various approaches to changing policy, consider context for the change (timing, climate for change, opposition) and then identify the most viable option to use to influence policy change. This class is about influencing change versus the mechanics of designing policy. Students will review different influence models, discuss which ones work best in various situations, and identify how influence models connect to campaigns that influence legislative and institutional policy. You will better understand policy change efforts by reviewing examples and learning the central elements of a successful endeavor. Finally, students, in teams, will choose their own adventure and create their own policy change strategy.

**Grade Mode:** Letter Grading**PPOL 722 - Media Strategy and Communication****Credits:** 4

In this course, we will introduce contemporary media strategies and learn how to use them to influence public policy. We will focus on: Recognizing the dynamics of the news cycle and how to identify opportunities in a saturated media landscape; Developing a message and a strategy to convey the message; Writing to advance a message in different media; Verbal skills to deliver a policy message via TED talk, panel or news conference; Nuance and differences when interacting with TV, radio, print, and social media; Introducing and practicing interview skills for TV, video, radio, print, and online media; and Understanding the power of image and authenticity.

**Grade Mode:** Letter Grading**PPOL 797 - Advanced Special Topics****Credits:** 4

Occasional or experimental offerings.

**Grade Mode:** Letter Grading

## Race & Ethnic Studies (RES)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

No courses are currently active in the course inventory for this subject prefix.

## Recreation Management & Policy (RMP)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**RMP 400 - Recreation Management and Policy Continuing Enrollment****Credits:** 0

This course enables BS students to maintain continuous enrollment in RMP as part of their matriculation plan until after their degree is formally awarded. Students registering for RMP 400 will pay a continuous enrollment fee. No credit. Special fee. RMP majors only.

**Repeat Rule:** May be repeated up to 2 times.**Grade Mode:** Not graded**RMP 411 - Applied Recreation Risk Management****Credits:** 2

This course prepares students for leadership and management activities in recreational settings. Students will become familiar with professional standards in applied recreation contexts, examine risk management principles, and pursue certifications in areas such as: defensive driving, child protection, wilderness first aid, and CPR. At the end of the course students will be equipped to lead various campus-based and off campus recreational programs.

**Grade Mode:** Letter Grading**RMP 444A - Taking the "Dis" out of Disability****Credits:** 4

In contrast to the traditional view of disability as a defect, students learn how disability provides a unique vantage point on our world and can be perceived as an ordinary part of the twists and turns of life. Examines the history of social responses to disability, with an emphasis on the present day concepts of inclusion and self-determination. Students explore expressions of the disability experience through print and visual media. Writing intensive.

**Attributes:** Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** RMP 550**Grade Mode:** Letter Grading**RMP 490 - Recreation & Tourism in Society****Credits:** 4

This course provides an overview of the historical and philosophical framework for the comparison of concepts, theories, and the inter-relationships between factors (social, economic, political, psychological) that influence our recreation and tourism experiences. Students explore how recreation is reflected in arts, literature, history, philosophy, psychology, sociology, economics, and anthropology, and will be introduced to different delivery systems, as well as a variety of relevant professional associations and career opportunities.

**Attributes:** Social Science (Discovery)**Equivalent(s):** LMT 490, RMP 490H**Grade Mode:** Letter Grading**RMP 500 - Therapeutic Recreation Methods in Physical Rehabilitation Settings****Credits:** 1

This course introduces students to a variety of assistive techniques, devices and equipment used in Therapeutic Recreation settings that allow individuals with illnesses and disabilities achieve maximum independence and functional capacity to maintain optimal health and leisure functioning. Students learn and apply skills in anatomical orientation and positioning, universal precautions, assistive technology and adapted equipment for recreation including manual, power, sports, and all-terrain wheelchairs, wheelchair mobility skills, proper body mechanics, transfer and lifting techniques, ambulation assists, and sighted guide techniques. Prereq: RMP 490, 501, 502, permission.

**Co-requisite:** RMP 503**Grade Mode:** Letter Grading

**RMP 501 - Recreation Services for Individuals with Disabilities****Credits:** 4

Presents and discusses issues that concern the delivery of quality leisure services to individuals with disabilities in community settings. Classroom activities provide opportunities for practical experience.

**Equivalent(s):** LMT 501**Grade Mode:** Letter Grading**RMP 502 - Foundations of Therapeutic Recreation****Credits:** 4

History and professional concepts of therapeutic recreation and the roles and functions of the therapeutic recreation specialist.

**Equivalent(s):** LMT 502**Grade Mode:** Letter Grading**RMP 503 - Therapeutic Recreation Rehabilitation Principles & Interventions****Credits:** 4

Introduces the rehabilitation principles and recreational therapy interventions used by therapeutic recreation specialists to improve functioning for people with physical and cognitive impairments. Students learn and apply fundamental processes of clinical reasoning and treatment program planning to improve quality of life. A lab provides students with the opportunity to use a variety of assistive techniques, adaptive devices, and equipment to support individuals and achieve maximum independence and promote a healthy leisure lifestyle. Special fee. Prereq: RMP 490, RMP 501, RMP 502.

**Co-requisite:** RMP 500**Equivalent(s):** RMP 606**Grade Mode:** Letter Grading**RMP 504 - Therapeutic Recreation Mental Health Principles and Interventions****Credits:** 4

Introduces mental health principles and recreational therapy interventions to improve functioning for people with emotional, social, and behavioral impairments. Students will learn and apply fundamental processes of clinical reasoning and treatment program planning to improve quality of life for persons with emotional, social, and behavioral impairments. Restricted to RMP majors.

**Grade Mode:** Letter Grading**RMP 505 - Therapeutic Recreation: Aging Services Principles & Interventions****Credits:** 4

This course is designated to introduce the student to the field of therapeutic recreation and its nexus with the older adult population. We will explore the role leisure and recreation, in concert with the recreational therapist, plays in the well-being of older adults. Topics of study will include: Health Promotion and Prevention; Geriatric Syndromes, Chronic Health Conditions; Roles of Recreational Therapist in Geriatrics; Common Illness, Health Settings; and Interventions.

**Grade Mode:** Letter Grading**RMP 511 - Issues of Wilderness and Nature in American Society****Credits:** 4

Provides students with an overview of the evolving relationship between wilderness/nature and American society. Examines the philosophy, ethics, and societal values in American society and its relationship to our natural wilderness. Recent issues are used as case studies in order for students to articulate, defend, and critique the ethical issues presented. Students are responsible for understanding and applying philosophical approaches developed by philosophers, writers, and activists associated with the wilderness, sustainability, biodiversity, hunting, suburban sprawl, environmental activism, endangered species, organic foods, and genetic engineering.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**RMP 515 - History of Outdoor Pursuits in North America****Credits:** 4

Voluntary pursuits in the outdoors have defined American culture since the early 17th century. Over the past 400 years, activities in outdoor recreation and education have reflected Americans' spiritual aspirations, imperial ambitions, social concerns, and demographic changes. This course will give students the opportunity to learn how Americans' experiences in the outdoors have influenced and been influenced by major historical developments of the 17th, 18th, 19th and 20th, and early 21st centuries. This course is cross-listed with KIN 515.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** KIN 515**Grade Mode:** Letter Grading**RMP 557 - Program and Event Design****Credits:** 4

This course introduces students to a range of approaches to recreation program and event design, and focuses on providing leisure experiences for all populations. Course topics include foundations of programming, program theories, needs assessment techniques, vision, mission, goals, and objectives, processes of group planning, public relations, program promotion, and program evaluation. Students will design and deliver a recreation program using a team approach. Prereq: RMP 490. Permission required.

**Equivalent(s):** LMT 557**Grade Mode:** Letter Grading**RMP 559 - Marketing the Recreation Experience****Credits:** 4

This course prepares students to apply marketing principles and strategies to recreation programs and events, including procedures for developing marketing plans for recreation and event organizations. Course content includes planning the marketing mix, with a focus on the recreation or event product, price, place, and promotion. The course covers the application of marketing and communication strategies delivered through social and audio-visual media. The culminating project consists of a marketing and communication plan for a recreation/leisure service agency. Prereq: RMP 490. Permission required. RMP Majors Only.

**Attributes:** Writing Intensive Course**Equivalent(s):** RMP 665**Grade Mode:** Letter Grading



**RMP 560 - Recreational Sport Management****Credits:** 4

Explores and examines the theoretical foundations and basic skill methods, and techniques necessary for the effective and efficient delivery of recreational sport programs within a variety of collegiate, public, quasi-public, and private settings, agencies and/or organizations.

**Equivalent(s):** LMT 560**Grade Mode:** Letter Grading**RMP 563 - Recreation Management and Policy Practicum****Credits:** 2

Designed to provide first and second year RMP majors the opportunity to observe and practice leadership skills in clinical and community-based settings. Students complete a 40-45 hour practicum at an approved site. Successful completion of a practicum is prerequisite to the professional internship, RMP 664. Students are responsible for transportation and housing. Prereq: RMP 490. Permission required. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Credit/Fail Grading**RMP 593 - Special Topics****Credits:** 2-4

A) Camping and Outdoor Education for Individuals with Disabilities, B) State Parks: Their Management and Role, C) Therapeutic Recreation in the School Setting, D) Social Psychology of Leisure, E) New Hampshire's Recreation/Ski Industry, F) Child Life Internship, J) Campus Recreation Applied Leadership, K-Z) Interdisciplinary. Specialized courses covering information not presented in regular course offerings. Description of topics available in department office during preregistration. Prereq: RMP majors or permission. May be repeated but not in duplicate areas. Special fee for RMP 593G. Cr/F.

**Equivalent(s):** LMT 593, RMP 593W**Grade Mode:** Credit/Fail Grading**RMP 603 - New Hampshire Ski Industry Management****Credits:** 4

This course examines the New Hampshire ski and snowboard industry from several distinct but interrelated perspectives: social, technological, environmental, historical, economic, and operational. Students will explore skiing as a holistic and fulfilling segment of the outdoor recreation field, while gaining an understanding of its interdependence with the state's economy, the natural environment, and New Hampshire's unique cultural history. The influence of New Hampshire's ski industry on the history and growth of the American ski industry will be examined, and the impacts of climate change and other environmental issues will be investigated in light on ongoing societal shifts and relevant technological advancements.

**Grade Mode:** Letter Grading**RMP 612 - Therapeutic Communication and Facilitation Techniques in Therapeutic Recreation****Credits:** 0 or 4

Addresses specific clinical knowledge and skills essential to therapeutic recreation service delivery including clinical interviewing, group process, leisure education, treatment approaches, and intervention techniques. Prereq: RMP 490. Permission required.

**Equivalent(s):** RMP 604**Grade Mode:** Letter Grading**RMP 613 - Interventions and Documentation in Therapeutic Recreation****Credits:** 0 or 3

This course emphasizes theory and concepts in clinical intervention within therapeutic recreation settings. Students learn to identify and select appropriate facilitation techniques for a variety of client needs. Students also learn to write and interpret practice-based documentation. Students are afforded the opportunity to practice and apply concepts learned. Prereq: RMP 490. Permission required. Only open to RMP. Therapeutic Recreation majors.

**Equivalent(s):** RMP 605**Grade Mode:** Letter Grading**RMP 614 - Assessment and Treatment Planning in Therapeutic Recreation****Credits:** 4

Addresses the principles of activity analysis, client assessment, documentation, individualized program planning, selection of interventions, and collaboration with a treatment team. Prereq: RMP 612/ RMP 613. Permission required. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** RMP 603**Grade Mode:** Letter Grading**RMP 615 - Clinical Lab in Therapeutic Recreation****Credits:** 2

A clinical lab that provides students with the opportunity to apply principles central to the effective delivery of therapeutic recreation individualized treatment planning, client assessment, documentation, and activity analysis with members of one of two community sites located in the Seacoast region. Students are required to participate in weekly sessions (five to six hours per week) for a total of 15 weeks. Prereq: RMP 612/RMP 613. Permission required. Cr/F.

**Equivalent(s):** RMP 602**Grade Mode:** Credit/Fail Grading**RMP 654 - Professional Development and Ethics****Credits:** 2

Focuses on preparing students for the internship experience through the identification of career goals and the selection of an approved internship site. A portfolio emphasizing process skills in resume construction, interviewing techniques, establishing internship goals and objectives, and self-assessment is developed. Securing Certification in Basic First Aid and CPR (infant, child, adult) is a component of this course. Majors only. Prereq: permission. Letter Grade/IA (continuous grading).

**Equivalent(s):** LMT 564, LMT 654**Grade Mode:** Letter Grading**RMP 661 - Leadership in Recreation Services****Credits:** 4

This course is designed to expose students to fundamental principles of leadership, communication, group facilitation, motivation, employee management, conflict resolution, and development of professional ethics. Students will develop techniques for the exercise of leadership in group and organizational settings associated with recreational programs and events. Students are expected to apply the leadership principles, theories, and techniques to small group exercises and activity leadership requirements. RMP majors only. Prereq: RMP 490 (grade of C or better) or instructor permission.

**Equivalent(s):** RMP 558**Grade Mode:** Letter Grading



**RMP 663 - Management and Finance in the Experience Industry****Credits:** 4

This course provides advanced standing RMP students with entry-level knowledge of current management practice, specializing in planning, human resources, finance, budget, resource acquisition, technology, and evaluation. The primary objective of this course is to provide students with an understanding of the tools and approaches used in the management and financing of recreation and event planning agencies and organizations. RMP majors only. Prereq: RMP 490 (grade of C or better) or instructor permission.

**Equivalent(s):** LMT 663**Grade Mode:** Letter Grading**RMP 668 - Youth Culture and Programs****Credits:** 4

Emphasizes the identification of community and personal issues youth face in growing up as well as institutional and programmatic support available to assist youth. The course also examines the leadership, administrative, financial, and marketing tools necessary to develop successful youth programs and services. Service learning fieldwork and the completion of a background check are required. Prereq: RMP, RMP.PA or RMP.TR Majors Only or by permission of the instructor. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**RMP 670 - Venue Management Design & Operations****Credits:** 4

Provides students with an orientation to the management, design, operation, and functions of various recreation venues. Topics include venue management, operational considerations, support features, and auxiliary functions that impact the manager's role. Students gain insight into key areas of venue management, design, and operations through visits to actual recreation venues.

**Grade Mode:** Letter Grading**RMP 680 - Festival and Event Planning****Credits:** 4

Introduces the planning, marketing, management, and evaluation of festivals and special events. Explores the theories and practices relevant to successful event planning for host community residents and visitors. Prereq: RMP 557 (majors); or by instructor permission (non-majors). Sophomores, Juniors, and Seniors only.

**Grade Mode:** Letter Grading**RMP 700H - Senior Honors Project****Credits:** 4-6

Under the direction of an RMP faculty member, students complete either a supervised research or applied field study project that builds on their honors coursework. Students submit a written proposal for approval and present the results at the completion of their project. Applied studies address a specific need or problem of a local agency or organization.

**Attributes:** Honors course**Grade Mode:** Letter Grading**RMP 705 - Management and Policy in Therapeutic Recreation****Credits:** 4

Addresses National Council for Therapeutic Recreation Certification knowledge areas concerning management competency. Students acquire knowledge of current principles and procedures for assuming an administrative role in the therapeutic recreation profession. Issues and practices related to budgeting, reimbursement, quality improvement programs, and comprehensive program planning. Prereq: RMP 612, RMP 613. RMP.TR majors only.

**Grade Mode:** Letter Grading**RMP 711 - Recreation Resource Management****Credits:** 4

Examines the supply and demand of natural resources for outdoor recreation uses, with emphasis on relationships between public and private roles and responsibilities. Social, environmental, and economic impacts of outdoor recreation use are discussed. Current principles and techniques of recreation resource planning and management are outlined. Prereq: seniors or permission.

**Equivalent(s):** LMT 711**Grade Mode:** Letter Grading**RMP 720 - Adaptive Sport Facilitation for Recreation Therapy and Related Professions****Credits:** 4

This course takes a strengths-based approach to examining adaptive sports and recreation for recreational therapists and related professions, with a focus on best practices and risk management in community-based settings. This is an experiential learning course, whereby students will learn how to design, plan, and facilitate a variety of adaptive sports for people with disabilities. Students will learn and apply processes for assessing, selecting, and fitting adaptive sports and recreation equipment for individuals with disabilities.

**Grade Mode:** Letter Grading**RMP 724 - Research, Evaluation, and Data-Driven Decisions****Credits:** 4

Emphasizes the understanding and practical application of evaluation concepts and tools within recreation, event, and allied health services. The course will cover the utility and feasibility of evaluation, evaluation planning and design (including quantitative and qualitative research design, methods, and analysis), evaluation management and data collection, analysis and reporting, and decision-making based on evaluation data. Prereq: RMP 557, and Junior or Senior RMP major or permission.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**RMP 740 - Therapeutic Recreation Service Delivery in Community Settings****Credits:** 4

This course provides specialized knowledge and skills related to the practice of Recreational Therapy in a community setting. The course will encourage students to expand their understanding of philosophical constructs, public policy, and professional programs. Specific facilitation techniques and treatment modalities will be introduced as well as information specific to the therapeutic process as it is observed in these settings. Prereq: RMP 490, RMP 502.

**Grade Mode:** Letter Grading**RMP 764 - Internship****Credits:** 8 or 12

Supervised professional work experience in an approved recreation, park, tourism, or healthcare agency. Students participate in a 10 week (400 hour) or 14 week (560 hour) internship experience after receiving approval from their Academic Advisor and the Internship Coordinator.

**Grade Mode:** Credit/Fail Grading

**RMP 772 - Law and Public Policy in Leisure Services****Credits:** 4

Topics including the law of torts, contracts, property, civil rights, risk management, and legal research are addressed in the context of leisure services and recreation resources. Public policy and professional advocacy implications are examined in relation to legislative and judicial systems. Prereq: RMP 557, RMP 663, and senior RMP major or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** LMT 772**Grade Mode:** Letter Grading**RMP 775 - Entrepreneurial and Commercial Recreation****Credits:** 4

Principles of business planning and development as applied to the private sector leisure services industry. Emphasizes knowledge of key commercial leisure services profiles and their intersection with allied professions such as hospitality and tourism. Course topics include entrepreneurship, business planning, needs assessment, product development, selling, financing, legal designations, and business operations leading to the development of a business plan for a new entrepreneurial recreation enterprise.

**Equivalent(s):** RMP 675**Grade Mode:** Letter Grading**RMP 776 - Human Dimensions of Natural Environments****Credits:** 4

This course draws on research and theories that illuminate the profound connections between nature and human health and wellbeing. Students will explore contemporary philosophical, psychological, and cultural perspectives to understand how both organized and unstructured experiences in the outdoors support human flourishing. Students review research and gain hands-on practice with ideas in the context of outdoor recreation, resource management, education, and other human service fields.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**RMP 780 - Event and Experience Design****Credits:** 4

This course will explore social and technical aspects of event coordinating, with a focus on the production associated with management, strategic planning and evaluation of event. Throughout the course, students will gain hands-on experience working with volunteers and clients. Students will have the opportunity to plan and execute an event. Students will hone their skills in planning, executing, marketing, risk management and budgeting, while discovering how best practices are applicable to effective event coordinating. Prereq: RMP 680 with a minimum grade of C- or permission from instructor.

**Grade Mode:** Letter Grading**RMP 796 - Independent Study****Credits:** 1-4

Individual study and/or research relating to leisure-oriented topics. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** LMT 796, RMP 796W**Grade Mode:** Letter Grading**RMP 796W - Independent Study****Credits:** 1-4

Individual study and/or research relating to leisure-oriented topics.

Prereq: permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** RMP 796**Grade Mode:** Letter Grading

## Religious Studies (RS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**RS 483 - History of World Religions****Credits:** 4

Introduces the religions of the world in terms of historical development, relationship to society, belief system, central texts, and ritual practices. Begins with the religions of small and tribal societies (e.g., African, Native American), moves through religions of complex societies (e.g., Hinduism), and then studies the various traditions that emanated from ancient revelations: Zoroastrianism, Buddhism, Judaism, Christianity, Islam, and certain new forms of Christianity.

**Attributes:** Historical Perspectives(Disc)**Equivalent(s):** HIST 483**Grade Mode:** Letter Grading**RS 505 - Introduction to Religion****Credits:** 4

This course provides an introduction to religion, exploring the various ways that this phenomenon has been understood, approached, practiced, and studied across human history. The course will examine the different ways that religion can be defined, drawing from a variety of humanities and other disciplines. Foundational theories explaining the origins, persistence, and continued relevance of religion will be compared and applied to different traditions. Topics include concepts of divinity, rituals, myth, mysticism and spirituality, pilgrimage, death and the afterlife, and ultimate reality.

**Attributes:** Humanities(Disc)**Equivalent(s):** HUMA 505**Grade Mode:** Letter Grading

## Russian (RUSS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**RUSS 401 - Elementary Russian I****Credits:** 4

For students without previous training in Russian. An introduction to contemporary standard Russian. Includes a cultural component. Topics include those which enable students to function in Russian in everyday situations (i.e. food, leisure activities, literature, transportation, music, sports, daily life).

**Grade Mode:** Letter Grading

**RUSS 402 - Elementary Russian II****Credits:** 4

For students without previous training in Russian. An introduction to contemporary standard Russian. Includes a cultural component. Topics include those which enable students to function in Russian in everyday situations (i.e. food, leisure activities, literature, transportation, music, sports, daily life.) Prereq: RUSS 401 or equivalent. Cannot be taken separately except with permission of instructor.

**Attributes:** Foreign Language Requirement**Grade Mode:** Letter Grading**RUSS #425M - Topics in Russian Culture and Society in Moscow****Credits:** 4

Introduction to contemporary Russian society and culture in English. Examines the "Russian mind" (as it was before 1917), the "Soviet mind" and how the two have clashed. A closer examination of how the Russians are adapting to the changes that have taken place in their country since the collapse of communism. Readings, film, realia. Themes to be discussed include leadership, authority and power, the Russian soul, family, women, youth, education, holidays and celebrations, and the new Russians. Through pre-departure readings and on location, each culture and historical topic is taught on site during field trips and after field trip discussions, lectures, and round tables. A focused topic is explored on location with pre- and post program research. Permission required.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** RUSS 425, RUSS 425T, WLCE 425R**Grade Mode:** Letter Grading**RUSS 503 - Intermediate Russian I****Credits:** 4

Continued work in grammar, and writing with cultural components. A review of the fundamentals of grammar and syntax. Readings and cultural material included. Topics include: the university, student life, everyday routines, holidays.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** RUSS 502**Grade Mode:** Letter Grading**RUSS 504 - Intermediate Russian II****Credits:** 4

Continued work in grammar, and writing with cultural components. A review of the fundamentals of grammar and syntax. Readings and cultural material included. Topics include: description of people, living arrangements, weather, cities, travel.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**RUSS 521W - Devils, Deities, and Madness in Russian Literature****Credits:** 4

Introduces Russian literature from a variety of perspectives. Selected works by famous and lesser known Russian writers on the themes of devils, deities, and madness. Literary texts, as well as film versions of literary texts, are considered in their historical and cultural contexts. Lectures, readings, and discussions in English. Open to all students, including freshmen. No prerequisites.

**Attributes:** Humanities(Disc); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** RUSS 521, WLCE 521R**Grade Mode:** Letter Grading**RUSS 525 - Russia: Mythology and Propaganda****Credits:** 4

Exploration of the relationship between mythology and culture as a part of the cultural identity of the Russian people, before the 1917 Revolution, during the Communist period, and since the fall of the Soviet Union. Focus on pre 1917 Slavic pagan, Christian, and folk mythology vis-a-vis Western mythology, on 20C propaganda and control of the "public mind" designed to reshape national identity and on the current deconstruction, reform, and rebirth of the old mythology.

**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading**RUSS #525M - Russia: Mythology and Propaganda in Moscow****Credits:** 4

Exploration of the relationship between mythology and culture as a part of the cultural identity of the Russian people, before the 1917 Revolution, during the Communist period, and since the fall of the Soviet Union. Focus on pre 1917 Slavic pagan, Christian, and folk mythology vis-a-vis Western mythology, on 20C propaganda and control of the "public mind" designed to reshape national identity and on the current deconstruction, reform, and rebirth of the old mythology. Course conducted on location in Russia and on line. Special fee.

**Co-requisite:** INCO 589**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading**RUSS 595 - Russian Practicum****Credits:** 2

Participants earn credit for approved, uncompensated, pre-professional activities and special projects, including K-12 outreach, assisting in undergraduate courses, work with professional organizations, businesses, social services, non-profits, NGOs or educational organizations in a Russian context and with on-site supervision. Writing assignments are required and vary depending upon the project. Enrollment limited to sophomores, juniors and seniors who are Russian majors and have a B or above average in Russian language courses. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Credit/Fail Grading**RUSS 631 - Advanced Russian Conversation and Composition****Credits:** 4

Advanced spoken and written Russian designed to include all four language skills (speaking, reading, writing, listening.) Readings on contemporary cultural topics and vocabulary building. Composition and conversation based on Russian-language media and literature.

**Grade Mode:** Letter Grading**RUSS 632 - Advanced Russian Conversation and Composition****Credits:** 4

Advanced spoken and written Russian designed to include all four language skills (speaking, reading, writing, listening.) Readings on contemporary cultural topics and vocabulary building. Composition and conversation based on Russian-language media and literature.

**Grade Mode:** Letter Grading**RUSS #680 - UNH Russia Summer Study Abroad****Credits:** 0

Summer study abroad program facilitated by the UNH Russia Program. This course is a placeholder for the study abroad program fee. Students register for both this administrative course number and two Russian courses offered on the program.

**Co-requisite:** INCO 589**Grade Mode:** Credit/Fail Grading

**RUSS #685 - Study Abroad****Credits:** 0-16

Studies at a Russian institution of higher learning. Interested students should consult with a Russian advisor. Special fee. Cr/F. (IA grade will be assigned until official transcript is received from the foreign institution.)

**Grade Mode:** Credit/Fail Grading**RUSS 691W - Readings in Russian Literature****Credits:** 1-4

Linguistic and stylistic characteristics of one of the major works in Russian literature. Study of the epoch when the work was written, as well as reading the literary work and discussing it. Students learn to analyze a literary work in the target language. Readings, class discussions, and papers conducted entirely in Russian.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**RUSS #725M - Topics in Russian Culture and Society in Moscow****Credits:** 4

Historical, social, political, intellectual and artistic developments in Russia that have influenced contemporary Russian society and culture. Designed to give a deeper introspection into Modern Russian and its society, and a firsthand dialogue with the most significant sites in Russian civilization. Through pre-departure readings and on location, each cultural and historical topic is taught on site during field trips and after field trip discussions. Readings, class discussions, and films. Conducted entirely in Russian. A focus topic is explored on location with pre and post program research. Prereq: RUSS 504 or equivalent.

**Equivalent(s):** RUSS 725, RUSS 725T, RUSS 725W**Grade Mode:** Letter Grading**RUSS 733 - History of Slavic Languages and Culture****Credits:** 4

Students look at modern Russian (standard and dialects) through the perspective of the history of the language. Focuses on the evolution of phonetics and grammar as well as etymology. Russian's relation to other Slavic languages is discussed. Students look at the language through the lens of history, culture, and politics.

**Equivalent(s):** RUSS 533, RUSS 790**Grade Mode:** Letter Grading**RUSS 790W - Advanced Language and Style****Credits:** 4

For students who have a strong, active control of grammar. The most difficult problems of Russian grammar and syntax in poetry and prose. Develops confidence in expression both in everyday situations and in abstract concepts (emphasis on the latter). The course is tailored to students' major and interest (such as international affairs, history, political science, etc) so they can use the language towards their research in Russian. Prereq: grade of C or better in last Russian language course taken. May be repeated for credit, barring duplication of material.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** RUSS 790**Grade Mode:** Letter Grading**RUSS 795 - Independent Study****Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with permission of the Russian program coordinator and the supervising faculty member or members. Barring duplication of subject, may be repeated for credit.

**Repeat Rule:** May be repeated up to 4 times.**Grade Mode:** Letter Grading**RUSS #796 - Independent Study****Credits:** 1-4

Open to highly qualified juniors and seniors. To be elected only with permission of the Russian program coordinator and the supervising faculty member or members. Barring duplication of subject, may be repeated for credit.

**Repeat Rule:** May be repeated up to 4 times.**Grade Mode:** Letter Grading**RUSS 797 - Special Studies in Russian Language, Literature, and Culture****Credits:** 2 or 4

Selected topics in language, literature, and culture. Barring duplication of subject, may be repeated for credit.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**RUSS #798 - Special Studies in Russian Language, Literature, and Culture****Credits:** 2 or 4

Selected topics in language, literature, and culture. Barring duplication of subject, may be repeated for credit.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to 4 times.**Grade Mode:** Letter Grading

## Sign Language Interpreting (INTR)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**INTR 430 - Introduction to Interpretation****Credits:** 4

A survey of traditional and contemporary perspectives on interpretation and interpreters; introduces the cognitive processes involved in interpretation and factors that influence those processes. Several models of interpretation explored. Particular attention given to interpretation as an intercultural, as well as inter-lingual, process. Students engage in a research project related to course content.

**Grade Mode:** Letter Grading**INTR 438 - A Socio-cultural Perspective on the Deaf Community****Credits:** 4

Introduction to the deaf community and deaf culture. Discussion of similarities to, and differences from, mainstream hearing culture. Supplemental videotapes focus on aspects of culture including deaf education, autobiographical sketches, deaf norms and values, and deaf literature and folklore. Theoretical issues of culture and linguistics applied to deaf culture, American Sign Language, and the variety of cultural perspectives of the deaf community. Students engage in a research project related to course content.

**Attributes:** Social Science (Discovery); Writing Intensive Course**Prerequisite(s):** ENGL 401 (may be taken concurrently) with a minimum grade of D-.**Grade Mode:** Letter Grading

**INTR 439 - Ethics and Professional Standards for Interpreters****Credits:** 4

Seminar course using readings, theory, and discussion of hypothetical situations and role plays to explore ethical standards and dilemmas in ASL-English interpretation. Covers personal and professional values, ethics, and morality; professional principles; power, responsibility, and group dynamics; the interpreter's role; cross-cultural issues; and the decision-making process. Students engage in a research project related to course content.

**Attributes:** Writing Intensive Course**Prerequisite(s):** INTR 430 with a minimum grade of D-.**Grade Mode:** Letter Grading**INTR 539 - Comparative Linguistic Analysis for Interpreters****Credits:** 4

Examines the basic similarities and differences between the linguistic structure of American Sign Language and spoken English; focuses on each language's communication functions and how they serve these functions. Students engage in a research project related to course content.

**Prerequisite(s):** ASL 532 (may be taken concurrently) with a minimum grade of D-.**Grade Mode:** Letter Grading**INTR 540 - Translation****Credits:** 0 or 4

Introduction to theory and practice of translation. Students analyze pre-prepared interpretations and translations to discover how expert interpreters and translators construct meaning in the alternate language. Particular attention paid to the form/meaning distinction. Students prepare translations from texts of their choosing. Lab.

**Prerequisite(s):** ASL 532 (may be taken concurrently) with a minimum grade of D-.**Grade Mode:** Letter Grading**INTR 599 - Special Topics****Credits:** 1-4

Occasional offerings dependent on availability and interest of faculty. Barring duplication of subject, may be repeated.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**INTR 630 - Consecutive Interpretation I****Credits:** 0 or 4

Introduction to the theory and practice of consecutive interpretation. Analyzes and integrates specific subtasks of the interpreting process culminating in the performance of prepared and spontaneous consecutive interpretations. Students work with a variety of texts, language models, and settings with the goal of engaging in the consecutive interpreting process by chunking information and constructing meaning in the alternate language. Lab.

**Prerequisite(s):** INTR 540 with a minimum grade of D-.**Grade Mode:** Letter Grading**INTR 636 - Consecutive Interpretation II****Credits:** 0 or 4

Continues and advances the theory and practice of consecutive interpretation and introduces simultaneous interpretation. The focus of this course is on interactive discourse (dialogues). Particular attention is given to processes involved in the transition from consecutive to simultaneous interpreting, and determining when to use each mode of interpretation. The advantages and limitations of both types of interpreting are compared. Students apply theoretical information to the process of simultaneous interpreting. Students also engage in a research project related to course content. Lab.

**Prerequisite(s):** INTR 630 with a minimum grade of D-.**Grade Mode:** Letter Grading**INTR 732 - Simultaneous Interpretation****Credits:** 0 or 4

Focuses on simultaneous interpretation of expository discourse (presentations). Students further explore and apply theory learned in INTR 636 to a variety of texts, language models, and settings. Students engage in a research project related to course content. Lab.

**Attributes:** Writing Intensive Course**Prerequisite(s):** INTR 636 with a minimum grade of D-.**Grade Mode:** Letter Grading**INTR 734 - Field Experience and Seminar I****Credits:** 4

Gives students the opportunity to observe professional working interpreters, with some direct interpreting experience as deemed appropriate. Students integrate knowledge, theoretical understanding, and skills acquired in the interpreting program by working closely with on-site supervisors (interpreters) in addition to attending a bi-weekly seminar with the UNHM field experience coordinator.

**Prerequisite(s):** INTR 732 (may be taken concurrently) with a minimum grade of D-.**Grade Mode:** Letter Grading**INTR 735 - Field Experience and Seminar II****Credits:** 4

Gives students the opportunity to gain supervised interpreting experience. Students engage in actual interpreting assignments and receive support and mentorship from a professional interpreter, enabling them to integrate knowledge, theoretical understanding, and skills acquired in the interpreting program. Students work closely with on-site supervisors (interpreters) in addition to attending a biweekly seminar with the UNHM field coordinator.

**Prerequisite(s):** INTR 734 with a minimum grade of D-.**Grade Mode:** Letter Grading

## Social Work (SW)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**SW 424 - Introduction to Social Work****Credits:** 4

Introduces the learner to the field of social work with emphasis on the "person-in-environment" and attention to a range of practice approaches to understanding and assisting of the human condition. An overview of the history, values, and ethics of the profession. Includes various fields of practice in which social workers are employed. Special fee.

**Equivalent(s):** SW 524**Grade Mode:** Letter Grading



**SW #440A - Honors/Healthy Communities: Personal Accountability and Social Change****Credits:** 4

This course utilizes theory and concepts from biology, sociology, psychology, political science, history, urban planning as well as social work to examine and promote healthy communities. Students will develop an interdisciplinary knowledge of community health and a value-based understanding of social advocacy in the community context. Important course topics include: social-economic-environmental justice, sustainable communities, community organization, community capital, and empowerment. Prereq: permission.

**Attributes:** Honors course; Social Science (Discovery)**Grade Mode:** Letter Grading**SW 444 - You've Got Your Troubles, I've Got Mine****Credits:** 4

A seminar for traditional first- or second-year students. Examines the many personal losses typical for students leaving home for the first time. Guest speakers from various disciplines (e.g., social work, therapeutic recreation, nursing, family studies). The various ways one may find and give informal support to others dealing with loss are explored. In addition, the personal responses allowing one to better cope with adversity and ways of expressing grief are explored. Group work brings the class together as an informal support network. Students exchange ideas in techniques used to deal with personal loss and develop an informal support network to use after the course has ended.

**Attributes:** Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading**SW 525 - Social Welfare Policy: History of Social and Economic Justice****Credits:** 4

An overview of the history and current status of social welfare policy in the United States. Considers the origins, development, and analysis of significant policies, values, attitudes and other issues related to the social welfare system and the delivery of service. Focuses on policy analysis from a social and economic justice perspective.

**Attributes:** Historical Perspectives(Disc)**Grade Mode:** Letter Grading**SW 550 - Human Behavior and Social Environment I****Credits:** 4

Introduces human behavior and development as it influences and is influenced by multiple factors in the social environment, including individual genetic and biological composition, race, gender, age, socioeconomic status, ethnicity, geographic location, physical appearance, and ability. How these factors operate throughout the life cycle. Provides a knowledge base and perspective to understand a client's behavior, attitude, and values in relation to the attitudes and values of the social work professional and the larger society.

**Attributes:** Social Science (Discovery)**Grade Mode:** Letter Grading**SW 551 - Human Behavior and Social Environment II****Credits:** 4

Agents of socialization that most significantly affect family, group, and organizational development and behavior within an ecosystems framework. Particular attention is paid to the influence of class, gender, race, ethnicity, religion, age, sexual orientation and other aspects of diversity on development and behavior of larger systems.

**Attributes:** Social Science (Discovery)**Grade Mode:** Letter Grading**SW 565 - Introduction to Child Life****Credits:** 4

When facing acute, chronic, or life-threatening illness and traumatic injuries, children and families have unique needs within the medical system. The purpose of this course is to provide an introduction to the theory and practice of the child life profession and family centered care. Topics include children's emotional reactions to hospitalization, use of play, preparation, and family support, designing healing environments, and specializations within the field.

**Equivalent(s):** HDFS 565**Grade Mode:** Letter Grading**SW 601 - Research Methods in Social Work****Credits:** 4

Introduces students to practitioner-researcher role in social work. Critical evaluation of, and introduction to research including project design, survey and evaluative methodologies. Introduction to statistics used in research process. Each student completes an individual research project. Cannot be taken for credit after SOC 601 or PSYC 502. Prereq: SW 424 and junior or senior standing or permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** PSYC 502, SOC 601, SOC 601W**Grade Mode:** Letter Grading**SW 611 - Behavioral Health and Well Being****Credits:** 4

This course provides an overview of behavioral health and wellbeing through a social justice lens. While students will learn about the traditional approach to behavioral health including the diagnosis and assessment of "mental illness", they will also explore contemporary perspectives that view our behavioral health as inseparable from our bodies, families, communities, and other social determinants of health.

**Equivalent(s):** SW 711**Grade Mode:** Letter Grading**SW 622 - Social Work Practice: Interventions with Individuals and Families****Credits:** 4

Introduces methods and practice. Basic principles, values, and ethics, interviewing skills, problem assessment, and contracting of social work practice with individuals and families are studied. Skills training in lab sessions. Prereq: SW 424 or permission of instructor. Must have junior or senior status. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**SW 623 - Social Work Practice: Interventions with Groups, Organizations and Communities****Credits:** 4

Continuation of SW 622. Delineation and study of intervention and change strategies differentiated with individuals, groups, and communities. Prereq: SW 622. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**SW 625 - Social Welfare Policy in a Global Context****Credits:** 4

Builds on the curricular content covered in Introduction to Social Welfare Policy (SW 525). Both courses view social welfare policy as the framework from which social work services are developed and delivered. This course examines the macroeconomic context for policy analysis and advocacy and integrates policy and practice through student research and analysis of specific social problems. Policymaking is analyzed in legislative, community, organizational, and global environments emphasizing advocacy in the pursuit of social and economic justice. Prereq: SW 424, SW 525. Special fee.

**Grade Mode:** Letter Grading**SW 630 - Race Equity in Health and Human Services****Credits:** 4

The course will explore the social construction of individual and group racial and ethnic identities and their relationship to oppression, prejudice, discrimination, and powerlessness in social and interpersonal contexts and their impact on individuals, families, groups, organizations and communities. Students will have an opportunity to examine their own experiences of both privilege and oppression. Students will learn to critically examine theories, concepts, and models of practice for racial and cultural bias.

**Grade Mode:** Letter Grading**SW 650 - Exploring Social Justice and Cultural Competency Using an Experiential Learning Approach****Credits:** 4

This course explores the use of experiential activities to address social justice issues and cultural competency. Students will experience an interactive activity-based approach to build self-awareness and techniques for working with specific client groups. The course focuses on methods and activities using metaphoric development and facilitation to promote dialogue and reflection. (can be used to satisfy SW Distribution Requirement).

**Grade Mode:** Letter Grading**SW 660 - Exploring Issues in Housing and Homelessness****Credits:** 4

This course examines the meaning we attach to shelter in our society, and will examine multiple perspectives on the issues of housing and homelessness. The course will begin with a macro perspective and will draw on economic, humanistic, and historical perspectives to respond to this question, is housing a right? Students will also examine community development approaches to housing and their neighborhood effects. The course will conclude with an in-depth look at the complexities of homelessness.

**Grade Mode:** Letter Grading**SW 697 - Special Topics in Social Welfare****Credits:** 4

Seminar for advanced majors. Topics may include: Alcohol and Alcoholism, Drugs and Chemical Dependency, Income Maintenance, Health Care, Child Welfare, Aging, Mental Health, or Developmental Disabilities. or study travel experiences. May be repeated for different topics. Prereq: permission. Special fee for course trip.

**Repeat Rule:** May be repeated up to 1 time.**Grade Mode:** Letter Grading**SW 702 - Aging and Society****Credits:** 4

This course is designed to formalize students with biological, psychological, and sociological perspectives of aging and social services and policies for older people. This course covers a broad range of theories and contemporary issues in the field of aging. It also focuses on the strengths and limitations of existing programs and policies such as Social Security, Medicare, Medicaid, Supplemental Security Income, and other community services. Comparisons to developments in other countries will be made throughout the course to provide a broader context for understanding aging and programs/policies in the U.S.

**Grade Mode:** Letter Grading**SW 704 - Adolescents with Emotional and Behavioral Challenges****Credits:** 4

This course focuses on the characteristics and needs of youth with emotional and behavioral challenges based upon socio-cultural and ecological theories, and provides exposure to family- and youth-driven practices and approaches that represent System of Care values and principles.

**Grade Mode:** Letter Grading**SW 705 - Child and Adolescent Risks and Resiliency: Program, Policy and Practice****Credits:** 4

Examination of the major policy and program questions of child welfare with a focus on child care and protection, adoption and foster care, juvenile delinquency, service delivery, and concepts of treatment in public and private programs. Prereq: junior, senior status or permission.

**Grade Mode:** Letter Grading**SW 706 - Social Action in the Dominican Republic****Credits:** 4

This course examines issues of culture, poverty, social development and social justice in the Dominican Republic through both service learning work and through preparatory and reflective class sessions and discussions. Students will examine social and economic development issues within a global framework and will explore efforts to improve conditions on this island nation. The service learning component includes working on a designated construction project and volunteering in a local elementary school. Students will also collaborate with community leaders to learn more about social, cultural and historical issues and will engage in a variety of cross-cultural activities. Students will engage with the local Haitian immigrant community, tour local schools and orphanages, and visit historical areas including the Zona Colonial of Santo Domingo. The primary part of the class will take place during March spring break. Special fee.

**Co-requisite:** INCO 589**Grade Mode:** Letter Grading**SW 707 - Child Maltreatment****Credits:** 4

This course introduces students to advanced concepts in child welfare with an emphasis on child maltreatment assessment and child protective services. The course addresses emerging assessment practices, data informed child protective service provision, the role of technology in child welfare practice, and workforce development.

**Grade Mode:** Letter Grading

**SW 710 - SW and the Digital Age****Credits:** 4

This course focuses on the ever-changing landscape of technology as it relates to the Social Work field. Students will explore topics such as telehealth, online communities, assistive technology as well as digital advocacy. Ethical implications of the integration of technology into Social Work will be explored throughout the course. Students will work independently or collaboratively at a distance to create a multi-media project focused on a topic of interest within Digital Social Work.

**Grade Mode:** Letter Grading**SW 712 - Understanding Developmental Disabilities****Credits:** 4

Analysis of the complex social contexts of people with developmental disabilities. Explores and questions traditional approaches and the current system. Examines family and community services and resources. Prereq: junior, senior status or permission.

**Grade Mode:** Letter Grading**SW 713 - School Social Work****Credits:** 4

The course examines the school as a social institution that serves to educate and socialize children into US society and the role of the social worker in the school setting. Readings, activities, and discussions provide practical skills and theory for school social work practice. The course content addresses the history of school social work integrating social work values into a school setting, systemic needs within school settings, the importance of networking and professional collaboration, and working with diverse and at-risk youth and their families. Students also examine the role of school social workers in helping students, schools and families adjust to and cope with trauma, special education needs, and related topics.

**Grade Mode:** Letter Grading**SW #714 - Drugs and Alcohol: Use, Misuse and Addiction****Credits:** 4

This course examines a) historical, cultural, social aspects of alcohol, b) impact of alcohol on body and behavior, c) progression of drinking and the treatment and prevention of alcoholism, d) impact of addiction on families. Prereq: junior, senior status or permission.

**Grade Mode:** Letter Grading**SW 715 - Affirming Practice with Lesbian, Gay, Bisexual, Transgender, Queer+ People****Credits:** 4

This course addresses the task of clinical practice with lesbian, gay, bisexual, transgender, queer, questioning, asexual, intersex, two-spirit, genderqueer, pansexual, and beyond (LGBTQ+) people on both personal and professional levels for the social worker. The class makes use of personal narratives, as well as theoretical and clinical practice readings. Students are expected to explore and examine their own attitudes, beliefs, and assumptions about LGBTQ+ people.

**Grade Mode:** Letter Grading**SW 740 - Social Work Field Experience****Credits:** 4

Majors are placed in a social welfare setting for a minimum of 225 hours; individual arrangements with faculty coordinate. Prereq: SW 622. Special Fee. (No credit toward a minor). Cr/F.

**Co-requisite:** SW 740A**Equivalent(s):** SW 640**Grade Mode:** Credit/Fail Grading**SW 740A - Social Work Field Experience I: Seminar****Credits:** 4

This weekly seminar, held concurrently with Social Welfare Experience I, integrates the field experience with social work theory and concepts learned throughout the curriculum by class discussion, exercises, readings and written assignments. Seminar I provides an opportunity for orientation to field, an overview of field requirements, review of the Code of Ethics, and use of small group discussion for problem solving. Students learn to use supervision effectively, to participate in the helping process, and to manage their own stress. Students learn to assess the impact of policy on the client system, agency and worker and to use research to inform practice. Prereq: SW 622.

**Co-requisite:** SW 740**Equivalent(s):** SW 640A**Grade Mode:** Letter Grading**SW 741 - Social Work Field Experience II****Credits:** 4

A continuation of SW 740 with a minimum of 225 hours required in this term. Prereq: SW 740, SW 740A.

**Co-requisite:** SW 741A**Equivalent(s):** SW 641**Grade Mode:** Credit/Fail Grading**SW 741A - Social Work Field Experience II: Seminar****Credits:** 4

This is a continuation of Social Welfare Field Experience I: SW 740A and builds upon the concepts presented in the student's first field practice seminar. This seminar meets weekly for two and a half hours and is held concurrently with the field placement. It is designed to integrate the field experience with social work concepts through class discussion, reading and written assignments. Topics include but are not limited to, understanding and using agency structure to enhance client interactions, preparing client assessment and other documents, enhancing the client-worker therapeutic interaction, effective use of supervision, effective use of self in practice, prevention of burn-out, termination with clients and with agency staff, and values and ethics. Prereq: SW 740, SW 740A.

**Co-requisite:** SW 741**Equivalent(s):** SW 641A**Grade Mode:** Letter Grading**SW 785 - Study Abroad: Comparative Social Welfare Systems****Credits:** 4

Students examine the historical development of social welfare in another country including an analysis of the underlying values and attitudes that dictate practice and policy decisions. Includes agency site visits, lectures, themed readings, and visits to important cultural sites. Prereq: SW 424 and SW 525; junior, senior status or permission. Special fee.

**Co-requisite:** INCO 589**Grade Mode:** Letter Grading**SW 795 - Independent Study in Social Service****Credits:** 1-6

Independent work under department faculty guidance. Enrollment by permission only through arrangement with specific faculty. May be repeated with a different focus. Prereq: 12 hours social service coursework; permission. Special fee.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

**SW 796 - Independent Study: Teaching Assistantship****Credits:** 1-6

Participating students provide leadership and supervision for small groups of social work majors in social work practice simulations. Student teaching assistants work closely with, and under the direction of, department faculty. Prereq: senior status; 16 hours in social work; and permission. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**SW 797 - Special Topics in Social Welfare****Credits:** 4

Seminar for advanced majors cross-listed with SW 897. Topics may include: alcohol and alcoholism, drugs and chemical dependency, income maintenance, health care, child welfare, aging, mental health, or developmental disabilities or study travel experiences. May be repeated for different topics. Prereq: permission.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**SW 797H - Honors Thesis****Credits:** 2-4

Working with an assigned faculty adviser, students propose and develop a thesis project for both oral and written presentation before the end of the semester. Prereq for 797H: admission to the SW honors program; senior status, 16 hours in social work and permission.

**Attributes:** Honors course**Repeat Rule:** May be repeated for a maximum of 6 credits.**Grade Mode:** Letter Grading**SW 798 - Undergraduate Thesis in Social Work****Credits:** 1-6

Collaborating with a faculty adviser, students propose, develop, and implement a thesis research project for both oral and written presentation. The thesis must be a significant research project through which the student independently demonstrates their expertise in a specific topic area.

**Prerequisite(s):** SW 601 with a minimum grade of D-.**Repeat Rule:** May be repeated for a maximum of 6 credits.**Equivalent(s):** SW 798H**Grade Mode:** Letter Grading**SW 798H - Honors Thesis****Credits:** 2-4

Working with an assigned faculty adviser, students propose and develop a thesis project for both oral and written presentation before the end of the semester. Prereq: satisfactory completion of 797H; senior status, 16 hours in social work and permission.

**Attributes:** Honors course**Repeat Rule:** May be repeated for a maximum of 6 credits.**Grade Mode:** Letter Grading

## Sociology (SOC)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**SOC 400 - Introductory Sociology****Credits:** 4

Overview of sociology as the scientific study of human social and cultural relationships. Social theory, methods and techniques of research, and current research findings on a wide range of social issues.

**Attributes:** Social Science (Discovery)**Equivalent(s):** SOC 400H, SOC 400W**Grade Mode:** Letter Grading**SOC 402 - Statistics****Credits:** 4

Elementary applied statistical techniques; tables, graphs, cross-classifications; central tendency and dispersion; correlation and linear regression; confidence intervals and hypothesis testing. Other statistical classes including ADM 430, BIOL 528, ADMN 420, EREC 525, HHS #540, MATH 439, MATH 539, PHIL 412, MATH 644, PSYC 402 cannot be used to satisfy the major requirement. This is, all majors must take SOC 402 even if they have taken an introductory statistics course in another department. A student can, however, petition to receive eight credits for two introductory statistics courses, if and only if, SOC 402 is taken after the student became a sociology major and took their first statistics course prior to declaring SOC as their major. Majors cannot receive credit for statistics courses taken after they have declared SOC.

**Attributes:** Quantitative Reasoning(Disc)**Equivalent(s):** SOC #402H, SOC 502, SOC 502H

**Mutual Exclusion:** No credit for students who have taken ADM 430, ADMN 420, ADMN 510, BIOL 528, EREC 525, HHS 540, MATH 439, MATH 539, MATH 644, PSYC 402, PSYC 402H.

**Grade Mode:** Letter Grading**SOC #402H - Honors/Statistics****Credits:** 4

Elementary applied statistical techniques; tables, graphs, cross-classifications; central tendency and dispersion; correlation and linear regression; confidence intervals and hypothesis testing. No credit for students who have completed ADMN 430, BIOL 528, ADMN 420, EREC 525, HHS #540, MATH 439, MATH 539, MATH 644, PSYC 402, but petitions for acceptance of such courses to fulfill the sociology major requirement in statistics will be entertained.

**Attributes:** Honors course; Quantitative Reasoning(Disc)**Equivalent(s):** SOC 402, SOC 502, SOC 502H

**Mutual Exclusion:** No credit for students who have taken ADM 430, ADMN 420, ADMN 510, BIOL 528, EREC 525, HHS 540, MATH 439, MATH 539, MATH 644, PSYC 402, PSYC 402H.

**Grade Mode:** Letter Grading**SOC #440A - Honors/Drug Addiction in American Society****Credits:** 4

This course will introduce students to interdisciplinary topics in the study of drug addiction, drug panics, and the U.S. war on drugs. It will draw on scholarly and journalistic research to consider sociological theories, methods, and data gathering techniques in the study of addiction, and it will explore ways in which individuals create, interact with, and are shaped by social groups and institutions, including those associated with politics, health, economics, family, and the legal system.

**Attributes:** Honors course; Social Science (Discovery)**Grade Mode:** Letter Grading

**SOC 444A - Honors/Society in the Arctic****Credits:** 4

Introduction to societies of the far North today, from Alaska and Canada through Greenland, Iceland, northern Scandinavia and Russia. Reviews interconnected issues of social change, environment, sustainable development, local control, and modernization vs. traditions. Arctic dilemmas highlight some basic questions facing all societies in the 21st century. Writing intensive.

**Attributes:** Environment, TechSociety(Disc); Honors course; Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**SOC 450 - Contemporary Social Problems****Credits:** 4

This course introduces students to the study of major social problems in contemporary society, including poverty, discrimination, inequality, crime, violence, and environmental degradation. Explores how and why people come to view certain social conditions as problematic. Also explores the consequences of and possible solutions to contemporary social problems.

**Attributes:** Social Science (Discovery)

**Equivalent(s):** SOC 540

**Grade Mode:** Letter Grading

**SOC 515 - Introductory Criminology****Credits:** 4

Introduces the scientific study of crime. Reviews the different forms of criminal behavior, theories of crime, and strategies of crime control.

**Grade Mode:** Letter Grading

**SOC 520 - Family****Credits:** 4

Sociological study of marriage and the family in American society. Following a life-cycle approach, topics include gender roles, communication and conflict, dating and mate selection, work and family economics, the transition to parenthood, middle- and late-life family, divorce, and remarriage.

**Equivalent(s):** SOC 520H

**Grade Mode:** Letter Grading

**SOC 525 - Juvenile Crime and Delinquency****Credits:** 4

Crime, violence, and the criminal justice system as it affects children and youth in the role of both perpetrators and victims.

**Grade Mode:** Letter Grading

**SOC 530 - Race and Racism****Credits:** 4

This course scientifically examines the system of race as it evolved in the United States and its resulting impacts. By the end of the course, students should have: an in-depth understanding of the origins of race and racism; be able to identify, explain, and apply various sociological concepts and theories pertaining to race, ethnicity, and racial oppression; and be able to conceptualize, operationalize, and test a line of scientific inquiry about race.

**Grade Mode:** Letter Grading

**SOC 535 - Homicide****Credits:** 4

An introduction to theory and research in homicide studies, including a review of the origins of and social responses to homicide.

**Grade Mode:** Letter Grading

**SOC 565 - Environment and Society****Credits:** 4

Environment and Society focuses on the complex interactions between human communities and the natural world. The course considers the interconnected ways that social systems, the built environment, and related technologies produce environmental changes, and in turn how shifts in resources, air, water quality, climate, biodiversity, and ecosystems force societies to adapt. This course fulfills in the Environment, Technology, and Society category of UNH's Discovery Program.

**Attributes:** Environment, TechSociety(Disc)

**Grade Mode:** Letter Grading

**SOC 570 - Sexual Behavior****Credits:** 4

This course approaches sexuality as a social phenomenon. We examine variability in sexual practices, sexual identities, and sexual behaviors throughout history, across cultures, and throughout the life course of individuals. Particularly, we focus on the social control of sexuality and the extent to which sexualities are socially constructed. We consider the media and other cultural influences on a diverse range of sexual experiences and take a straightforward, non-stigmatizing approach to tackling controversial issues.

**Grade Mode:** Letter Grading

**SOC #590 - Global Social Conflict****Credits:** 4

This course examines the causes and consequences of worldwide economic, cultural, and political conflict in the age of globalization. Issues covered include: economic inequality, gender, race, health, environmental sustainability, and violent extremism throughout the modern world.

**Grade Mode:** Letter Grading

**SOC 595 - Independent Reading and Research****Credits:** 2-8

Independent study of advanced or specialized topics in sociology requiring extensive reading and writing. Before registering, students must develop a project in consultation with a faculty supervisor and submit a proposal to the undergraduate committee. Prereq: 12 sociology credits and permission.

**Grade Mode:** Letter Grading

**SOC 597 - Special Topics****Credits:** 4

Occasional or experimental offerings. May be repeated baring duplication of subject.

**Repeat Rule:** May be repeated up to unlimited times.

**Grade Mode:** Letter Grading

**SOC 599 - Sociological Analysis****Credits:** 4

Basic skills essential to sociological study, including: development of critical reading skills; evaluation of theory construction and evidence; analysis of classic and contemporary works, research, writing, and use of library resources. To be taken by sociology majors no later than the junior year. Writing intensive.

**Attributes:** Inquiry (Discovery); Writing Intensive Course

**Equivalent(s):** SOC 599W

**Grade Mode:** Letter Grading



**SOC 601 - Methods of Social Research****Credits:** 4

Overview of major research methods: survey analysis, personal interview, participant observation, content analysis, and experimental design. Each student designs and completes a research project. Prereq: SOC 402 or SOC 502 or equivalent; juniors and seniors only.

**Attributes:** Writing Intensive Course**Equivalent(s):** PSYC 502, SW 601, SW 601W**Grade Mode:** Letter Grading**SOC 611 - Sociological Theory****Credits:** 4

Analysis of the origins and development of sociological theory. Includes the classical works of Marx, Weber, and Durkheim and their connections to the major strands of present day research. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**SOC 620 - Drugs and Society****Credits:** 4

Provides students with an overview of drug using behavior as viewed from a sociological perspective. Highlights historical and current drug use trends, examines the social correlates of drug use, considers societal responses to drug use including treatment, prevention, and policy, and engages students in key controversial debates confronting U.S. citizens and policymakers. Provides a foundation for understanding of drugs and society.

**Grade Mode:** Letter Grading**SOC 625 - Mental Health and Society****Credits:** 4

This course introduces students to sociological approaches for studying and understanding mental health and illness in society. With an emphasis on the importance of social stress, we examine the distribution of mental illness in the United States and identify the factors that help to explain mental health differences across social roles and statuses.

**Grade Mode:** Letter Grading**SOC 627 - Sociology of Fashion****Credits:** 4

This course explores how clothing, accessories, and bodily adornment are socially constructed processes. We apply a sociological lens to uncover how fashion intersects with: social identities and aspirations; fads and trends; historical forces; how we modify our bodies; production and consumption of clothing and shoes; race, class, and gender; labor and human rights; globalization and trade; technology, and environmental issues in clothing production. Cannot earn credit if previously earned credit for SOC 697 "Special Topics Sociology of Fashion".

**Grade Mode:** Letter Grading**SOC 635W - Medical Sociology****Credits:** 4

Health and Illness are considered as a sociocultural phenomenon. Meanings are attached to health and illness as they are influenced by our social values and our cultural beliefs, which to a large degree are influenced by available medical technologies. People's experiences of health and illness are shaped by a range of social factors (e.g., race, class, gender) and follow clear patterns of social inequality. A critical approach is taken to examine topics such as the social determinants of health, illness and healthcare; the social construction of illness; the medicalization of society; and the social organization of health care. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** SOC 635**Grade Mode:** Letter Grading**SOC #640 - Religion****Credits:** 4

The continuing significance of religion in society is a central area of sociological inquiry. Examines the historical and cultural explanations for the persistence of religion and apply diverse sociological perspectives to explaining the personal, institutional, and cultural relevance of religion with a focus on contemporary American society. Topics studied include religious authority, identity, violence, and the impact of religion on various domains of social life including gender relations, family, politics, and economy. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**SOC 645 - Class, Status and Power****Credits:** 4

Focuses on the major dimensions of inequality, including class, gender, and race, by exploring the distribution of economic, political, and social resources within contemporary societies.

**Equivalent(s):** SOC 645W**Grade Mode:** Letter Grading**SOC 647 - Sociology of Work and Well-Being****Credits:** 4

What constitutes a 'good job' or a 'bad job'? What characteristics of jobs are harmful, and which job conditions protect worker health and wellbeing? In this course, we focus heavily on the nature of job stress, where it comes from, and why some people experience more of it than others. Topics will include socioeconomic disparities in stress exposure, gender and racial discrimination in the workplace, gig work and online platforms, social protection policies, and COVID-19. Cannot earn credit if already taken SOC 697 under the special topic "Work and Well-Being".

**Grade Mode:** Letter Grading**SOC #655 - Sociology of Law and Justice****Credits:** 4

Systematic study of how social factors, such as inequality, differentiation, culture, and organization, influence the justice process. Historical and cross-cultural focus on the behavior of the police, courts, and other legal institutions. Prereq: SOC 515 or permission; juniors and seniors only.

**Grade Mode:** Letter Grading**SOC #656 - Terrorism****Credits:** 4

This course provides a global assessment of the definition and nature of terrorism, trends in terrorism over the course of the past several decades, perspectives concerning the degree to which cultural, economic, and political conflict contribute to terrorism, and alternative means for dealing with terrorism in the age of globalization.

**Grade Mode:** Letter Grading**SOC 660 - Urban Sociology****Credits:** 4

Urban Sociology focuses on urban communities, urbanization, and urban social issues. Covers the historical development of cities; the difference between urban, suburban, and rural communities; urban life styles; and the significance of poverty and race for understanding contemporary American cities. Emphasizes American cities, with some consideration to world patterns of urbanization and the growth, development, and role of global cities.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**SOC 665 - Environmental Sociology****Credits:** 4

Interactions between society and the physical environment, including environmental constraints, population and economic growth, social impacts of resource development, large-scale environmental change, and the social bases of environmental attitudes, behavior, and politics. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** SOC 665W**Grade Mode:** Letter Grading**SOC 693 - Global Social Change****Credits:** 4

This course explores the causes and consequences of social change in societies around the world. Case studies of important social trends such as the diffusion of culture, international migration, health pandemics, changing status of women, environmental degradation, and promoting more equitable development enable investigation of the broad social implications of the process of globalization. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**SOC 697 - Special Topics****Credits:** 4

Occasional or experimental offerings. May be repeated for different topics.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to 2 times.**Grade Mode:** Letter Grading**SOC #715 - Criminological Theory****Credits:** 4

Introduces graduate students and advanced undergraduates to the major theoretical literature in crime and delinquency. Covers both classical and contemporary theory, with empirical assessments of theories, including macro- and micro-level control, strain, and learning theories, as well as recent developments in biosocial, deterrence, labeling, and critical/feminist theories. Permission required.

**Grade Mode:** Letter Grading**SOC 720 - Sociology of Drug Use****Credits:** 4

Examines licit and illicit drug use from a sociological perspective. Draws primarily from the sociology of mental health and criminology to explore a variety of drug-related topics including historical and current U.S. drug trends, dominant theoretical approaches about the initiation into, and continued use of drugs, drug-related crime, therapeutic use of drugs, prevention and treatment of drug problems, and drug-related policies. Permission required.

**Grade Mode:** Letter Grading**SOC 725 - Social Demography****Credits:** 4

Social demography examines the linkages between changes in the size, composition and distribution of the population and changes in social, environmental, economic and political factors. The course examines demographic methods and the materials and the analytical techniques used by demographers to analyze population redistribution, fertility, work, marriage, migration and mortality. The policy implications of demographic change will be examined with attention to the U.S. as well as the developed and developing world. Permission required.

**Grade Mode:** Letter Grading**SOC 730 - Communities and the Environment****Credits:** 4

People and the natural environments in which they live fundamentally structure communities around the globe. Economic change, expanding development, and human migration are transforming social and environmental conditions in both rural and urban settings, altering the identities of many communities as well as their relationships with the natural world. The importance of these emerging social and environmental issues has made them a focus for social science inquiry. This course exposes students to a range of sociological concepts, theories, and research approaches related to the study of communities and environmental issues. Some of the substantive themes that are covered include: population dynamics and environmental change; social capital and social networks; political economy and community development; collective action and social movements; science, technology, and environmental risks; and environmental racism and justice. The principal assignment for the course will be a research project where students investigate a community or environmental issue of their own interest. Permission required.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**SOC 740 - Sociology of Mental Health****Credits:** 4

Introduces students to different sociological approaches for studying and understanding mental health and illness. Students examine the social distribution of mental illness in the United States and the social-structural factors that help to explain mental health variations. Also addresses issues surrounding mental health treatment, systems, and policies for the mentally ill. Permission required.

**Grade Mode:** Letter Grading**SOC 745 - Race, Ethnicity, and Inequality****Credits:** 4

Sociological perspectives on race and ethnic relations for graduate and advanced undergraduate students. Topics include the creation of racial and ethnic identities, the nature and extent of segregation, education, employment, and wealth inequalities, and the effects of state policy. The course emphasizes both theoretical and empirical assessments. Permission required.

**Grade Mode:** Letter Grading**SOC 773 - Childhood and Social Policy****Credits:** 4

Exposes students to a variety of sociological perspectives about childhood in American society. Stimulates analysis about how social institutions, like the modern family, school, economic system, justice system and communications media affect children. Assumes prior understanding of important sociological concepts, critical thinking skills and social science writing ability. Permission required. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**SOC 788 - Advanced Medical Sociology****Credits:** 4

This course is intended to provide an in-depth introduction to the major theoretical frameworks of medical sociology and empirical research examining social factors that influence individual's health and illness. We will take a critical approach in our examination of: the distribution of health and illness (by socioeconomic status, sex/gender, and race/ethnicity); medicalization and social control; and the social construction of health and illness. Most of the learning in this course will take place through shared facilitation of class discussions based on the reading. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**SOC 792 - Internship Independent Study****Credits:** 2-8

Provides upper level sociology majors with an opportunity to apply what they have learned in the classroom to the real world. This will provide the opportunity for students to work individually with a faculty member on an Internship with the option of variable credit. There is no formal class time required. Students will arrange meetings with supervising faculty to plan assigned readings, update internship progress and complete semester projects. Project ideas are developed with faculty and internship site supervisor. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**SOC 797 - Special Topics****Credits:** 4

Occasional or experimental offerings. May be repeated for different topics. Permission required. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** SOC 797W**Grade Mode:** Letter Grading**SOC 799 - Senior Thesis****Credits:** 4 or 8

Independent work in the library or field culminating in a written senior thesis. Recommended for, but not confined to, majors intending to pursue graduate studies. Students must arrange for supervision from two faculty members and submit a proposal to the Undergraduate Committee before registering. May be completed in one or two successive semesters during the senior year. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** SOC 699**Grade Mode:** Letter Grading**SOC 799H - Senior Honors Thesis****Credits:** 4 or 8

Independent work in the library or field culminating in a written senior honors thesis and a formal research presentation. Recommended for, but to be confined to, majors intending to pursue graduate studies. Required for students participating in the departmental honors program as part of their 16 honors credits. Students must arrange for supervision from two faculty members and submit a proposal to the Undergraduate Committee before registering. May be completed in one or two successive semesters during the senior year. Permission required.

**Attributes:** Honors course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** SOC 699H**Grade Mode:** Letter Grading

## Spanish (SPAN)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**SPAN 401 - Elementary Spanish I****Credits:** 4

Conducted in Spanish. For students with no previous knowledge of Spanish. Development of listening comprehension, speaking, reading, and writing skills, as well as cultural awareness of the Hispanic world. No credit for students who have had two or more years of Spanish in secondary school; however, any such students whose studies of Spanish have been interrupted for 5 years or more should consult the coordinator of elementary Spanish. SPAN 401-402 taken together satisfy the foreign language requirement.

**Grade Mode:** Letter Grading**SPAN 402 - Elementary Spanish II****Credits:** 4

Conducted in Spanish. Development of listening comprehension, speaking, reading, and writing skills, as well as cultural awareness of the Hispanic world. SPAN 401 is a prerequisite for this course. Cannot be taken separately without permission of the instructor. SPAN 401-402 taken together satisfy the foreign language requirement.

**Attributes:** Foreign Language Requirement**Grade Mode:** Letter Grading**SPAN 403 - Review of Spanish****Credits:** 4

Conducted in Spanish. Accelerated elementary Spanish course, designed for those who have had only 2 years of High school Spanish. Does not satisfy the foreign language requirement. Preparation for Spanish 503.

**Equivalent(s):** SPAN 501**Grade Mode:** Letter Grading**SPAN 503 - Intermediate Spanish I****Credits:** 4

Conducted in Spanish. Further development of reading, writing, speaking, and listening skills. Development of intercultural awareness through discussion and short papers in Spanish based on authentic texts from the Hispanic world. Counts toward the major and the minor in Spanish. Satisfies the Foreign Language Requirement.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** SPAN 503H**Grade Mode:** Letter Grading**SPAN 504 - Intermediate Spanish II****Credits:** 4

Conducted in Spanish. Further development of reading, writing, speaking, and listening skills. Development of intercultural awareness through discussion and short papers in Spanish based on authentic texts from the Hispanic world. Counts towards the major and minor in Spanish. Satisfies the foreign language requirement.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** SPAN 504H**Grade Mode:** Letter Grading

**SPAN 525 - Introduction to Spanish Cultures****Credits:** 4

Historical, geographical, and artistic expressions of Spanish cultures that have formed the character of contemporary Spanish culture. Majors may take either SPAN 525 or SPAN 526 or another English language course with advisor approval, but only one can be counted for major credit.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**SPAN 526 - Introduction to Latin American Cultures****Credits:** 4

Significant historical, geographical, and artistic expressions of pre-Colombian and Latin America cultures. Conducted in English. Counts towards the major and the minor in Spanish.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** SPAN 526H, WLCE 526S**Grade Mode:** Letter Grading**SPAN 535B - Professional Culture in Latin America - Case Study: Mexico and Brazil****Credits:** 4

Conducted in English. No previous Spanish or Portuguese required. Conducting business with countries in Latin America with a particular emphasis on Mexico and Brazil. The course focuses on the central role played by professional culture and business practices in the global marketplace.

**Attributes:** World Cultures(Discovery)**Equivalent(s):** LLC 535B**Grade Mode:** Letter Grading**SPAN 595 - Practicum****Credits:** 2-4

Practical use of Spanish language or cultural skills outside the classroom through special projects. Prereq: SPAN 504.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Grade Mode:** Letter Grading**SPAN 631 - Advanced Conversation and Composition I****Credits:** 4

Emphasis on presentational, interpersonal, written or spoken Spanish through in-class and online discussions and frequent out of class assignments based on cultural and literary readings and films. May include service learning option. Prereq: SPAN 504 or equivalent. Satisfies the foreign language requirement. Required for Spanish major and minor. The course sequence SPAN 631-SPAN 632 may be taken in any order.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Equivalent(s):** SPAN 631H**Grade Mode:** Letter Grading**SPAN 632 - Advanced Conversation and Composition II****Credits:** 4

Emphasis on presentational, interpersonal, written or spoken Spanish through in-class and online discussions and frequent out of class assignments based on cultural and literary readings and films. May include service learning option. Satisfies the foreign language requirement. The course sequence SPAN 632-SPAN 631 may be taken in any order.

**Attributes:** World Cultures(Discovery); Writing Intensive Course**Equivalent(s):** SPAN 632H**Grade Mode:** Letter Grading**SPAN 641 - Spanish Language Variation & Change****Credits:** 4

This course introduces students to the variation in the Spanish spoken today in Spain, Latin America, and the U.S. Students will improve speaking and listening skills through close study of pronunciation and language variation (geographic, social class, age, gender/sexuality, etc.). Students will deepen their understanding of language and culture through examining the relationship between language variation and language change in the Spanish-speaking world. This class is conducted in Spanish. Prereq: SPAN 631 or SPAN 632.

**Grade Mode:** Letter Grading**SPAN 645 - Intro to Spanish Linguistics****Credits:** 4

Establishes the basis for future application of linguistic principles. Explores different areas of linguistics including morphology, word formation and verbal inflection. Issues in syntax and semantics are analyzed both in isolation and in terms of their relationship to each other. Students will be equipped with the skills necessary to apply these linguistic concepts to actual Spanish language data and to achieve a better understanding of the structures governing the language they are studying. Conducted in Spanish. Prereq: SPAN 631 and/or SPAN 632 (or equivalent).

**Grade Mode:** Letter Grading**SPAN 647 - Topics in Hispanic Cultural Studies****Credits:** 4

Contemporary approaches to the study of Hispanic cultural practices and perspectives that examine the intersections of politics, art, religion and the forces of globalization with the aim of further development of intercultural competence. Conducted in Spanish. May be taken more than once for credit if no duplication of content. Prereq: SPAN 631 or SPAN 632 (or equivalent).

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**SPAN 648 - The Hispanic World Today****Credits:** 4

This course focuses on researching and discussing contemporary issues in Spain and/or Latin America while improving reading and oral performance. Primary sources include newspapers, resources from the internet, and/or archival materials. Prereq: SPAN 631 or SPAN 632 (or equivalent).

**Equivalent(s):** SPAN 691, SPAN 692**Grade Mode:** Letter Grading**SPAN 650 - Hispanic Literature and Popular Culture****Credits:** 4

The study of literary texts and popular literary art forms. Prereq: SPAN 621 and/or SPAN 632 (or equivalent).

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**SPAN 651 - Introduction to Spanish Literature and Thought****Credits:** 4

Reading and analysis of major works within the historical, cultural, and social background of the Iberian peninsula. Emphasis on works from medieval to Golden Age Spain. Conducted in Spanish. Prereq: SPAN 631 and/or SPAN 632 (or equivalent).

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading



**SPAN #652 - Introduction to Spanish Literature and Thought****Credits:** 4

Reading and analysis of major works within the historical, cultural, and social background of the Iberian peninsula. Emphasis on works from 19th century to contemporary works in Spain. Conducted in Spanish. Prereq: SPAN 631 and/or SPAN 632 (or equivalent).

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**SPAN 653 - Introduction to Latin American Literature and Thought****Credits:** 4

Reading and analysis with thematic focus on historical, cultural, and social backgrounds of Precolombian, colonial, and modern cultures in Latin America. Conducted in Spanish. Prereq: SPAN 631 and/or SPAN 632 (or equivalent).

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**SPAN 654 - Introduction to Latin American Literature and Thought****Credits:** 4

Reading and analysis of major works within the historical, cultural, and social background of Latin America. Emphasis on works in the 20th-21st century. Conducted in Spanish. Prereq: SPAN 631 and/or SPAN 632 (or equivalent).

**Attributes:** Humanities(Disc); Writing Intensive Course**Grade Mode:** Letter Grading**SPAN 683 - Summer Study in Costa Rica****Credits:** 0 or 8

Studies in San Joaquin de Flores, Costa Rica. Six week summer immersion program for undergraduate students. Prereq: a minimum of 32 credit hours with an overall GPA of 2.5. Interested students should contact the program director. Spanish majors only. Special fee. Cr/F.

**Co-requisite:** INCO 589**Grade Mode:** Credit/Fail Grading**SPAN 686 - Study Abroad/Granada****Credits:** 0 or 20

Studies in Granada, Spain. Prereq: primarily for juniors and seniors who have passed SPAN 503-SPAN 504 or equivalent with a grade of B (3.00) or better. Noncredit orientation meetings required during semester prior to departure. Interested students should consult with the program directors. Special fee. Cr/F. (An IA [continuous grading] grade will be assigned until official transcript is received from the foreign institution.)

**Co-requisite:** INCO 588**Attributes:** World Cultures(Discovery)**Grade Mode:** Credit/Fail Grading**SPAN 790 - Topics in Second Language Acquisition/Pedagogy/****Methodology****Credits:** 4

A) Introduction to Second Language Acquisition, B) Internet Technologies and Second Language Learning. Prereq: permission of instructor. May be taken more than once if no duplication of content.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**SPAN 795 - Independent Study****Credits:** 1-4

Guided individual study with training in bibliography and organization of materials. Topics selected by instructor and student in conference. Barring duplication of content, may be repeated for credit. Prereq: permission of instructor.

**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** SPAN 797**Grade Mode:** Letter Grading**SPAN 797 - Topics in Hispanic Literary and Cultural Studies****Credits:** 4

A) Medieval Spanish Literature, B) Spanish Literature of the Renaissance and the Golden Age, C) Spanish Literature of the 18th and 19th Centuries, D) Spanish Literature of the 20th Century (Poetry/Theater/Prose), E) Contemporary Spanish Literature, F) Spanish Cultural Studies, G) Latin American Literature of the 16th and 17th Centuries, H) Latin American Literature of the 18th and 19th Centuries, I) 20th Century Latin American Literature (Poetry/Theater/Prose), J) Contemporary Latin American Literature, K) Cyberliterature and Cyberculture, L) Transatlantic Studies, M) Spanish and Latin American Philosophy and Essay, N) Indigenous Cultural Expression of the Americas, O) Hispanic Film Studies, P) U.S. Hispanic Cultural Studies, Q) Latin American Cultural Studies, R) Senior Seminar, S) Other. Prereq: permission of instructor. May be taken more than once for credit if no duplication of content. Any course in this category can be counted as your major discover capstone. Consult with your advisor.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 16 credits.**Equivalent(s):** SPAN 799**Grade Mode:** Letter Grading**SPAN 798 - Topics in Hispanic Linguistics and Cultural Studies****Credits:** 4

A) History of the Spanish Language, B) Study of Spanish Mood and Aspect, C) Sociolinguistics of Spanish, D) Discourse Analysis, E) Politeness and Pragmatics, F) Bilingualism and Spanish in the U.S., G) Spanish Pronouns, Agreement and Modifiers, H) Regional and Social Variation in Spanish Phonetics, I) Other. Prereq: permission of instructor. May be taken more than once for credit if no duplication of content. Any course in this category can be counted as your major discovery capstone. Consult with your advisor.

**Repeat Rule:** May be repeated up to unlimited times.**Equivalent(s):** SPAN 796**Grade Mode:** Letter Grading**SPAN 799 - Senior Honors****Credits:** 4

For senior Spanish majors with a minimum cumulative grade-point average of 3.40 and the same or better average in the major who want to undertake a special honors project in an area of Spanish language or literature of their choice. Prereq: permission of advisor and departmental approval necessary.

**Attributes:** Honors course**Grade Mode:** Letter Grading



# Sports Management & Leadership (SML)

## SML 521 - Theory of Coaching Basketball

**Credits:** 2

Individual team offense and defense, rules of the game. Problems in team handling and conditioning.

**Prerequisite(s):** (SPST 565 (may be taken concurrently) with a minimum grade of D- or SML 565 (may be taken concurrently) with a minimum grade of D-).

**Equivalent(s):** KIN 521, SPST 521

**Grade Mode:** Letter Grading

## SML 522 - Theory of Coaching Football

**Credits:** 2

Systems of play, team and individual offensive and defensive fundamentals, theory and strategy of team play, coaching methods, physical conditioning, rules.

**Prerequisite(s):** (SPST 565 (may be taken concurrently) with a minimum grade of D- or SML 565 (may be taken concurrently) with a minimum grade of D-).

**Equivalent(s):** KIN 522, SPST 522

**Grade Mode:** Letter Grading

## SML 523 - Theory of Coaching Ice Hockey

**Credits:** 2

Basic hockey skills. Fundamentals of individual and team offense and defense; coaching methods; rules. Student must have basic skating skills prior to taking course. Special fee.

**Prerequisite(s):** (SPST 565 (may be taken concurrently) with a minimum grade of D- or SML 565 (may be taken concurrently) with a minimum grade of D-).

**Equivalent(s):** KIN 523, SPST 523

**Grade Mode:** Letter Grading

## SML 525 - Theory of Coaching Soccer

**Credits:** 2

Fundamental and advanced skills and techniques; offensive and defensive principles of team play; tactical formations and strategy; methods of training and practicing; rules.

**Prerequisite(s):** (SPST 565 (may be taken concurrently) with a minimum grade of D- or SML 565 (may be taken concurrently) with a minimum grade of D-).

**Equivalent(s):** KIN 525, SPST 525

**Grade Mode:** Letter Grading

## SML 528 - Theory of Coaching Track and Field

**Credits:** 2

Starting, sprinting, middle-distance and distance running, relay, hurdling, high and broad jumping, pole vault, shot putting, discus, hammer, and javelin. Methods of training and practicing.

**Prerequisite(s):** (SPST 565 (may be taken concurrently) with a minimum grade of D- or SML 565 (may be taken concurrently) with a minimum grade of D-).

**Equivalent(s):** KIN 528, SPST 528

**Grade Mode:** Letter Grading

## SML 560 - Sport Psychology

**Credits:** 4

Introduction to the discipline of sport psychology. Explores behavioral, cognitive, and social psychology in relation to elite, collegiate and high school athletes, as well as recreational sport participants.

**Equivalent(s):** KIN 560, SPST 560

**Grade Mode:** Letter Grading

## SML 561 - History of American Sport and Physical Culture

**Credits:** 4

Major individuals, organizations, and trends that influenced the development of an American industry in sports, active recreation, and physical fitness. Readings, discussions, and research projects provide experience in the craft and utility of history.

**Attributes:** Historical Perspectives(Disc)

**Equivalent(s):** KIN 561, KIN 561W, SPST 561, SPST 561W

**Grade Mode:** Letter Grading

## SML 561W - History of American Sport and Physical Culture

**Credits:** 4

Major individuals, organization and trends that influenced the development of an American industry in sports, active recreation, and physical fitness. Reading, discussions and research projects provide experience in the craft and utility of history.

**Attributes:** Historical Perspectives(Disc); Writing Intensive Course

**Equivalent(s):** KIN 561W, SPST 561W

**Grade Mode:** Letter Grading

## SML 562 - Sport Media Relations

**Credits:** 4

A survey of basic concepts of sports media relations for students considering careers in school or college sports coaching or administration, media or related fields. The focus is on developing necessary skills, techniques and recommended media relations practices as well as social implications of the media in sports public relations including print, radio, television, the World Wide Web and social media.

**Equivalent(s):** KIN 562, SPST 562

**Grade Mode:** Letter Grading

## SML 564 - Introduction to Sport Marketing

**Credits:** 4

An introductory study of sport marketing, which includes the basic principles, key scholars, relevant scholarship, and necessary experiential elements to aid students in understanding the discipline's applied and academic aspects. This course will introduce traditional marketing concepts as well as focus on the marketing of sport and through sport.

**Equivalent(s):** KIN 564, SPST 564

**Grade Mode:** Letter Grading

## SML 565 - Principles of Coaching

**Credits:** 4

Overviews current theory and practice in coaching education, including sport pedagogy, physiology, psychology, administration and risk management. Issues of performance and competition specific to child, youth and collegiate coaching are addressed.

**Equivalent(s):** KIN 565, SPST 565

**Grade Mode:** Letter Grading

## SML 565A - Clinical Practice in Coaching

**Credits:** 2

Students will learn and utilize best practices in the field to create safe, positive and effective coaching environments while teaching technical and tactical sport skills. Group management, motivation skill progression, evaluation and feedback will be explored. An emphasis will be placed on writing and implementing practice objectives, as well as effective practice design and execution. This course will include weekly practical coaching sessions.

**Prerequisite(s):** SML 565 with a minimum grade of D- or SPST 565 with a minimum grade of D-.

**Equivalent(s):** SPST 565A

**Grade Mode:** Letter Grading

**SML 568 - Global Perspectives in Sport****Credits:** 4

Global Perspectives in Sport explores the intersections of management and the cross cultural context of sport in examining issues and challenges in sport around the globe. This course will prepare students to think critically about the organization, governance, business activities, and cross-cultural context of modern sport on an international level.

**Equivalent(s):** KIN 568, SPST 568**Grade Mode:** Letter Grading**SML 580 - Sport Industry****Credits:** 4

Overviews the various segments that make up the sport industry, including governing bodies, the mass media, sporting goods firms, players' and coaches' associations, public regulatory agencies, and secondary and higher education. Readings and discussions consider the development and structure of each segment. Interaction between segments, legal issues, and policy implications. While the course will focus on the United States, there is some comparison to other countries.

**Equivalent(s):** KIN 580, SPST 580**Grade Mode:** Letter Grading**SML 630 - Sport Facility and Event Management****Credits:** 4

Students learn the principles and processes involved in effective sport facility and event management. In terms of facilities, students explore the concepts of facility design, planning, systems, risk management, marketing, and ownership. In terms of events, students explore the concepts of creation, impact(s) on host communities, marketing/ sponsorship, and the potential positive and negative outcomes of sport events. Special fee.

**Equivalent(s):** KIN 630, SPST 630**Grade Mode:** Letter Grading**SML 631 - Sport Media Production****Credits:** 4

Sport media professionals are expected to write their own scripts, produce their own content, and distribute that content on multiple digital platforms. Sport Media Production is designed to combine media management with production work in digital media, video, podcasting and website design. This course examines many of the current distribution platforms (Twitter, Facebook, Youtube, blogs, mobile applications) and the tools to create media for these outlets. In this course, students will create media using Adobe Creative Cloud and current video-editing systems.

**Prerequisite(s):** (SML 562 with a minimum grade of D- or SPST 562 with a minimum grade of D-).**Equivalent(s):** KIN 631, SPST 631**Grade Mode:** Letter Grading**SML 634 - Sport Sponsorship and Sales****Credits:** 4

The goal of this course is for students to develop an understanding of all aspects of sport sales and sponsorship. This course will explain the intricacies of both sport sales and sport sponsorship as well as demonstrate the ways they overlap and differ. Specifically, this course will cover concepts such as aftermarketing, up-selling, benefit selling, and sponsorship proposals.

**Equivalent(s):** KIN 634, SPST 634**Grade Mode:** Letter Grading**SML 643 - Social Media Marketing in Sport****Credits:** 4

Students examine the use of social media as a tool in the marketing of sport and sport-related products. They are expected to effectively analyze and prescribe different ways in which social media can enhance the marketing profile of such products upon course completion. Student work should facilitate a deep understanding of social media in its constituent forms as they apply to sport and students should be able to examine such use critically.

**Equivalent(s):** KIN 643, SPST 643**Grade Mode:** Letter Grading**SML 645 - Leadership in Sport****Credits:** 4

This course examines leadership theories and behavior as it relates to the sport industry. Students will study leadership behavior as it relates to coaching, administering athletic departments or programs, and directing sport-related businesses. Additionally, this course will explore the ethical issues dilemmas, and ethical decision-making process sport managers face in professional, collegiate and interscholastic sport.

**Equivalent(s):** SPST 645**Grade Mode:** Letter Grading**SML 650C - Internship in Sport Management and Leadership****Credits:** 1-8

Experiential learning in a setting appropriate to the major option and to student's objectives. An 8 credit internship requires a minimum of 600 hours experience; fewer credits will require proportionally fewer hours. May be on- or off-campus with an approved organization. Student must participate in securing the internship. A journal, bi-weekly reports and a final paper required. May be repeated, with no more than 8 credits taken in any given semester.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Equivalent(s):** KIN 650C, SPST 650C**Grade Mode:** Letter Grading**SML 650D - Internship in Coaching****Credits:** 2-4

Experiential learning in a setting appropriate to student's learning objectives in coaching. May be on- or off-campus with an approved organization. Student must participate in securing the assistantship. A journal, bi-weekly reports, and final report required.

**Prerequisite(s):** (SPST 565 with a minimum grade of D- or SML 565 with a minimum grade of D-).**Repeat Rule:** May be repeated for a maximum of 12 credits.**Equivalent(s):** KIN 650D, SPST 650D**Grade Mode:** Letter Grading**SML 693 - Teaching Assistantship****Credits:** 2

A) Physical Education Pedagogy; B) Exercise Leader; C) Outdoor Education; D) Science Labs; E) Cardiac Rehabilitation; F) Coaching. Students serve as teaching teaching assistants in assigned class activities. Assignments to be made by the class instructor may include teaching assistants' and administrative duties. May be repeated barring duplication of subject.

**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** KIN 693, SPST 693**Grade Mode:** Credit/Fail Grading

**SML 696 - Independent Study****Credits:** 2-4

An advanced, individual scholarly project under the direct supervision of a faculty member.

**Equivalent(s):** KIN 696, SPST 696**Grade Mode:** Letter Grading**SML 696W - Independent Study****Credits:** 2-4

An advanced writing-intensive, individual scholarly project under the direct supervision of a faculty member. Student and Faculty advisor will prepare a written proposal that outlines: questions to be pursued, methods of investigation, students qualifications to conduct the research, nature of finished written product (e.g. case study, position paper, extended lab report). Proposal must be approved by major faculty and dept. chair prior to students registration for SML 696W. All SML 696W projects must include Some forms of informal, ungraded writing such as a journal, reading summaries, draft chapters, or invention activities. Regular writing interaction between student and faculty adviser (i.e. at least weekly or biweekly), to include written feedback from the adviser. A finished product that is polished via revision. Faculty sponsors and students should consult the resources and guidelines of the UNH Writing Program.

**Attributes:** Writing Intensive Course**Equivalent(s):** KIN 696W, SPST 696W**Grade Mode:** Letter Grading**SML 699H - Honors Project****Credits:** 4

Project first involves tutorial sessions to introduce the student to the experimental design, after which a research question is developed. After an appropriate literature review, the student collects and analyzes data, forms conclusions, and prepares a written report on the findings.

**Attributes:** Honors course**Equivalent(s):** KIN 699H, SPST 699H**Grade Mode:** Letter Grading**SML 738 - Sport Finance****Credits:** 4

This course examines the financial tools that sport managers use to run their sport businesses. Therefore it explores traditional and innovative methods of revenue acquisition and financial management in sports organizations, the financial business structure of sports organizations, and the financial planning and forecasting processes that make organizations effective. Various other aspects of finance are discussed as they relate to sport organizations, including the tie value of money, capital structuring, stocks, inventory management, and taxation.

**Equivalent(s):** SPST 738**Grade Mode:** Letter Grading**SML 740 - Athletic Administration****Credits:** 4

Introduces basic management components and processes used in the successful administration of school and college athletic programs. Topics include planning, organizing, and managing sports programs, personnel, and policies; game scheduling; finances and facilities; equipment and event management; student support services; and key legal issues.

**Equivalent(s):** KIN 740, SPST 740**Grade Mode:** Letter Grading**SML 741 - Social Issues in Contemporary Sports****Credits:** 4

Investigation of interrelationships among sport, culture, and society in an attempt to understand the role and function of sport in contemporary society. Overview of selected socio-cultural factors that influence and result from participation in sports.

**Equivalent(s):** KIN 741, SPST 741**Grade Mode:** Letter Grading**SML 761 - Senior Seminar Sport Management and Leadership****Credits:** 4

Discussions of sport studies topics, such as gambling, aggression, media, gender, race, class. Students consider different disciplinary approaches to these topics and develop projects to advance knowledge related to their interests. Students must accumulate an aggregate total of 150 hours of work (paid or unpaid) in four approved sport organizations before they are allowed to register for SML 761.

**Attributes:** Writing Intensive Course**Equivalent(s):** KIN 761, SPST 761**Grade Mode:** Letter Grading**SML 764 - Advanced Sport Marketing****Credits:** 4

An advanced course covering sport marketing, which includes a review of key sport marketing terms/concepts, in-depth experience writing s a sport marketer, and practical experience acting as a sport marketer. This course will instruct students n how to complete all aspects of an in-depth marketing plan. This is an undergraduate/graduate dual student course.

**Prerequisite(s):** (SPST 564 with a minimum grade of D- or SML 564 with a minimum grade of D- or ADMN 585 with a minimum grade of D-).

**Equivalent(s):** KIN 764, SPST 764**Grade Mode:** Letter Grading**SML 765 - Advanced Topics in Coaching****Credits:** 4

This course goes beyond the basic principles of coaching and addresses advanced topics in coaching (talent identification, talent development) from both the science and the art of coaching technique and strategies. This course is structured as an upper division course in Sport Studies. Content includes topics related to the development of the field of coaching. The class makes extensive use of case studies and analysis of practical coaching situations for the betterment of coach development. This course combines lecture, small group discussion and practical application of material.

**Prerequisite(s):** (SML 565 with a minimum grade of D- or SPST 565 with a minimum grade of D- or KIN 565 with a minimum grade of D-).

**Equivalent(s):** KIN 765, SPST 765**Grade Mode:** Letter Grading**SML 780 - Psychological Factors in Sport****Credits:** 4

Factors of outstanding athletic achievement; psychological variables in competition; the actions and interactions of sport, spectator, and athlete. Special attention directed to strategies for coaches, teachers, and athletic trainers to utilize sport psychology in their professional practice.

**Prerequisite(s):** PSYC 401 with a minimum grade of D-.

**Equivalent(s):** KIN 780, SPST 780**Grade Mode:** Letter Grading

**SML 798 - Special Topics****Credits:** 1-4

New or specialized courses not normally covered in regular course offerings. Special fee on some sections.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Equivalent(s):** KIN 798, SPST 798

**Grade Mode:** Letter Grading

## Sustainability (SUST)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**SUST 401 - Exploring Sustainability****Credits:** 4

This interdisciplinary course is focused on discovering what sustainability means, understanding the challenges, and exploring transformative solutions. We explore the concept of sustainability and the three intersecting dimensions of environmental, social, and economic well-being. We learn about systems and explore specific sustainability challenges. Learning in this course is active and participatory. We also explore the role of personal and collective action and how we each can play a role in building a more sustainable society.

**Attributes:** Environment,TechSociety(Disc)

**Grade Mode:** Letter Grading

**SUST #401A - Surveying Sustainability****Credits:** 2

This course explores the history of sustainability and the varied and changing meanings of the concept. It focuses on the principles of sustainability in support of the long-term welfare of humans and the earth system. Students discuss and debate a set of global grand challenges, their local and national ramifications, and how to connect knowledge to action. To count towards the SDM, it must be followed by SUST #401B at Shoals Marine Lab.

**Co-requisite:** SUST #401B

**Grade Mode:** Letter Grading

**SUST #401B - Surveying Sustainability Lab****Credits:** 2

This week long intensive course takes place at the Shoals Marine Laboratory, and must be preceded by SUST #401A. This course is focused on using the Isles of Shoals archipelago as a case study of the ecological, economic, and social aspects of sustainability, as explored through a systems framework.

**Co-requisite:** SUST #401A

**Grade Mode:** Letter Grading

**SUST 501 - Sustainability in Action****Credits:** 4

This course explores what sustainability action entails from academic and practitioner perspectives. We begin by understanding the cross-cutting perspectives and methods of sustainability science including transdisciplinarity, systems thinking, stakeholder driven research, and solutions-based projects. We build on this knowledge to explore sustainability challenges using case studies to provide current and local context for the material we cover. Students are expected to apply the theoretical concepts to these practical examples of sustainability science in practice.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** SUST 401 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**SUST 600 - Sustainability Independent Study****Credits:** 1-4

SUST 600 will provide an independent study to students who are interested in studying of a topic in sustainability in depth. Due to the highly personalized nature of SUST 600, the specific readings, activities and assignments will vary based on student interests and disciplinary backgrounds. At a minimum, students will be guided in how to prepare a project proposal, place their work within the current literature on the topic, and complete a final project.

**Prerequisite(s):** SUST 401 with a minimum grade of D-.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Credit/Fail Grading

**SUST 605 - Sustainability Internship****Credits:** 1-4

SUST 605 will provide credit for practical work or a project experience in sustainability. The purpose of SUST 605 is to gain practical experience working in a sustainability field while simultaneously achieving specific learning goals pre-identified by the student and faculty mentor.

**Prerequisite(s):** SUST 401 with a minimum grade of D-.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Credit/Fail Grading

**SUST 750 - Sustainability Capstone****Credits:** 4

This course is the culminating experience for the Sustainability Dual Major. The overall format is to: 1) synthesize the knowledge obtained in other core courses and elective courses taken for the Sustainability Dual Major; and 2) work in groups to apply that knowledge to a specific project. As sustainability science is focused on developing solutions to place-based sustainability challenges, students will delve into a specific sustainability issue, applying their disciplinary expertise within interdisciplinary teams.

**Attributes:** Writing Intensive Course

**Prerequisite(s):** SUST 401 with a minimum grade of C- and SUST 501 with a minimum grade of C-.

**Grade Mode:** Letter Grading

## Sustainable Agriculture & Food Systems (SAFS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**SAFS 405 - Sustainable Agriculture and Food Production****Credits:** 4

This course introduces the fundamental concepts that define sustainable and organic agriculture. We will explore the scientific and biological principles that underlie sustainable and organic farming techniques and methods, and each student will explore research-based evidence surrounding the sustainability of different practices within the agricultural and food system. We will study the environmental, social and economic impacts of different food production systems, with an emphasis on systems common in the U.S. Finally, we will look at the role each of us has in influencing how food is grown, either as producer or as a consumer.

**Attributes:** Environment,TechSociety(Disc)

**Equivalent(s):** PBIO 405

**Grade Mode:** Letter Grading



**SAFS 410 - A Taste of the Tropics****Credits:** 4

This course will expose students to the exciting world of tropical agriculture and the ways that people in the tropics utilize a diverse array of food crops. Our lives as consumers in the developed world are touched by tropical products every single day. Whether it's the cinnamon in your tea, the vanilla in your cookies, the black pepper on your salad, or your cup of hot coffee, you likely consume tropical crops whether you know it or not. Ever stop to wonder where these items are from and how they are produced? We will examine agriculture and food culture throughout the tropical world's four principle areas: Latin America, Tropical Asia, Tropical Africa, and the South Pacific. Production systems ranging from large scale modern high input operations to home subsistence gardens are explored. Tropical crops are examined in five major groups: grains and legumes, starchy roots, exotic vegetables, tropical fruit, and herbs, spices, medicinal plants. Cultural uses of these crops throughout the tropical world are given special emphasis.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**SAFS 415 - Introduction to Brewing Art and Science****Credits:** 4

Introduction to the scientific foundations of beer brewing. Topics covered will include beer styles; ingredient sourcing; industrial production from nano to macro scale; current trends and topics; quality control; safety and sustainability.

**Grade Mode:** Letter Grading**SAFS 421 - Introductory Horticulture****Credits:** 0 or 4

This course will introduce the disciplines of plant science and horticulture. Students will learn the fundamentals of plant structure and how cells, tissues, organs and whole plants develop and function. Students will then explore how environmental factors affect growth and development, and how humans manipulate them to produce horticultural crops: fruits, vegetables, flowers and landscape plants. Labs are designed to emphasize and reinforce the principles covered in lecture and will give students a hands-on introduction to horticulture. Special Fee. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Equivalent(s):** PLSC 421**Grade Mode:** Letter Grading**SAFS 430 - Plant Propagation****Credits:** 4

Plant Propagation is an introductory hands-on course. Students will learn the techniques and skills necessary to propagate plants by seed, cuttings, grafting, budding, division, layering, and tissue culture. Students will also learn how plant morphology, anatomy and physiology and the environment influence the success of plant propagation. Special Fee.

**Grade Mode:** Letter Grading**SAFS 502 - Agroecology****Credits:** 4

This course introduces students to the discipline and practice of agroecology, with an emphasis on relevant ecological theory within the context of production agriculture. Students are exposed to key ecological principles from population, community, and ecosystem ecology and agronomy. Students learn about the history and consequences of modern industrial agricultural systems and the need for more sustainable management practices that consider ecological interactions.

**Grade Mode:** Letter Grading**SAFS 510 - Agriculture and Development in the Neotropics****Credits:** 4

Course is designed as a three week immersion into tropical agriculture and Costa Rican ecology and culture. Agriculture plays a pivotal role in Costa Rica's history and in shaping current events. Production of horticultural and agronomic crops occurs on a variety of scales ranging from large export based systems, to mid-sized operations for domestic sales, and sustenance based home gardens. Examples of all systems are visited and discussions focus on their overall sustainability. Sustainability is a broad concept and requires consideration of socio-cultural, environmental, and economic factors. Agriculture and agricultural products infuse the culture as seen by large participation in farmers markets and appreciation for a wide variety of fruits and vegetables prepared in myriads of ways. An appreciation for nature also infuses the culture and is embodied by the country's extensive system of national parks and protected reserves along with the national philosophy of 'Pura Vida'. Special fee.

**Attributes:** World Cultures(Discovery)**Grade Mode:** Letter Grading**SAFS 515 - Technical Brewing****Credits:** 4

Technical brewing will focus on learning skills needed in the brewing industry. This hands-on class will focus on sensory, the brewing process, quality control, safety, and sanitation in the brew house. Must be 21 to enroll in the course. Prereq: SAFS 415. Special fee.

**Grade Mode:** Letter Grading**SAFS 517 - Advanced Aspects of Brewing****Credits:** 4

In Advanced Aspects of Brewing, we will examine five specific aspects of the brewing industry: microbiology, waste products, sustainability, engineering, and analytical chemistry. We will utilize the UNH brewery to make a series of unique products that will serve as the testing basis for each module. Prereq: SAFS 415.

**Grade Mode:** Letter Grading**SAFS #600 - Field Experience****Credits:** 0

As part of their degree program, students are expected to engage in a work experience or internship under professional supervision and approved by sustainable agriculture faculty. Provides the opportunity to apply academic knowledge in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. Permission required. Cr/F.

**Equivalent(s):** SAFS 600W**Grade Mode:** Credit/Fail Grading**SAFS 601 - Fruit Crop Production****Credits:** 4

This course explores the origin, distribution, botany, and cultural practices of fruit crops. Fruit crops represent an important component of both our dietary needs and many agricultural production systems. Emphasis is given to temperate fruit crops suitable for New England growing conditions. Other topics explored include integrating fruit crops into landscapes, organic and conventional cultural practices, and post-harvesting handling. Prereq: SAFS 421 or permission.

**Grade Mode:** Letter Grading



**SAFS 620 - Food Systems & Community Resilience****Credits:** 4

This course is designed to provide a broad overview of the emerging field of food systems. We will use a systems perspective to better understand how the U.S. food system shapes the food we eat, and the character and health of our communities and environment. In the second half of the course, we will critically evaluate alternative food system development, policies, and initiatives aimed at improving farmers' livelihoods, environmental sustainability, food justice, and community resilience. Prereq: SAFS 405, or instructor permission.

**Grade Mode:** Letter Grading**SAFS 632 - Urban Agriculture****Credits:** 4

Urban agricultural systems play an important role in local food production. Production systems range from community gardens to completely controlled production environments. Urban farmers face unique challenges developing sustainable business models due to high land costs, waste management, post-harvest storage, and limited technical experience. This course provides a practical, hands-on understanding of urban agricultural production systems. Emphasis is placed on controlled environmental agriculture from an urban farmer's perspective through classroom discussion and production systems operation.

**Grade Mode:** Letter Grading**SAFS 651 - Plant Pathology****Credits:** 4

Plant pathology explores the nature, impact and management of plant diseases. Topics covered include organisms and environmental causes of plant diseases and disorders, how plant pathogens interact with host plants and the environment to cause disease, types of diseases, disease development and spread, the human environmental costs of plant diseases, diagnosis, and prevention and management. Students learn to diagnose diseases and disorders through the recognition of symptoms and signs. Laboratory exercises explore the casual agents of plant diseases, symptom and signs, and diagnosis. Prereq: BIOL 409 or SAFS 421, or instructor permission. Lab.

**Equivalent(s):** BOT 651, PBIO 651**Grade Mode:** Letter Grading**SAFS 670 - Systems Thinking: Land Use Capability and Sustainability in Aotearoa New Zealand****Credits:** 4

This course establishes a conceptual framework in systems thinking to critically examine New Zealand and global examples of the challenges that have arisen from the mismatch between land use and land use capability. Students investigate downstream effects of the rural-urban divide (food-justice), on people, health, services and the environment. Food security, ethical foods, as well as the influence of climate change on food supply and the viability of agribusiness are included. Special Fee.

**Co-requisite:** INCO 588, SAFS 671, SAFS 672, SAFS 673**Grade Mode:** Letter Grading**SAFS 671 - Agroecology and Sustainable Land Management in Aotearoa New Zealand****Credits:** 4

Agroecology is a way of thinking and acting. Using this lens, students investigate the interface of agriculture and the natural environment. Through first-hand experiences with agribusiness, students explore enduring solutions for sustainable food systems. The emphasis will be on dimensions of agroecology that are relevant in a framework of sustainable land management; and on gaining confidence in evaluating processes and science associated with the biological and physical process in agroecosystems. Special Fee.

**Co-requisite:** INCO 588, SAFS 670, SAFS 672, SAFS 673**Grade Mode:** Letter Grading**SAFS 672 - Pathways to Sustainable Agriculture and Food Systems in Aotearoa New Zealand****Credits:** 4

This course empowers students to pursue knowledge and understanding of food systems around the interface of policy, practice, and science to build pathways toward technically robust, economically sound and viable solutions which enable transformation in the rural landscape. Topics include: value systems, socio-cultural benefits of re-thinking food systems at scale, carbon-forestry, carbon offsets, nutrient cap-and-trade models, (Integrated) Catchment Management and Climate Smart Agriculture. Critical thinking and risk assessment tools are integral components. Special Fee.

**Co-requisite:** INCO 588, SAFS 670, SAFS 671, SAFS 673**Grade Mode:** Letter Grading**SAFS 673 - Agricultural Production and Business Practice in Aotearoa New Zealand****Credits:** 4

In this experiential course students will spend time in farm or agribusiness placements. Practical, hands-on experience of the workings of agribusiness provides students with opportunities to enhance their autonomy and capacity as active learners. Students will gain transferable skills, increase competency and develop a comprehensive understanding of sustainability initiatives and practices of food systems. Students can transfer insights from classroom work to a practical setting and bring previously developed skills to a new context. Special Fee.

**Co-requisite:** INCO 588, SAFS 670, SAFS 671, SAFS 672**Grade Mode:** Letter Grading**SAFS 679 - Food Production Field Experience I****Credits:** 4

This is part one of a two course series to be taken during spring semester. Course provides students with hands-on experience in growing food and managing a small farm business. We will be growing fresh vegetables and some fruits for the UNH Dairy Bar. Lectures, readings, and hands-on activities during Part I focus on all aspects of production: propagation, crop establishment, irrigation, crop management, soil considerations, and pest and disease practices. Prereq: SAFS 405 or permission of instructor.

**Grade Mode:** Letter Grading

**SAFS 680 - Food Production Field Experience II****Credits:** 4

This is part of a two course series to be taken during fall semester. Course provides students with hands-on experience in growing food and managing a small farm business. We will be growing fresh vegetables and some fruits for the UNH Dairy Bar. Lectures, readings, and hands-on activities in part two focus on crop harvesting and maturity, post-harvest considerations, marketing, special event planning and execution, record keeping, and small farm business management. Prereq: SAFS 405, SAFS 679 or permission of instructor.

**Grade Mode:** Letter Grading**SAFS 689 - Greenhouse Management and Operation****Credits:** 4

Course provides introduction to greenhouse construction, design, environmental control, and current trends in the industry. Fundamentals of starting a greenhouse business including safety and labor, marketing, and post-harvest considerations also covered. Efforts towards making the greenhouse industry more sustainable are explored alongside with certification options and procedures. Crops representative of current major New England crops are grown during lab. Students learn about crop selection and practices including IPM, irrigation, and fertility management. Prereq: SAFS 421 or permission of the instructor. Lab. Special fee. (Offered alternate years). Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** PBIO 689**Grade Mode:** Letter Grading**SAFS 733 - Advanced Topics in Sustainable Agriculture****Credits:** 4

In this writing-intensive, capstone course, SAFS juniors and seniors engage in critical, student-led discussion of instructor-chosen and student-selected works related to food systems sustainability across scales, local to global. With these discussions as context, students pursue individual, semester-long projects to practically address a specific issue of interest. The course aims to improve critical reading, writing, discussion, and presentation skills; build cohort cohesiveness; and challenge students' beliefs and working assumptions about agriculture and food systems sustainability. Pre- or Coreq: Must be SAFS junior or senior, or by permission. Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**SAFS 760 - Insect Pest Management****Credits:** 4

Students learn the principles of integrated pest management, as they apply to insects (and some other arthropods). Additionally, they learn to recognize the major orders of insects, and some insect families that are important as natural enemies of pests. Course incorporates a significant amount of writing, plus learning to search the scientific literature. Prereq: BIOL 411 and BIOL 412 or equivalent. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** PBIO 760**Grade Mode:** Letter Grading**SAFS 795 - Investigations****Credits:** 1-4

With faculty guidance, students work on individual projects related to sustainable agriculture and food systems. Permission required.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** SAFS 795W**Grade Mode:** Letter Grading**SAFS 795W - Investigations****Credits:** 1-4

With faculty guidance, students work on individual projects related to sustainable agriculture and food systems. Permission required.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** SAFS 795**Grade Mode:** Letter Grading**SAFS 799 - Honors Senior Thesis****Credits:** 1-4

Independent research requiring a written proposal, thesis, and presentation of research results to an audience of faculty and/or students. Intended for students completing SAFS Honors-in-Major requirements. Contact SAFS Program coordinator prior to senior year to arrange supervision and obtain permission. Two-semester sequence; students typically register for 5 credits over two semesters. IA grade (continuous course) given at end of first semester. Writing intensive.

**Attributes:** Honors course; Writing Intensive Course**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## Technology (TECH)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**TECH 400 - Introduction to CEPS Programs****Credits:** 1

An overview of programs offered by the College of Engineering and Physical Sciences with an emphasis on skills needed to be successful academically, career opportunities and professional development. Required course of all undeclared majors in CEPS. Cr/F.

**Grade Mode:** Credit/Fail Grading**TECH 401 - Scientific Research Exploration****Credits:** 2

This course introduces incoming freshmen to the scientific research process via a hands-on approach, which includes case studies, group work, and a two-week immersion experience under the guidance of the College of Engineering and Physical Sciences (CEPS) faculty. Course readings, discussions, and active participation in local research will facilitate the student's exploration of experimental design, hypothesis testing, data collection and analysis, interpretation of results, and effective communication of research findings. In the context of a group research project, students begin thinking like scientists, as well as strengthening their math, writing, and oral communication skills. Prereq: permission. Open to incoming freshmen only.

**Grade Mode:** Credit/Fail Grading**TECH 411 - Innovation Scholars I****Credits:** 2

A research driven introduction to the university experience. Science, mathematical, and engineering principles will be applied within a cohort research experience for first year students. Under the direction of a faculty mentor(s), student teams will be guided through a year-long research experience culminating in a presentation of research results at the Undergraduate Research Conference, or equivalent activity.

**Grade Mode:** Credit/Fail Grading

**TECH 412 - Innovation Scholars II****Credits:** 2

A research driven introduction to the university experience. Science, mathematical, and engineering principles will be applied within a cohort research experience for first year students. Under the direction of a faculty mentor(s), student teams will be guided through a year-long research experience culminating in a presentation of research results at the Undergraduate Research Conference, or equivalent activity. Prereq: TECH 411.

**Attributes:** Inquiry (Discovery)**Grade Mode:** Credit/Fail Grading**TECH #500 - Integrated CEPS Seminar I****Credits:** 2

The seminar course is intended for students transferring to CEPS. The course focuses on building an interdisciplinary community among students; introducing the STEM disciplines as fields of study and professions, discussing the nature of scientific knowledge and ethics; learning how to learn, and engaging with CEPS student organizations, and with other campus academic support structures. Students are evaluated on their participation in class activities, written assignments, presentations, and posting/commenting to/on topical online blogs, which promote out-of-class discussion. Permission required. Cr/F.

**Grade Mode:** Credit/Fail Grading**TECH #501 - Integrated CEPS Seminar II****Credits:** 1

The seminar course is intended for students transferring to CEPS. The course focuses on building an interdisciplinary community among students, advancing topics from TECH #500, and professional development via engagement in undergraduate research and career development activities. Students are required to be simultaneously involved in a research project with a faculty member of their choosing. Students are evaluated on their participation in class activities, written assignments, presentations, and posting/commenting to/on topical online blogs, which promote out-of-class discussion. Permission required. Cr/F.

**Grade Mode:** Credit/Fail Grading**TECH 601 - Fundamentals Examination Review****Credits:** 1

A ten-week review course for those interested in taking the fundamentals examination to be certified as an engineer-in-training (EIT). Cr/F.

**Grade Mode:** Credit/Fail Grading**TECH 602 - Machine Shop Training****Credits:** 1

In this course, the operation of the basic metal-cutting machine tools (e.g., engine lathe, milling machine, drill press, band saw, cut-off saw, etc.) are demonstrated. The students receive introductory training on the safe operation of these machines as well as on safe practices in the machine shop. Two small projects are completed to demonstrate basic machine shop abilities by the end of the course. Prereq: no course prerequisites, but students must successfully complete an online shop safety quiz prior to the first day of the course. Offered spring and fall semesters only. Special fee. Cr/F.

**Equivalent(s):** TECH 602A**Grade Mode:** Credit/Fail Grading**TECH #697 - CEPS Industrial Experience****Credits:** 1

Students in the CEPS Industrial Experience must register for TECH #697 during each semester (fall and/or spring) in which they are participating in their industrial work experience. Student in the minor must get permission from the minor advisor in order to register for this course.

**Repeat Rule:** May be repeated for a maximum of 2 credits.**Equivalent(s):** TECH 797**Grade Mode:** Credit/Fail Grading**TECH 750 - Intellectual Asset Management for Engineers and Scientists****Credits:** 4

This course provides an introduction to the most important topic in the 21 century—intellectual assets. Students will receive an overview in practical, real-world aspects of managing intellectual assets (copyright, patents, trademarks, trade secrets, etc.). Students taking this course will be exposed to lectures, guest presentations, and case studies aimed at increasing their understanding of intellectual property strategies and related legal issues; technology assessment; technology valuation; licensing issues, strategies and negotiation techniques; business planning and start-up company development; and strategies for attracting investment for new ideas. The instructors and guest speakers for the course are involved in managing, protecting, investing in, or commercializing intellectual property assets in real world settings such as university technology transfer offices, patent law firms, venture capital firms, start-up companies, and related settings.

**Grade Mode:** Letter Grading**TECH 780 - Intellectual Property Law for Engineers & Scientists****Credits:** 3

This course will cover the major doctrines of trade secrets, patents, copyrights, and trademarks, including what kinds of information qualify for protection, what must be done to obtain that protection, what rights owners and others have to use the information, and the underlying policy choices made by legislators and courts.

**Grade Mode:** Letter Grading**TECH 797 - Undergraduate Ocean Research Project****Credits:** 2

Students work as members of interdisciplinary project teams on contemporary ocean-related problems under the guidance of a faculty adviser. Student team defines problem, prepares a budget, conducts literature surveys, engages in dialogue with experts in the community, deals with vendors, designs, and builds a working engineering model, gathers and analyzes scientific data or conducts a comprehensive study, makes interim reports, and defends the results before a jury of experts. Prereq: normally senior standing and permission of the program director. A yearlong effort: 2 credits each semester, 4 credits total, an IA (continuous course) grade given at the end of the first semester. Writing intensive.

**Attributes:** Writing Intensive Course**Repeat Rule:** May be repeated up to 1 time.**Equivalent(s):** TECH #697**Grade Mode:** Letter Grading

## Theatre & Dance (THDA)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**THDA 401 - New Student Seminar****Credits:** 1

This course is an introduction to being a theatre and dance major. Students will examine academic standards expected in our department as well as management skills essential for success in balancing rehearsal and practicum schedules with academic responsibilities for all classes. This course is focused on helping majors understand expectations of being a Theatre and Dance major along with ways to cope with the stress.

**Grade Mode:** Credit/Fail Grading**THDA 435 - Introduction to Theatre****Credits:** 4

Introduces all aspects of theatrical production: play writing, acting, directing, design, technical theatre and construction, and theatre management. Cultural and social context of theatre in our time and through the ages. Introduces major classical and modern types of theatre. Selected plays are read and discussed, and attendance at theatrical production is required.

**Attributes:** FinePerformingArts(Discovery)**Grade Mode:** Letter Grading**THDA 436 - History of Theatre I****Credits:** 4

The history of theatre and its drama is introduced through close study of the world's greatest plays from the Greeks through the end of the 17th century -- How these plays were performed then, how they are performed now, their political, social, and cultural urgencies.

**Attributes:** FinePerformingArts(Discovery); Writing Intensive Course**Equivalent(s):** THDA 436H, THEA 436H**Grade Mode:** Letter Grading**THDA 436H - Honors/History of Theatre I****Credits:** 4

The history of theatre and its drama is introduced through close study of the world's greatest plays from the Greeks through the end of the 17th century -- How these plays were performed then, how they are performed now, their political, social, and cultural urgencies. Writing intensive.

**Attributes:** FinePerformingArts(Discovery); Honors course; Writing Intensive Course**Equivalent(s):** THDA 436, THEA 436**Grade Mode:** Letter Grading**THDA 438 - History of Theatre II****Credits:** 4

The history of theatre and its drama is introduced through close study of the world's greatest plays of the 19th, 20th, and 21st centuries -- How these plays were performed then, how they are performed now, their political, social and cultural urgencies.

**Attributes:** FinePerformingArts(Discovery); Writing Intensive Course**Equivalent(s):** THDA 438H, THEA 438H**Grade Mode:** Letter Grading**THDA 438H - Honors/History of Theatre II****Credits:** 4

The history of theatre and its drama is introduced through close study of the world's greatest plays of the 19th, 20th, and 21st centuries -- How these plays were performed then, how they are performed now, their political, social and cultural urgencies. Writing intensive.

**Attributes:** FinePerformingArts(Discovery); Honors course; Writing Intensive Course**Equivalent(s):** THDA 438, THEA 438, THEA 438H**Grade Mode:** Letter Grading**THDA 439 - In Bed with the Bard: Shakespearean Seduction from Romeo and Juliet to Leonardo and Claire****Credits:** 4

Introduces the imaginative process by which actors and directors bring Shakespeare's plays to life on the stage. Detailed study of eight plays.

**Attributes:** FinePerformingArts(Discovery)**Grade Mode:** Letter Grading**THDA 440A - Honors/Theatre and Social Justice****Credits:** 4

This course that will examine to what degree dramatic literature and theatre art has effected socio-political change in the past, and in the present, through an in-depth exploration of texts, artistic methods and theatrical techniques. Students will create theatrical art related to various sociopolitical issues. Absolutely no experience in theatre is necessary, as this course is built around the premise that we all have the ability to create art and affect politics and society.

**Attributes:** FinePerformingArts(Discovery); Honors course**Equivalent(s):** THDA 444**Grade Mode:** Letter Grading**THDA 441 - Exploring Musical Theatre****Credits:** 4

This is an introductory course designed to enhance the student's enjoyment and understanding of musical theatre. Course content and internet exploration as well as play attendance are designed to acquaint students with and nurture an appreciation for musical theatre. This course is intended for introductory students of all majors who are interested in studying musical theatre elements, styles, and significance.

**Attributes:** FinePerformingArts(Discovery)**Equivalent(s):** THDA 440**Grade Mode:** Letter Grading**THDA 442 - Introduction to the Art of Acting****Credits:** 4

Designed for non-THDA major students interested in the art of acting. Students broaden and deepen their own creativity, gain a deeper understanding of human behavior and interaction, and strengthen analytical skills through class work and projects. Focuses on the basic skills of acting: the ability to effectively communicate, to gain access to the full spectrum of human emotions, and increase spontaneity. Important innovators and theorists in the field of theatre and acting are covered, such as Sanford Meisner, Constantine Stanislavski, Bertolt Brecht, Jerzy Grotowsky, Augusto Boal, and Jacques Lecoq. Additional topics include contemporary plays and playwrights, an historical perspective of the art of acting, and the current state of live theatrical performance. Theatre majors not allowed.

**Attributes:** FinePerformingArts(Discovery)**Equivalent(s):** THDA 551, THEA 551**Grade Mode:** Letter Grading**THDA 444A - What's Old Becomes New: Dramatic Adaptations****Credits:** 4

To what degree does updating theatrical themes contribute to societal norms and relevant commentary? This course will examine how enduring dramatic ideas evolve by comparing plays that are written in reaction to or as an extension of a provocative piece, both carrying on similar themes but told in updated ways. Students also will investigate the role these adaptations play in theatre history, why they are done and whether they are justified as quality art.

**Attributes:** FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading



**THDA 444B - Famous Dancers of the 20th Century****Credits:** 4

The purpose of this course is to provide an introduction to the dancers of the twentieth century whose contributions to the art form have made dance an important cultural necessity. This includes examining how their style of dance and unique personalities has had a major influence on our perceptions of dance and how they have had an effect on society. Writing intensive.

**Attributes:** FinePerformingArts(Discovery); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**THDA 450 - History of Musical Theatre in America****Credits:** 4

Study of the development of the musical and its relationship to American social history.

**Equivalent(s):** THDA 440

**Grade Mode:** Letter Grading

**THDA 455 - Musicianship and Beginning Vocal Techniques for Musical Theatre****Credits:** 2

This course is a combination course designed to help musical theatre students develop the appropriate musicianship skills as well as beginning vocal techniques. Musicianship skills include melodic and rhythmic sight reading, harmony reading and singing, basic piano skills, as well as key signature and interval recognition. Beginning vocal techniques include breath management, strengthening vocal fold closure, releasing tension and creating space in the acoustic chamber (throat and mouth). These skills will help musical theater students develop the ability to overlap strong vocal work with strong musicianship specifically for industry standard auditions and performances in Musical Theatre.

**Grade Mode:** Letter Grading

**THDA 458 - Costume Construction****Credits:** 4

Study and development of costuming techniques, including hand and machine sewing, pattern drafting, alterations, and fabric manipulation. Emphasis on demonstrated understanding. Special fee.

**Grade Mode:** Letter Grading

**THDA 459 - Stagecraft****Credits:** 0 or 4

Elements of play production: basic building components, tools, and materials for producing the scenery; equipment and shop layouts supporting all of the areas of the set, lighting, and costume designs; and consideration of various stage spaces and theatrical venues. Practical application on University theatre productions. Special fee. Lab.

**Attributes:** FinePerformingArts(Discovery)

**Grade Mode:** Letter Grading

**THDA 460 - Elements of Design****Credits:** 4

Course is designed for students who are interested in theatrical design elements including scenery, costume, lighting and sound. Class encompasses lecture, discussion, presentation and studio (work in class) formats. Critique and discussion are essential to the creative thinking that a designer needs to have. Throughout the course, each student is expected to complete projects that incorporate the design elements they have studied.

**Grade Mode:** Letter Grading

**THDA 462 - Ballet I****Credits:** 4

Introductory lecture and dance technique course focusing on the fundamentals of ballet technique and the historical development of ballet from the Renaissance to modern times. This ballet class will improve strength, flexibility, coordination, agility, endurance, and musicality while incorporating an appreciation for artistry. No dance experience required, only willingness to develop at your own pace. Open to both majors and non-majors.

**Attributes:** FinePerformingArts(Discovery)

**Equivalent(s):** THCO 462, THEA 462

**Grade Mode:** Letter Grading

**THDA 463 - Theatre Dance I****Credits:** 4

Introductory lecture and dance technique course focusing on how technology, industrialization and popular culture impact the art by discussing dancers, choreographers, films and musicals of the 20th century. Jazz and tap class will improve strength, flexibility, coordination, and musicality. No Dance experience required, only willingness to develop at your own pace. Students with prior experience are expected to register for THDA 563 or THDA 663. Instructor determines appropriate level. Class open to both majors and non-majors. Special Fee.

**Attributes:** FinePerformingArts(Discovery)

**Equivalent(s):** THCO 463, THEA 463

**Grade Mode:** Letter Grading

**THDA 464 - Ballet Cross-Training****Credits:** 1

Traditional ballet exercises will be modified to focus on repetition and body mechanics to improve athletic skills through dance. This ballet class will help students further develop strength, coordination, speed, agility, flexibility, fluidity, balance, efficiency of movement, and mental focus. Particular emphasis will be given to psychomotor skill development through challenges that require applying unfamiliar ballet vocabulary while moving to music. No dance experience required, only willingness to develop at your own pace in a fun, judgment-free environment.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

**THDA 475 - Stage Makeup****Credits:** 2

Fundamentals of juvenile, old age, character, and special stage makeup techniques. Special fee.

**Grade Mode:** Letter Grading

**THDA 487 - History of Dance****Credits:** 4

This course will be a study of dance from prehistory to the present. Through an interactive approach students will gain methods to perceive, create and respond to the history of dance through integrated arts and technology. Activities both in and out of the classroom will aid in the understanding of dance and how it has evolved throughout history both socially and as a means of entertainment. This course will also examine how dance has influenced or collaborated with other art forms.

**Attributes:** FinePerformingArts(Discovery)

**Equivalent(s):** THCO 487, THEA 487

**Grade Mode:** Letter Grading



**THDA 500 - Musical Theatre Voice I****Credits:** 0 or 1

This course provides students with a foundation in healthy, relaxed, and dynamic singing of primarily musical theatre repertoire. In addition to expanding the student's knowledge of and ability to sing various styles of musical theatre repertoire, this course provides a venue to explore and develop analytical skills relating to character and script.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading**THDA #520 - Creative Drama****Credits:** 4

Drama techniques leading to the design and execution of drama sessions with children. Includes role-playing, improvisation, and story dramatization. Lab.

**Grade Mode:** Letter Grading**THDA 522 - Storytelling, Story Theatre, and Involvement Dramatics****Credits:** 4

This course actively explores storytelling techniques based on individual needs. An examination of story theatre and involvement styles leads to practical experience in individual performances. Participants will actively develop performance techniques that reflect a variety of styles and approaches for storytelling. We will examine the historical significance of storytelling in Eastern and Western civilizations and develop a perspective on its role in culture and religion. Applications for both educational and entertainment purposes will be explored through acting and vocal techniques, games, media, felt board, and puppetry. This course will include an examination of story theatre and involvement styles and the development of the ensemble for performance. The projects will include individual performances and group collaboration of selected stories appropriate for a wide range of audiences. The final project will reflect the participant's individual needs and utilize storytelling techniques developed in the course. Special fee.

**Attributes:** FinePerformingArts(Discovery)**Equivalent(s):** THCO 662, THDA 622, THEA 622, THEA 662**Grade Mode:** Letter Grading**THDA 531 - The London Experience: Discovery****Credits:** 4

Learn about one of the greatest cities in the world during this 10-day trip to London. This Discovery class begins as a two-week, on-line course and then packs in a busy schedule visiting amazing sights and taking in some of the best theatre in the English speaking world. The course offers an insight into the history, politics, society and culture of London through the lens of art, architecture, music, and of course, theatre. Special fee.

**Co-requisite:** INCO 589**Attributes:** FinePerformingArts(Discovery)**Grade Mode:** Letter Grading**THDA 532 - The London Experience****Credits:** 2

Exploration of the culture and history of London while enhancing study of live theatre prior to active study in the country. IA (continuous grading). Special fee.

**Co-requisite:** INCO 589**Repeat Rule:** May be repeated for a maximum of 4 credits.**Equivalent(s):** THDA 592C, THEA 592C**Grade Mode:** Letter Grading**THDA 541 - Arts Administration and Entrepreneurship****Credits:** 4

This course will explore multiple facets of the business of running an arts-based organization. The course will also examine business-related issues relevant to individuals seeking to build a career in the arts. The class will provide an overview of the essential knowledge needed for effective arts management and to cultivate the skillset needed to develop, fund, promote and deliver arts-based projects.

**Attributes:** Inquiry (Discovery)**Grade Mode:** Letter Grading**THDA 546 - Costume Design for the Theatre****Credits:** 4

How to design costumes for the theatre, not figure drawing, although drawing techniques are taught. Script analysis and research and presentational techniques for costume design explored and implemented. Special fee.

**Grade Mode:** Letter Grading**THDA #547 - Stage Properties****Credits:** 4

Research and manufacture of period and modern stage, trim, and hand properties. Special fee.

**Prerequisite(s):** THDA 459 with a minimum grade of D-.**Grade Mode:** Letter Grading**THDA 548 - Stage Lighting Design and Execution****Credits:** 4

This class is designed for students who are interested in theatrical lighting design. The class meets 3 hours per week. It is a project-based course taught in various formats including lectures, hands-on practices, class discussions, and presentations. The class will help students develop the skills for lighting design and creative thinking that are essential for a critical thinker.

**Attributes:** FinePerformingArts(Discovery)**Grade Mode:** Letter Grading**THDA 549 - Vectorworks Computer-Aided Design Drafting for the Theatre****Credits:** 2

This course will help students develop essential drafting skills used to present design ideas, technical solutions, and communication in productions. Drafting is a form of visual presentation that brings the design ideas to realization. Throughout the semester, students will learn about the basic graphic standard in the industry, gain proficiency in VectorWorks software, and develop a clear and accurate presentation for their designs.

**Grade Mode:** Letter Grading**THDA 551 - Acting I****Credits:** 4

Development of fundamental vocal and physical stage techniques for actors and directors through exercises, improvisation and theatre games. Special fee.

**Attributes:** Inquiry (Discovery)**Equivalent(s):** THDA 442**Grade Mode:** Letter Grading**THDA 552 - Acting II****Credits:** 4

Focuses on strengthening the actor's ability to achieve a higher level of truth, presence, and spontaneity on stage. Building on the approach devised by Sanford Meisner, this highly intensive class creates a bridge to connect these developing skills to various forms of text. Special fee.

**Prerequisite(s):** THDA 551 with a minimum grade of D-.**Grade Mode:** Letter Grading

**THDA 554 - Stage Combat****Credits:** 4

This course actively explores stage combat techniques for unarmed combat as well as basic rapier swordplay. Students are expected to prepare hand-to-hand acting projects as well as a final rapier fight project which demonstrates proper stage combat techniques learned during the semester. Special fee.

**Grade Mode:** Letter Grading**THDA 555 - Acting The Song****Credits:** 4

Foundations of solo musical theatre performance, with a special focus on Acting the Song. Students will review beginner acting techniques and transfer their work from the realm of the monologue into the realm of the musical theatre solo assessed through solo performances and written assignments. Special Fee.

**Grade Mode:** Letter Grading**THDA 562 - Ballet II****Credits:** 2

This dance technique class is taught at an intermediate level and is an extension of Ballet I with a focus on developing ballet vocabulary and artistry. Open to both majors and non-majors.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Equivalent(s):** THCO 562, THEA 562**Grade Mode:** Letter Grading**THDA 563 - Theatre Dance II****Credits:** 2

This dance technique class is an extension of THDA 463. Students will become versatile in a variety of dance styles, including contemporary and musical theatre style jazz and tap dance. Technical execution, artistry and improvisation will be explored. Open to both majors and non-majors. Special fee.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Equivalent(s):** THCO 563, THEA 563**Grade Mode:** Letter Grading**THDA 564 - Compocinema****Credits:** 4

Compocinema examines dance/movement as an interdisciplinary form that integrates the human body, digital video camera, the computer program, and site-specific and/or collaborative formats. Emphasizing conceptual and practical approaches, students (individually and in groups) will take turns developing and performing movement as well as planning, designing, shooting, editing, observing, describing, analyzing, and revising video of dance/movement as artistic expression.

**Grade Mode:** Letter Grading**THDA 565 - Beginning Aerial Dance****Credits:** 2

This class focuses on beginning aerial dance language and skills as well as body conditioning. Apparatuses including fabric, trapeze and lyra are introduced.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Grade Mode:** Letter Grading**THDA 570 - Movement & Vocal Production****Credits:** 4

Expansion of the student's body-voice awareness, utilizing basic theories and lessons of Lessac Kinesensics and other somatic voice and body practices. Students will build breath-body connection and capacity, expand resonance and articulation, explore body alignment and expressiveness to build a foundation for a healthy and dynamic body-voice for stage and screen performance. Special Fee.

**Prerequisite(s):** THDA 551 with a minimum grade of D-.**Equivalent(s):** THDA 470**Grade Mode:** Letter Grading**THDA 576 - Pointe****Credits:** 2

This class is taught at an intermediate level focusing on developing pointe technique and artistry. Classical variations are incorporated to study the history of ballet through practical application. 1-2 years of pointe technique required. If interested in beginning the study of pointe technique, contact the instructor. Open to both majors and non-majors.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Equivalent(s):** THCO 576, THEA 576**Grade Mode:** Letter Grading**THDA 583 - Introduction to Puppetry****Credits:** 4

Introduces the art of puppetry for general appreciation, entertainment, application in the classroom, and as a therapeutic tool. Emphasis on constructing a variety of puppets (e.g., hand, rod, shadow, and scarf) and adapting literary sources for scripts and performance. Special fee.

**Attributes:** FinePerformingArts(Discovery)**Grade Mode:** Letter Grading**THDA 589 - Practicum****Credits:** 1

The practicum ensures a breadth of experience in the major, including sets, costumes, lighting, props, box office, marketing, and performing. Students must register for practicum every semester. They are notified of their practicum assignment at the beginning of each semester. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Equivalent(s):** THDA 689**Grade Mode:** Credit/Fail Grading**THDA 592A - Special Topics****Credits:** 1-4

Special topics, projects in theatre and dance. Content varies according to needs and interests of students and faculty. Course descriptions are available in department office. May be repeated for credit. Special fee.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Equivalent(s):** THDA 592**Grade Mode:** Letter Grading**THDA 600 - Musical Theatre Voice II****Credits:** 0 or 1

This course is a continuation of THDA 500: Musical Theatre Voice I. Students build on the groundwork in vocal technique, analysis, and performance established in Musical Theatre Voice I and continue to explore and develop these skills.

**Grade Mode:** Letter Grading

**THDA 624 - Theatre for Young Audiences****Credits:** 4

Introduces coaching and directing techniques for classical and contemporary acting styles in theatre for young audiences. Historical contents leads into practical exploration of actor training and coaching, production and design, choreography, and business management for theatre and for youth programs. Students develop teaching strategies for young performers and participate in a culminating project. Special fee.

**Equivalent(s):** THDA 624A, THDA 624B, THEA 624A, THEA 624B**Grade Mode:** Letter Grading**THDA 630 - Actor's Voice Through Text****Credits:** 4

Continuing development of the actor's techniques for creating increased vocal expressiveness. Expands actor's awareness and use of their voice through in-depth analysis and interpretation of text. Exploration of the application of vocal technique to film and theatre scripts from intimate to heightened communication including vocal extremes.

**Prerequisite(s):** THDA 570 with a minimum grade of D-**Equivalent(s):** THDA 550**Grade Mode:** Letter Grading**THDA 632 - Interpretation of Shakespeare in Theatre****Credits:** 4

Increases understanding of Shakespeare's language and action, and improves ability to speak his verse and prose with clarity and verve. Students achieve insights into Shakespeare's plays through the medium of performance. Weekly oral and written assignments.

**Grade Mode:** Letter Grading**THDA 633 - Dance Composition****Credits:** 4

Practical, developmental approach to process of creating dances. Special fee.

**Equivalent(s):** THCO 633, THEA 633**Grade Mode:** Letter Grading**THDA #638 - American Theatre: 1920-1970****Credits:** 4

A survey of American plays from O'Neill onward. Students read and analyze two plays a week. Oral, written, and theatrical assignments.

**Prerequisite(s):** THDA 436 with a minimum grade of D- or THDA 438 with a minimum grade of D- or THDA 450 with a minimum grade of D-**Grade Mode:** Letter Grading**THDA 640W - Playwriting****Credits:** 4

To illuminate and guide each student through the art and craft of writing for performance. This course explores the fundamental principles needed to build a realistic play that is intended to be produced upon the stage. Though the course is built around the construction of plays, the principles, writing exercises, readings, and other assignments serve as a solid base for any form of dialogue driven writing. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** THDA 540, THDA 540W, THDA 750, THEA 750**Grade Mode:** Letter Grading**THDA 641 - Stage Management****Credits:** 4

Introduces to the concepts and skills needed for stage management. Stage managers perform a central role in the theatrical production, coordinating artistic and technical elements. They need a thorough understanding of the script, strong management skills, and a solid background in all aspects of the theatre. Prepares students to function as a stage manager in productions at any theatre. Special fee.

**Equivalent(s):** THDA 592B**Grade Mode:** Letter Grading**THDA 650 - Scene Painting for the Theatre****Credits:** 4

This course focuses on developing scene painting techniques used by modern scenic artists in theatre. The class will encompass 3 hours per week for lectures, painting technique demonstrations, and working on individual projects. Students will need to commit hours outside class meeting time to completed large scale projects in the scene shop.

**Equivalent(s):** THDA 592E**Grade Mode:** Letter Grading**THDA 651 - Rendering for the Theatre****Credits:** 2

Theatrical rendering is a presentational arrangement of given items in perspective appropriate to a set or in a costume at a frozen moment during the production, indicating appropriate mood, atmosphere, and depth. For the theatre, this is generally done in watercolor, but many other media are possible and are explored. Special fee.

**Equivalent(s):** THDA 592F**Grade Mode:** Letter Grading**THDA 652 - Scene Design****Credits:** 4

Scene design from script to finished design. Both aesthetic and practical viewpoints considered. Emphasis on presentational techniques: study of perspective and finished rendering. Special fee.

**Grade Mode:** Letter Grading**THDA 655 - Musical Theatre Scene Study****Credits:** 4

Builds on and expands the techniques learned in Acting I and Musical Theatre Voice I, with a special emphasis on partner work and scene study.

**Prerequisite(s):** THDA 551 with a minimum grade of D- and THDA 555 with a minimum grade of D-**Grade Mode:** Letter Grading**THDA 662 - Ballet III****Credits:** 2

Advanced-level course in technique. Open to both majors and non-majors.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Grade Mode:** Letter Grading**THDA 663 - Theatre Dance III****Credits:** 2

This dance technique class is an extension of THDA 563. Students will become seasoned in contemporary jazz, musical theatre style jazz and tap dance. Technical execution, choreographic artistry and improvisation will be explored. Class open to both majors and non-majors. Special Fee.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Equivalent(s):** THCO 663, THEA 663**Grade Mode:** Letter Grading

**THDA 665 - Aerial Dance****Credits:** 2

The study of aerial arts including two and one point trapeze and fabric. Class open to both majors and non-majors.

**Repeat Rule:** May be repeated for a maximum of 16 credits.**Grade Mode:** Letter Grading**THDA 670 - Dialects****Credits:** 4

Study and practice in basic dialect acquisition for performers. Special fee.

**Prerequisite(s):** THDA 551 with a minimum grade of D-.**Grade Mode:** Letter Grading**THDA 672 - Audition****Credits:** 4

Business aspects of creating and maintaining a performance career, including resumes, photos, agents, casting directors, website building, networking, unions, trade publications, audition material, cold-reading, camera acting, and voice over.

**Prerequisite(s):** THDA 551 with a minimum grade of D-.**Grade Mode:** Letter Grading**THDA 683 - Advanced Puppetry****Credits:** 4

In-depth study of the theory and practice of puppetry for the advanced student. Students develop skills in manipulation and construction of selected puppet forms and apply these skills in performance. Examines historical perspectives and the application of puppetry in the classroom and as a therapeutic tool. Special fee.

**Equivalent(s):** THEA 592D**Grade Mode:** Letter Grading**THDA 700 - Musical Theatre Voice III****Credits:** 0 or 1

This course is a continuation of THDA 600: Musical Theatre Voice II. Students continue to develop their skills of vocal technique, analysis, and performance established in Musical Theatre Voice II, while focusing these skills towards their application in auditioning for, and performing in, professional theatre.

**Repeat Rule:** May be repeated for a maximum of 3 credits.**Grade Mode:** Letter Grading**THDA 721 - Arts Integration****Credits:** 4

This course examines the value and practical application of incorporating the arts into non-arts educational settings. From the perspective of multiple intelligences and varied learning styles, students investigate how the arts can enhance teaching methodology by developing and implementing lesson plans for a variety of non-arts subject areas.

Active theatre involvement is limited; the focus is on practicing teaching methods. Special fee. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** THDA 621, THEA 621**Grade Mode:** Letter Grading**THDA 727 - Methods of Teaching Theatre****Credits:** 4

This course is the culminating experience for theatre education. The purpose is to provide practical information and skills that theatre teachers will use as source material for the classroom and to prepare for the education job search. Students will examine a variety of teaching models in order to articulate a personal teaching philosophy, write comprehensive semester curricula and course syllabi, and create an extracurricular program plan and philosophy.

**Attributes:** Writing Intensive Course**Equivalent(s):** THDA 627, THEA 627**Grade Mode:** Letter Grading**THDA 729 - Community Oriented Drama Programs****Credits:** 1-4

Advanced practicum in designing, developing, and producing drama programs for the school and community. Includes audience analysis and marketing skills as well as adapting spaces, soliciting volunteers, and working with a limited budget. Special fee.

**Repeat Rule:** May be repeated for a maximum of 12 credits.**Grade Mode:** Letter Grading**THDA 732 - Choreography****Credits:** 4

Theoretical and practical consideration of the creative and aesthetic aspects of ballet, modern, and theatre dance. Special fee.

**Prerequisite(s):** THDA 633 with a minimum grade of D-.**Equivalent(s):** THCO 732, THEA 732**Grade Mode:** Letter Grading**THDA 741 - Directing****Credits:** 4

A process oriented approach to the art of stage directing. The course begins with an in-depth focus on script analysis. Students then develop their skills as the "master storyteller" through imagination, interpretation, communication, and style. Special fee.

**Prerequisite(s):** THDA 551 with a minimum grade of D- and THDA 552 with a minimum grade of D-.**Grade Mode:** Letter Grading**THDA 742 - Directing II****Credits:** 4

In-depth study of the theory and practice of stage direction for the advanced student. Builds on 741, Directing. Students strengthen and expand their existing knowledge of the subject area. Exploration focuses on three areas of directorial communication: application to periods and styles, exploration of avant-garde theory, and directorial technique. Concludes with a major project mounted for public performance. Special fee.

**Prerequisite(s):** THDA 741 with a minimum grade of D-.**Grade Mode:** Letter Grading**THDA 755 - Musical Theatre Repertoire****Credits:** 4

Students learn to integrate and expand on techniques in previous acting, musical theatre, and voice classes, with special emphasis given to audition techniques, repertoire expansion and specialization, and in-depth analysis of the business and personal requirements necessary to be a successful artist in the professional theatre. Special fee.

**Prerequisite(s):** THDA 551 with a minimum grade of D- and THDA 555 with a minimum grade of D-.**Grade Mode:** Letter Grading

**THDA 758 - Acting III****Credits:** 4

Applies the principles and techniques acquired by students in THDA 551 and THDA 552 to various genres, such as epic and absurdist, and to mediums such as television and film. Special attention is given to characterization beyond the student's standard range and the development of the actor as a creative artist, using the techniques of such methodologists as Lecoq, Laban, and Grotowski. Special fee.

**Prerequisite(s):** THDA 551 with a minimum grade of D- and THDA 552 with a minimum grade of D-.

**Grade Mode:** Letter Grading

**THDA 759 - Acting: Period and Style****Credits:** 4

Techniques of style analysis and period research. For the first time in the students' undergraduate actor training, students synthesize their basic actor training with the heightened language and archetypal characterization inherent in the classical theatre of the ancient Greeks, the Commedia dell' Arte, the Renaissance, the Neoclassical period, and the Restoration period.

**Prerequisite(s):** THDA 551 with a minimum grade of D- and THDA 552 with a minimum grade of D- and (THDA 436 with a minimum grade of D- or THDA 438 with a minimum grade of D-).

**Grade Mode:** Letter Grading

**THDA 760 - Teacher Planning for Theatre****Credits:** 4

Focuses on lesson and unit planning for the areas of high school theatre history, play analysis, and play writing. Students will practice various methods of teaching these areas of drama. Special fee.

**Grade Mode:** Letter Grading

**THDA 786 - Dance Pedagogy****Credits:** 4

Methods course that focuses on the art and science of teaching the movement forms of ballet, modern, jazz and tap. Designed to prepare students who are seeking dance certification with a M.Ed. or a M.A.T., or who wish to open their own studio. Provides background into the nature of teaching, standards that make up good teaching, awareness of National/State standards, and study and practice of lesson plans in K-12 school curricula or private studios.

**Grade Mode:** Letter Grading

**THDA 791 - Internship in Theatre and Dance****Credits:** 2-8

Fieldwork with a regional or touring theatre or with a theatre education program. This advanced-level internship allows the student to experience a professional theatre/theatre education setting prior to graduation. Normally supervised by a qualified theatre professional, with frequent consultation with a faculty sponsor. Written report required. May be part- or full-time with credits assigned accordingly. Permission required.

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Letter Grading

**THDA 795 - Independent Study****Credits:** 1-8

Advanced individual study. Specific independent study opportunities are sometimes posted in the Theatre and Dance Department Office. Project, which includes a substantial piece of writing, must be developed with supervising instructor.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Equivalent(s):** THCO 795, THDA 795W

**Grade Mode:** Letter Grading

**THDA 795W - Independent Study****Credits:** 1-8

Advanced individual study. Specific independent study opportunities are sometimes posted in the Theatre and Dance Department Office. Project, which includes a substantial piece of writing, must be developed with supervising instructor.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Equivalent(s):** THCO 795, THDA 795, THEA 795

**Grade Mode:** Letter Grading

**THDA 796 - Independent Study****Credits:** 1-8

Advanced individual study. Specific independent study opportunities are sometimes posted in the Theatre and Dance Department Office. Project, which includes a substantial piece of writing, must be developed with supervising instructor.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Equivalent(s):** THCO 796, THDA #796W

**Grade Mode:** Letter Grading

**THDA #796W - Independent Study****Credits:** 1-8

Advanced individual study. Specific independent study opportunities are sometimes posted in the Theatre and Dance Department Office. Project, which includes a substantial piece of writing, must be developed with supervising instructor.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Equivalent(s):** THCO 796, THDA 796, THEA 796

**Grade Mode:** Letter Grading

**THDA 798 - Senior Thesis****Credits:** 2

Supervised research leading to the presentation of a major research paper.

**Attributes:** Writing Intensive Course

**Grade Mode:** Letter Grading

**THDA 799 - Capstone Project****Credits:** 2 or 4

This required course incorporates and tests the knowledge that majors have learned over their careers in the Department of Theatre and Dance. Capstone experiences are tailored to each student through conference with their adviser in their specific Theatre and Dance track. Writing intensive.

**Attributes:** Writing Intensive Course

**Equivalent(s):** THDA 799H

**Grade Mode:** Letter Grading

**THDA 799H - Honors/Capstone Project****Credits:** 4

See description for THDA 799. THDA majors only. Writing intensive.

**Attributes:** Honors course; Writing Intensive Course

**Equivalent(s):** THDA 799

**Grade Mode:** Letter Grading

## Tourism Planning & Development (TOUR)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.



**TOUR 400 - Introduction to Tourism****Credits:** 4

Provides an informational foundation in tourism and gives a more extensive knowledge of the tourism industry. Examines historical perspectives, tourism organization, and supply and demand of the tourism industry. Discusses the dynamic and pluralistic nature of the tourism industry.

**Equivalent(s):** RECO 400**Grade Mode:** Letter Grading**TOUR 510 - Tourism and Global Understanding****Credits:** 4

Introduces ways in which tourism can act as a vehicle to understanding foreign cultures. Responsible tourism, has the potential to help bridge cultural and psychological distances that separate people of different races, religions, and socio-economic classes. Through responsible tourism we can learn to appreciate, trust, and respect the human diversity that our world has to offer. Helps students gain an informed acquaintance with other cultures and customs, and to understand the central role of tourism in international and cross-cultural understanding. Cr/F option.

**Grade Mode:** Letter Grading**TOUR 767 - Social Impact Assessment****Credits:** 4

Provides a cross-disciplinary perspective on the issues, problems, and methods of Social Impact Assessment (SIA). Provides analytic approach and theoretical framework for the assessment of diverse events, including changes in the natural environment, the local economy, or dominant technology. SIA is required of most U.S. and Canadian federal- and state-sponsored projects that come under the National Environmental Protection Act, as well as all projects funded by international donor agencies. (Juniors and seniors only.) Writing intensive.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**TOUR 798 - Independent Study****Credits:** 1-4

Special assignments in readings, investigations, field problems. May include teaching experience. Prereq: permission.

**Equivalent(s):** TOUR #798W**Grade Mode:** Letter Grading**TOUR #798W - Independent Study****Credits:** 1-4

Special assignments in readings, investigations, field problems. May include teaching experience. Prereq: permission. Writing intensive.

**Attributes:** Writing Intensive Course**Equivalent(s):** TOUR 798**Grade Mode:** Letter Grading

## TSAS Communication (COM)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

No courses are currently active in the course inventory for this subject prefix.

## TSAS Mathematics (MTH)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

No courses are currently active in the course inventory for this subject prefix.

## TSAS Social Science (SSCI)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

No courses are currently active in the course inventory for this subject prefix.

## TSAS Thompson School Applied Science (TSAS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**TSAS 495 - Thompson School:Special Topics****Credits:** 1-4

New or specialized courses not normally covered in regular course offerings. May involve one, two or more program areas within the Thompson School of Applied Science. Topics and prerequisites (if any) to be announced before registration. May be repeated up to 8 credits. May include a lab. Special fee on some sections. Some sections may be Cr/F.

**Equivalent(s):** TSAS 295**Grade Mode:** Letter Grading

## UNHM Independent Study (UMIS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**UMIS 599 - Independent Study****Credits:** 1-4

Independent study with the approval and sponsorship of UNHM faculty of material not covered in regular course offerings. Barring duplication of subject, may be repeated.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Letter Grading

## UNHM Special Topics (UMST)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**UMST 401 - First Year Seminar****Credits:** 1

The focus of this seminar is not on a specific academic subject or field of study; instead, the focus is on the student. This course is intentionally designed and proactively delivered for the purpose of promoting personal success in college and in life after college—by fostering the development of skills or strategies that are both applicable and valuable across subjects. The course focuses on the following topics: college expectations and opportunities, campus resources, learning styles and strategies including lecture note-taking, test taking, memory and concentration; life management, goal setting, educational planning, career decision-making, health maintenance, diversity and instructor/student relationships. The course integrates personal growth, academic and career success with problem solving, critical and creative thinking.

**Grade Mode:** Letter Grading**UMST 402 - Transfer Seminar****Credits:** 1

The Transfer Seminar focuses on students' adjustment to being at UNH Manchester. By incorporating topics such as campus resources, financial literacy, internship and career planning, self-reflection, and information literacy, the goal of this course is to foster the development of skills or strategies that are both applicable and valuable across disciplines as well as promoting personal success during and after college.

**Grade Mode:** Letter Grading**UMST 472 - Beyond Google: An Introduction to Information Literacy****Credits:** 2

Beyond Google is a 2-credit introduction to the six frameworks of information literacy for high education created by the Association of College and Research Libraries. Students learn the critical thinking skills necessary to identify, evaluate, and use diverse information sources to meet varied information needs.

**Grade Mode:** Letter Grading**UMST 500 - Internship****Credits:** 1-4

The UNHM internship places students in a variety of business and organizational settings under the direction of a faculty adviser and workplace supervisor. Students fulfill the obligations of the workplace internship plan, as well as complete individually-designed projects of academic merit under the direction of UNH faculty. Open to matriculated students with a 2.5 GPA or better. Students must receive approval of the UNHM internship coordinator. May be taken from 1-4 elective credits per semester. Credit/Fail.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**UMST 521 - Tutor Development****Credits:** 3

This interdisciplinary course, team-taught by the Director and Assistant Director of the Learning Center, is intended to prepare undergraduates for working as peer tutors. Students will study theories of adult development, learn several approaches to tutoring in their discipline(s), and practice their tutoring and communication skills. Cannot be repeated. Prereq: permission of instructor is required.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**UMST 572 - Knowledge in Action: Research in the Workplace****Credits:** 2

This 2-credit course guides students toward critical thinking competencies and evaluative skills necessary for successful information-seeking strategies in workplace settings. By discovering and assessing a variety of career-specific information sources, students will explore how professional organizations develop questions to address problems of practice. Students will interrogate the contexts in which professionals create and disseminate knowledge; engage in fact-checking and other assessment activities; and address workplace issues through the effective use of relevant professional information sources.

**Grade Mode:** Letter Grading**UMST #581 - Exploring Your Career Options****Credits:** 1

This course is designed to teach students how to make informed decisions about their career aspirations. Students will learn to identify essential resources that will assist them in gaining a better understanding of opportunities available to them. Career choice is very personal, therefore each student will identify a minimum of two paths of interest to research. By comparing and contrasting options, participants will be better prepared to accomplish and own their academic and career goals. Letter grades are assigned. This course cannot be repeated for credit. Students who enrolled in UMST 599 Internship and Career Planning Seminar previously are not eligible to take this course for credit.

**Grade Mode:** Letter Grading**UMST 582 - Internship and Career Planning Seminar****Credits:** 1

This course is strongly encouraged for any student seeking internship and/or employment opportunities. Participants will research and evaluate opportunities related to their career interests, conduct informational interviews, create tailored resumes and cover letters, use LinkedIn as a networking and job search resource, and participate in employer-based resume reviews and mock interviews. This course is open to all students in all majors and is suited for students interning and/or seeking employment within the next six months. Letter grades are assigned. This course cannot be repeated for credit. Students who enrolled in UMST 599 Internship and Career Planning Seminar previously are not eligible to take this course for credit.

**Grade Mode:** Letter Grading**UMST 599 - Special Topics****Credits:** 1-4

Occasional offerings dependent on availability and interest of faculty, barring duplication of subject, may be repeated for credit.

**Repeat Rule:** May be repeated up to unlimited times.**Grade Mode:** Letter Grading**UMST 799 - Pre-Pharmacy Concurrent Enrollment****Credits:** 0-20

Registration place-holder for students completing the fourth year of their B.A. Biology Program at Massachusetts College of Pharmacy and Health Studies in the Pre-Pharmacy articulation program.

**Grade Mode:** Credit/Fail Grading

## Veterinary Technology (VTEC)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**VTEC 424 - Introduction to Veterinary Technology****Credits:** 2

An overview of the veterinary technology field. Topics in veterinary office practice management are covered, including, appointment scheduling, inventory control, financial transactions, client communication and regulatory, legal, and ethical aspects of veterinary practice. Other topics include veterinary technician and animal science career options, professional development and domestic animal management including breed identification, terminology, and husbandry.

**Grade Mode:** Letter Grading**VTEC 430 - Companion Animal Behavior and Handling Techniques****Credits:** 4

Overview of the development, selection, genetics, and function of specific breeds of companion animals. Canine and feline handling and restraint skills will be demonstrated and practiced. General dog and cat, as well as breed-specific, behavior is included. Other companion animals such as parrots, rabbits, and pigs are reviewed as time allows.

**Equivalent(s):** AAS 430**Grade Mode:** Letter Grading**VTEC 435 - Animal Health and Laboratory Diagnostics****Credits:** 4

Covers the principles of maintaining animal health by preventing and managing disease via husbandry, immunization, and diagnostic testing. Focus is on domestic species; primarily dogs, cats, horses and cows. Topics include parasitology, microbiology, immunology, and clinical, gross and histopathology. Laboratory activities include fecal flotation, urinalysis, complete blood count and blood chemistry, bacterial culture and sensitivity testing, gram staining, serology, laboratory safety, and principles of sample collection and quality control. VTEC and AAS majors only.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Grade Mode:** Letter Grading**VTEC 449 - Clinical Animal Nursing Techniques I****Credits:** 4

Essential skills and knowledge for the care of small animals, focusing on companion animal species. Wellness protocols and basic nursing skills (medication administration, nail trimming, ear cleaning, anal gland expression, wound care, injections, phlebotomy, electrocardiogram, blood pressure measurement) will be discussed and practiced. VTEC majors only. Prereq: VTEC 430.

**Equivalent(s):** AAS 449**Grade Mode:** Letter Grading**VTEC 497 - Veterinary Technology Work Experience****Credits:** 0

Provides students supervised introductory hands-on experience in a veterinary medical facility. Students apply skills learned in animal handling and nursing, laboratory methods, client communication and practice management courses. Students are responsible for obtaining a position in an approved veterinary facility and need to complete a minimum of 80 hours of work to fulfill course requirements. Must have rabies vaccine series completed prior to the start of the semester. Open to veterinary technology students only. Prereq: AAS 449.

**Grade Mode:** Credit/Fail Grading**VTEC 550 - Clinical Animal Nursing Techniques II****Credits:** 4

Builds on materials presented in VTEC 449, Clinical Animal Nursing Techniques I. Covers veterinary imaging modalities including radiographic and ultrasonographic techniques and safety; nursing care of hospitalized patients, dentistry, emergency, laboratory, and exotic animal medicine. VTEC majors only. Prereq: VTEC 449 with a minimum grade of C+.

**Equivalent(s):** AAS 550**Grade Mode:** Letter Grading**VTEC 565 - Pharmacology for Veterinary Technicians****Credits:** 4

This course provides study in the area of veterinary medicines emphasizing classes and actions of drugs, calculating dosages, proper administration, and dispensing of drugs. Topics include general pharmacology, calculating dosages, pharmacy regulation guidelines and record keeping. Case-based learning is utilized to correlate common diseases in companion animals with associated pharmacological agents. Specifically, disease pathogenesis, diagnosis, and treatment options are discussed along with pertinent technician interventions and evaluations. Prereq: AAS 428.

**Equivalent(s):** VTEC 265**Grade Mode:** Letter Grading**VTEC 575 - Veterinary Anesthesia and Surgical Assisting****Credits:** 4

This course provides the theoretical knowledge and practical experience necessary to provide safe and effective anesthesia and analgesia to veterinary patients; including providing nursing care and assistance in all aspects of veterinary surgery and anesthesia. This course must be taken along with or after the completion of VTEC 565. VTEC majors only. Prereq: VTEC 565 with a minimum grade of C+.

**Equivalent(s):** VTEC 275**Grade Mode:** Letter Grading**VTEC 579 - Small Animal Practicum I****Credits:** 4

This course provides veterinary technology students service learning opportunities. Students manage a wellness clinic for pets, developing staffing/appointment schedules, and performing appropriate procedures on pets. Additionally, students travel off-campus to provide medical, husbandry, and behavioral care for shelter animals. Successful ascertainment and use of correct veterinary terminology is required. A surgical rotation is conducted to introduce techniques in anesthesia, surgical nursing, and dentistry. This is a four-credit course offered for VTEC majors only, and by permission only. Prereq: VTEC 449 with a minimum grade of C+, VTEC 565 with a minimum grade of C+.

**Grade Mode:** Letter Grading**VTEC 580 - Small Animal Practicum II****Credits:** 4

Students manage a wellness clinic for pets, developing staffing/appointment schedules, and perform appropriate procedures on pets. Additionally, students travel off campus to provide medical care for shelter animals. A surgical rotation is conducted to reinforce techniques in anesthesia/surgical nursing and dentistry. Nursing care assignments are due throughout the semester to aid students in the integration of knowledge gain during their academic coursework. This is a four-credit course offered for VTEC majors only, and by permission only. Prereq: VTEC 579 with a minimum grade of C+, VTEC 575 with a minimum grade of C+.

**Grade Mode:** Letter Grading

**VTEC 583 - Large Animal Practicum****Credits:** 2

An applied large animal class covering basic veterinary nursing care and procedures, focusing on horses and cows. The majority of class time is spent practicing hands-on skills with animals. Restricted to veterinary technology students only. Prereq: AAS 421 with a minimum grade of C+, VTEC 449 with a minimum grade of C+.

**Equivalent(s):** VTEC 283**Grade Mode:** Letter Grading**VTEC 595 - Veterinary Technology Internship****Credits:** 3

Provides students supervised hands-on experience in a veterinary medical facility within a clinical setting, students apply skills learned in animal handling and nursing, diagnostics and laboratory, client communication and practice management courses. Students are responsible for obtaining a position in an approved veterinary facility prior to the start of the semester. Open to veterinary technology students only. Prereq: VTEC 550 with a minimum grade of C+, VTEC 579 with a minimum grade of C+.

**Equivalent(s):** VTEC 295**Grade Mode:** Credit/Fail Grading**VTEC 599 - Comprehensive VTNE Review****Credits:** 4

Course will prepare veterinary technology students for the Veterinary Technician National Examination (VTNE). Topics include VRNE qualification and registration procedures and standardized test-taking strategies, but will primarily focus on a systematic review of the nine knowledge domains covered on the VTNE. Specific course content will vary based on yearly changes to VTNE content and based on students' performance on a VTNE readiness assessment at the start of the course. Prereq: VTEC 435 with a minimum grade of C+, VTEC 550 with a minimum grade of C+, VTEC 575 with a minimum grade of C+, VTEC 579 with a minimum grade of C+. Special fee.

**Grade Mode:** Letter Grading

## Women's Studies (WS)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**WS 401 - Introduction to Women's Studies****Credits:** 4

Interdisciplinary survey of the major areas of women's studies: women's history, cross-cultural perspectives, women in literature, psychology of women, etc. Basic principles and concepts fundamental to more advanced women's studies research. Topics vary. Required for major and minor. Writing intensive.

**Attributes:** Social Science (Discovery); Inquiry (Discovery); Writing Intensive Course**Equivalent(s):** WS 401H**Grade Mode:** Letter Grading**WS 403 - Gender Interactions in College Sports Culture****Credits:** 2

An integrative view of growing up as an athlete in American culture. Analysis of major perspectives on human development and implications in sports and education. With emphasis on gender, sexual assault, and racism.

**Grade Mode:** Credit/Fail Grading**WS 405 - Gender, Power and Privilege****Credits:** 4

This course explores the diversity of women's lives through the dynamics of status, power, privilege, and inequality in contemporary United States. Students will examine women's diverse experiences by using the theoretical framework of the social construction of race, gender, economic class, and sexual orientation in historical context. We will examine categories of difference and the processes, philosophical developments, institutions, and conditions that lead to and rely on power and privilege in modern American society.

**Attributes:** Humanities(Disc)**Grade Mode:** Letter Grading**WS 444 - Trans/Forming Gender****Credits:** 4

Using a social construction approach, students explore the multiple ways in which gender is constructed within the lives of children, women, men, and transgender people. Specific attention focuses on the social institutions and systems that encourage both the construction and reproduction of gender identity and expression across the lifespan. Students actively participate in identifying historical and current day factors and institutions that shape gender. Students explore the roles of families, schools, educational settings, media, the workplace, recreation activities, the medical system, religion, laws, and the laws and the legal system in the construction of gender.

**Attributes:** Social Science (Discovery); Inquiry (Discovery)**Grade Mode:** Letter Grading**WS 444A - Race Matters****Credits:** 4

Class examines race categories in the United States and how these historically changing categories shape our diverse realities across racial, ethnic, gendered, classed, and national identities. Students examine race as a category of difference and explore the multiple ways that individuals claim racial identities. Specific attention focuses on how diverse women have made history in their own lives and in the lives of others by resisting the interlocking systems of oppression.

**Attributes:** Historical Perspectives(Disc); Inquiry (Discovery)**Grade Mode:** Letter Grading**WS #444C - On the Roads to Equality****Credits:** 4

Looking beyond what is traditionally thought of as the women's rights movement in the United States, this course remaps women's history and activism to include a diversity of women's experiences. A multicultural examination of history focuses on women's leadership and participation in immigrant rights, labor, the Black Women's Club, economic justice, reproductive rights, self determination and feminist movements during the 19th and early 20th centuries. Writing intensive.

**Attributes:** Historical Perspectives(Disc); Inquiry (Discovery); Writing Intensive Course**Grade Mode:** Letter Grading

**WS 444D - Cyborgs, Avatars, and Feminists: Gender in the Virtual World**  
**Credits:** 4

Utilizing feminist theoretical and critical investigations of gender and techno culture, students explore women's popular and theoretical conceptions of cyberspace. Students explore numerous digital communication systems within cyberspace and examine how and why a diversity of women utilize these systems. This course provides students with the opportunity to investigate the impact that advancements in virtual technology have in the lives of women.

**Attributes:** Environment, TechSociety(Disc); Inquiry (Discovery); Writing Intensive Course

**Grade Mode:** Letter Grading

**WS 505 - Survey in Women's Studies**

**Credits:** 4

In-depth study of topics not covered in regular course offerings. The course explores the breadth and depth of Women's Studies from a historical perspective. In order to understand Women's Studies currently, students look at the historical foundations that contribute social, political, and economic influences on the topics. Barring duplication of topic, may be repeated for credit.

**Attributes:** Historical Perspectives(Disc); Inquiry (Discovery)

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

**WS #5050 - Survey in Women's Studies**

**Credits:** 4

In-depth study of topics not covered in regular course offerings. The course explores the breadth and depth of Women's Studies from a historical perspective. In order to understand Women's Studies currently, students look at the historical foundations that contribute social, political, and economic influences on the topics. Barring duplication of topic, may be repeated for credit.

**Attributes:** Historical Perspectives(Disc)

**Equivalent(s):** WS 505

**Grade Mode:** Letter Grading

**WS 510 - Framing Feminism: Gender Politics in Film**

**Credits:** 4

This course examines the history of feminist struggle in the U.S. by critically viewing and analyzing diverse films from the 1970s to the present. Students learn about the three waves of feminism and the various sociocultural, economic, sexual and political issues faced by women in the long and ongoing quest to achieve gender equality. Students explore methods of historical inquiry and film criticism to enable complex analyses of historical developments and contemporary arrangements of power. Attention is paid to how multiple identities and forms of oppression intersect in women's diverse lived experiences.

**Attributes:** Historical Perspectives(Disc)

**Grade Mode:** Letter Grading

**WS 632 - Feminist Thought**

**Credits:** 4

Theories of women's oppression and emancipation explored from various historical, political, cultural, and social perspectives. A major goal of the course is to increase awareness of historical and contemporary feminist approaches to understanding women's experiences, representations, and relative positions in societies. The course also considers the interrelation of theory and practice and the impact of past feminist theories on feminist movements. Prereq: WS 401 or WS 405. Writing intensive.

**Attributes:** Writing Intensive Course

**Grade Mode:** Letter Grading

**WS 795 - Independent Study**

**Credits:** 1-4

For advanced students who have the preparation to carry out an individual project of supervised research on a specific women's studies topic. Preparation should include WS 401 or equivalent, and/or other women's studies courses. Barring duplication of topic, may be repeated. Prereq: permission of instructor and women's studies coordinator.

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

**WS 796 - Advanced Topics**

**Credits:** 4

Advanced or specialized topics not normally covered in regular course offerings. May be repeated, but not in duplicate areas. Prereq: permission.

**Repeat Rule:** May be repeated up to 2 times.

**Equivalent(s):** WS 796W

**Grade Mode:** Letter Grading

**WS 797 - Internship**

**Credits:** 4

Students gain practical experience in a woman-focused agency or organization. Plan of study and requirements are developed together with a faculty adviser and the student's workplace adviser. Bi-monthly seminar with all internship students and instructor. Prereq: permission. WS majors or minors.

**Repeat Rule:** May be repeated up to 2 times.

**Grade Mode:** Letter Grading

**WS 798 - Colloquium**

**Credits:** 4

Intensive study of specialized topic for advanced students. Topics vary with instructor. Barring duplication of topic, may be repeated for credit. Required for WS majors.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated up to 8 times.

**Grade Mode:** Letter Grading

**WS 799 - Honors Thesis**

**Credits:** 4-8

With a faculty sponsor, students enrolled in the honors-in-major program develop an independent, investigative project in women's studies. Written thesis. Prereq: permission, majors only.

**Attributes:** Honors course

**Grade Mode:** Letter Grading

## Zoology (ZOOL)

# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

**ZOOL 400 - Professional Perspectives in Zoology**

**Credits:** 1

Presentations by departmental faculty provide an informal overview of various zoological topics and professional opportunities. The course acquaints students with faculty, provides information on departmental research projects, and facilitates early research involvement for students. Required for all first-year zoology majors. (Fall only). Cr/F.

**Grade Mode:** Credit/Fail Grading



**ZOOL 401 - Human Biology****Credits:** 0 or 4

How does the human body function in the face of constant flux? In this introductory biology course you will explore the molecules, cells, and organ systems that keep you healthy through the multidisciplinary lenses of chemistry, genetics, and homeostasis. Hands-on experimentation allows you to investigate common health-related questions such as the effects of caffeine on reaction time and the effects of handwashing on bacterial growth and transmission. Cannot be taken for credit after BMS 507 and BMS 508. Special Fee. Lab.

**Attributes:** Biological Science(Discovery); Discovery Lab Course**Equivalent(s):** ZOOL 507, ZOOL 508**Grade Mode:** Letter Grading**ZOOL 406 - Evolution of Human Behavior****Credits:** 4

Have you ever wondered why women and men often have different criteria when looking for sexual partners? Why do we feel compelled to help people in some situations, but not others? This course explores the evolutionary effects on our most basic impulses, abilities, and failings, and illuminates the social and ecological pressures that made us who we are. Fair warning: this course may forever change how you think about your friends, your dates, and yourself!

**Attributes:** Biological Science(Discovery)**Grade Mode:** Letter Grading**ZOOL 406H - Honors/Evolution of Human Behavior****Credits:** 4

Have you ever wondered why women and men often have different criteria when looking for sexual partners? Why do we feel compelled to help people in some situations, but not others? This course explores the evolutionary effects on our most basic impulses, abilities, and failings, and illuminates the social and ecological pressures that made us who we are. Fair warning: this course may forever change how you think about your friends, your dates, and yourself!

**Attributes:** Biological Science(Discovery); Honors course**Grade Mode:** Letter Grading**ZOOL 518 - Comparative Morphology and Biology of Vertebrates****Credits:** 0 or 4

Why are vertebrates so successful on Earth? In this hands-on comparative biology course you will systematically examine the evolutionary history of form and function by exploring key adaptations that allowed vertebrates to diversify and thrive in the aquatic, terrestrial, and arboreal habitats they occupy today. In lab you will hone your dissection skills as you track ancestral and derived characteristics in 5 representative species on the vertebrate tree of life. Prereq: BIOL 411 and BIOL 412 or equivalent. Special fee. Lab.

**Grade Mode:** Letter Grading**ZOOL 529 - Developmental Biology****Credits:** 0 or 4

Developmental biology explores how organisms construct themselves in each generation, and how those processes interact with ecological and evolutionary forces. The course examines development in various phyla, with an overarching focus on the design and interpretation of experiments using both classical and modern techniques. Labs include student-designed experiments and observation of development in several species of vertebrate embryos. Special fee. Lab. Prereq: BIOL 411 & BIOL 412, or equivalent.

**Equivalent(s):** ZOOL 629**Grade Mode:** Letter Grading**ZOOL 542 - Ornithology****Credits:** 0 or 4

Identification and biology of birds, especially those of northeastern United States. Involves field trips, laboratory work, and lectures. Prereq: one semester of biology. (Spring semester only.)

**Grade Mode:** Letter Grading**ZOOL 555 - Introduction to Entomology****Credits:** 4

This course is about insects, the animal taxon that represents 50% of all life forms on Earth. During this course students will explore this incredible diversity by studying insects from inside out and learning about major evolutionary events in the last 500 million years that shaped this incredible diversity. This course will also highlight the beneficial and detrimental roles insects play in human society: students will gain insights into medical and veterinary entomology, coastal entomology, principles of sustainable pest management and insect conservation. Throughout the course, students will broadly apply online tools for insect identification and will be exposed to community driven nature conservation and monitoring efforts using online applications, such as iNaturalist and BugGuide. Prereq: BIOL 412. Lab.

**Grade Mode:** Letter Grading**ZOOL 566 - Herpetology****Credits:** 4

This course will serve as an introduction to the morphology, behavior, and evolutionary ecology of reptiles (tuataras, turtles, snakes, lizards, and crocodilians) and amphibians (frogs, salamanders, and caecilians), with a special emphasis on New England taxa. The course will include field excursions, short-term research projects, and the comparative examination of specimens. Prereq: BIOL 412. Special Fee.

**Grade Mode:** Letter Grading**ZOOL 600 - Field Experience****Credits:** 1-4

A supervised experience providing the opportunity to apply academic experience in settings associated with future professional employment and/or related graduate opportunities. Must be approved by a faculty advisor selected by the student. Prereq: permission. Cr/F.

**Repeat Rule:** May be repeated for a maximum of 8 credits.**Grade Mode:** Credit/Fail Grading**ZOOL 610 - Principles of Aquaculture****Credits:** 4

Introduces the culture practices employed for production of aquatic organisms. Topics include ecological and environmental considerations, selective breeding, nutrition, diseases, processing, and marketing. Emphasis on finfish. Prereq: BIOL 411 and BIOL 412 or equivalent.

**Grade Mode:** Letter Grading**ZOOL 613 - Animal Behavior****Credits:** 5

In this course we will first investigate the mechanisms of behavior—how do animals behave the way they do? We'll then spend the bulk of the semester exploring the ecology and evolution of behavior—why do animals behave the way they do? In lab, we will use hands-on activities to complement material from class, and you'll gain first-hand research experience when you design and conduct your own animal behavior study. Special fee. Lab. Prereq: BIOL 412 or equivalent.

**Attributes:** Writing Intensive Course**Equivalent(s):** ZOOL 713**Grade Mode:** Letter Grading

**ZOOL 625 - Principles of Animal Physiology****Credits:** 3

Introduces the principles of animal function. The major systems (digestion, metabolism, respiration, circulation, osmotic and ionic regulation, nerve-muscle function, endocrine control) are covered with emphasis on functional mechanisms at the cell and tissue levels. Prereq: one year of introductory biology is required.

**Equivalent(s):** ANSC 627, ANSC 717, ZOOL 519, ZOOL 627**Grade Mode:** Letter Grading**ZOOL 626 - Animal Physiology Laboratory****Credits:** 2

Basic training in the measurement of function in animals, data analysis and expression, and the development of scientific communication skills. Special fee.

**Co-requisite:** ZOOL 625**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ZOOL 690 - Evolution****Credits:** 4

Evolutionary biology is about uncovering the past, understanding the present, and predicting the future of animals, plants, and microbes. Is also offers insight into how scientific ideas change through time. This course covers natural selection and adaptation, phylogeny, population genetics and structure, origins and extinction of species, domestication, and evolutionary medicine. Additional topics may include human evolution and evolutionary impacts, biogeography, and social evolution, as well as the intersections between evolution, ecology and development.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ZOOL 708 - Stream Ecology****Credits:** 4

Ecological relationships of organisms in flowing water; streams as ecosystems. Lectures on physical and chemical features of streams, floral and faunal communities, and factors controlling populations and behavior of stream organisms. Lab exercises employ both field and laboratory experimental techniques. Special fee. Lab. (Not offered every year.)

**Grade Mode:** Letter Grading**ZOOL 710 - Sharks and Bony Fishes****Credits:** 0 or 4

Some fish swimming today are hundreds of years old, whereas others complete their life cycle in two months! This course provides an introduction to the diversity of fishes found across the globe, including elasmobranchs (sharks, skates, and rays) and teleosts (bony fishes). Particular attention will be paid to fishes local to New Hampshire and New England. Students will learn about fish anatomy, physiology, and ecology. Prereq: BIOL 411, BIOL 412, or equivalent. Lab. (Offered in alternative years.) Special Fee.

**Equivalent(s):** ZOOL 734**Grade Mode:** Letter Grading**ZOOL 726 - Conservation Behavior****Credits:** 4

What's the best way to deter an elephant from raiding crops? Is it with chili peppers? Bees? This is one example from the new interdisciplinary field of "conservation behavior," which uses the study of animal behavior to inform how we manage wildlife populations. This course targets students well-versed in either animal behavior or wildlife ecology who wish to learn more about the other side. We will focus heavily on reading, writing, discussion, and career preparation. Prereq: ZOOL 613, NR 433, or NR 640.

**Grade Mode:** Letter Grading**ZOOL 733 - Behavioral Ecology****Credits:** 0 or 4

Behavioral ecology is the evolution of animal behavior played out on the stage of ecology—why might a certain behavior be adaptive in a certain context? In this course, we will pursue in-depth, high-level explorations of the central topics of animal behavior, all through the lens of evolution. We will also focus heavily on improving reading, writing, and presentation skills. Prereq: ZOOL 613.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading**ZOOL 736 - Genes and Behavior****Credits:** 4

Genes and behavior examines the genetic underpinnings of animal behavior, and how behavior evolves on a genetic level. The course primarily relies on readings from the primary literature, using examples from laboratory model organisms, animals in their natural habitats, and humans. Topics include aggressiveness, social behavior, personality, parental care, communication, mating behavior, novelty seeking behavior, and foraging. This interdisciplinary course examines these behaviors at multiple levels, including genomics, population genetics, molecular genetics, epigenetics, endocrinology, and neurobiology. Prereq: GEN 604 and ZOOL 613 or equivalent.

**Grade Mode:** Letter Grading**ZOOL 770 - Senior Seminar in Zoology****Credits:** 2

Explore and synthesize your undergraduate zoological knowledge and skills through an integrated outlook at a topic relating to your professional future. Each semester revolves around a different overarching topic on which students read assigned topical papers, prepare critical analyses, and give presentations to the class.

**Grade Mode:** Letter Grading**ZOOL 777 - Neuroethology****Credits:** 4

Students taking this course will discover how some of the most remarkable behavioral adaptations in animals can be understood by examining specialized sensory systems and neural circuits. By exploring the complex interactions between animal behavior, neural systems, evolutionary relationships, anatomy, physiology and ecology, students will be better equipped to understand the neural basis of behavior. A culminating writing project will help sharpen students' scientific writing skills, and the ability to understand the primary neuroethology literature. Prereq: BIOL 411, BIOL 412.

**Attributes:** Writing Intensive Course**Grade Mode:** Letter Grading

**ZOOL 795 - Independent Investigations in Zoology****Credits:** 1-4

Independent study in a topic related to Zoology, arranged by the student with a faculty sponsor. Enrollment by permission only.

**Repeat Rule:** May be repeated for a maximum of 8 credits. May be repeated up to 5 times.

**Grade Mode:** Letter Grading

**ZOOL 795W - Special Investigations****Credits:** 1-4

Independent study in various areas including but not limited to animal behavior, developmental biology, ecology, endocrinology, evolution, ichthyology, genetics, history of biology, invertebrate biology, neurobiology and behavior, protozoology, teaching practices, underwater research, vertebrate biology, and biological techniques. Course sections for advanced work, individual or group seminar. May include reading, laboratory work, organized seminars, and conferences. Prereq: permission of instructor needed.

**Attributes:** Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 12 credits.

**Grade Mode:** Letter Grading

**ZOOL 799 - Honors Senior Thesis****Credits:** 1-4

Working under the direction of a faculty sponsor, the student plans and carries out independent research resulting in a written thesis. Limited to students entering their senior year; required for students in the honors program or working toward honors-in-major. Prereq: permission. A two-semester sequence. 2-4 credits each semester. IA (continuous grading) given at the end of the first semester.

**Attributes:** Honors course; Writing Intensive Course

**Repeat Rule:** May be repeated for a maximum of 8 credits.

**Grade Mode:** Letter Grading

# Faculty Listing

The faculty listing in the catalogs are static and updated annually in the Fall.

## A

### **Abbott, Katherine**

SENIOR LECTURER

Sociology

B.S., 2007, M.S., 2010, Ph.D., Arizona State University, 2013

### **Abeles, Sigmund**

PROFESSOR EMERITUS

PEAEMPL-Emeritus

A.B., Univ of South Carolina, 1955

M.F.A., Barnard College, 1957

### **Aber, John**

Emeritus

Natural Resources & The Environment

B.S., 1971, M.F.S., 1973, Ph.D., Yale University, 1976

### **Adamovich, Frank**

ASSOCIATE PROFESSOR EMERITUS

UNH Transition

B.S., Fitchburg State College, 1960

M.S., Simmons College, 1968

### **Adams, Nancy**

EXTENSION EDUCATOR EMERITA

UNH Transition

M.S., Michigan State University, 1977

### **Afolayan, Funso**

ASSOCIATE PROFESSOR

History

B.A., 1980, M.A., University of Ife, Nigeria, 1984

Ph.D., Obafemi Awolowo University, Nigeria, 1991

### **Aikens, Melissa**

ASSOCIATE PROFESSOR

Biological Sciences

A.B., Bowdoin College, 2000

M.F.S., Yale University, 2004

Ph.D., University of Virginia, 2013

### **Ainslie, Marcy**

Assistant Professor

Nursing

B.A., Boston College, 1993

B.S., 1998, M.S., Columbia University in the City of New York, 2000

Ed.D., Plymouth State University, 2017

### **Akdeniz Talay, Billur**

PROFESSOR

Marketing

B.A., 2002, M.B.A., Bogazici University, Turkey, 2004

Ph.D., Michigan State University, 2009

### **Akiyama, Sachiko**

ASSOCIATE PROFESSOR

Art and Art History

B.A., Amherst College, 1995

M.F.A., Boston University, 2002

### **Aktekin, Tevfik**

ASSOCIATE PROFESSOR

Decisions Sciences

B.S., Yildiz Technical University, Turkey, 2002

M.B.A., 2004, Ph.D., George Washington University, 2009

### **Alexander, Kimberly**

LECTURER

History

B.A., Colby College, 1985

M.A., 1989, Ph.D., Boston University, 1999

### **Alexander, Lee**

RESEARCH ASSOCIATE PROFESSOR EMERITUS

Center for Coastal and Ocean Mappin

B.S., Marietta College, 1968

M.S., University of New Hampshire, 1980

### **AlHaddad, Nada**

Research Assistant Professor

Space Science Center

M.A., University of Hawaii, 2010

Ph.D., KU Leuven, 2015

### **Aliouche, El-Hachemi**

ASSOCIATE PROFESSOR

Hospitality Management

B.S., 1980, M.A., 1982, Ph.D., 1992, M.B.A., University of New Hampshire, 1995

### **Alleva, Rick**

UNH Transition

B.A., Tufts University, 1975

M.Ed., 1981, Ed.D., Boston University, 1988

### **Alonzo, Roy**

PROFESSOR EMERITUS

UNH Transition

A.S., Becker Junior College, 1951

B.S., Boston University, 1953

M.B.A., Western New England Univ, 1961

Ed.D., Nova College, 1978

### **Alperin, Holly**

CLINICAL ASSOCIATE PROFESSOR

Kinesiology

B.S., Central Michigan University, 1999

M.Ed., Boston University, 2003

### **Alsip, Tom**

Assistant Professor

Theatre & Dance

B.F.A., New York University, 2010

M.F.A., University of Alabama, 2017

### **Alvarez, Mike**

Assistant Professor

Communication

**Amato-Wierda, Carmela**

ASSOCIATE PROFESSOR

Dean's Office - CEPS

B.A., Harvard University, 1988

Ph.D., Rensselaer Polytechnic Institute, 1993

**Ames, Raina**

ASSOCIATE PROFESSOR

Theatre &amp; Dance

B.A., 1990, M.Ed., Western Illinois University, 1999

M.F.A., Virginia Commonwealth University, 2002

**Amsden, Katherine**

ASSOCIATE PROFESSOR EMERITA

UNH Transition

A.B., Sweet Briar College, 1953

M.S., Smith College, 1956

Ph.D., University of Southern California, 1967

**Andersen, Kenneth**

PROFESSOR EMERITUS

UNH Transition

B.S., Rutgers University, 1955

Ph.D., University of Minnesota, 1959

**Anderson, Janet**

LECTURER

Biological Sciences

B.A., 1991, M.S., 2003, Ph.D., University of New Hampshire, 2008

**Andrew, Michael**

PROFESSOR EMERITUS

UNH Transition

B.S., Cornell University, 1960

M.A.T., 1961, Ed.D., Harvard University, 1969

**Andrews, Tama**

PRINCIPAL LECTURER

Political Science

B.A., 1997, M.A., University of New Hampshire, 2001

**Annicchiarico, Michael**

PROFESSOR

Music

B.M., University of New Hampshire, 1976

M.F.A., 1981, Ph.D., Brandeis University, 1993

**Annis, William**

PROFESSOR EMERITUS

UNH Transition

B.S., University of Maine, 1951

M.A.Agr., University of New Hampshire, 1959

Ed.D., Cornell University, 1961

**Antosiewicz, Rose**

ASSOCIATE PROFESSOR EMERITA

UNH Transition

A.B., Brown University, 1954

Ph.D., University of California - Los Angeles, 1971

**Arcand, Carolyn**

Senior Lecturer

Carsey School

B.S., Syracuse University, 2001

M.P.A., University of Southern Maine, 2006

M.S., 2011, Ph.D., University of Massachusetts - Boston, 2014

**Argall, Matthew**

Research Assistant Professor

Space Science Center

Ph.D., University of New Hampshire, 2004

B.A., 2006, B.S., Augsburg College, 2006

M.S., University of New Hampshire, 2008

**Armenti, Karla**

RESEARCH ASSISTANT PROFESSOR

Institute on Disability

B.A., Norwich University, 1981

M.S., 1995, Ph.D., University of Massachusetts - Lowell, 2001

**Armstrong, Jennifer**

PRINCIPAL LECTURER

Philosophy

A.B., Colby College, 1985

MTS, Harvard Divinity School, 1987

M.A., University of Massachusetts - Amherst, 1991

**Arnold, Gretchen**

CLINICAL ASSISTANT PROFESSOR

Agriculture, Nutrition, &amp; Food System

B.S., University of New Hampshire, 1993

M.S., University of New Haven, 2002

**Arnold, Samantha**

Nursing

**Aronson-Shore, Carol**

Professor Emerita

UNH Transition

B.F.A., Boston University, 1963

M.A., University of Chicago, 1965

**Arredondo, Robert**

SENIOR LECTURER

Applied Engineering &amp; Sciences

A.A.S., NH Voc Tech College-Laconia, 1978

B.S., 1989, M.S., University of Massachusetts - Lowell, 1993

Ph.D., University of New Hampshire, 2015

**Arthanat, Sajay**

Professor

Occupational Therapy

B.S., Santosh College Occupational Therapy, India, 1997

C.A.G.S., 2004, Ph.D., State University of New York at Buffalo, 2007

**Asbjornsen, Heidi**

Professor

Natural Resources &amp; The Environment

B.A., Carleton College, 1989

M.S., 1993, Ph.D., Yale University, 1999



**Ashcraft, Catherine**

ASSISTANT PROFESSOR  
Natural Resources & The Environment  
B.A., University of Pennsylvania, 1998  
M., Yale University, 2002  
Ph.D., Massachusetts Institute of Technology, 2011

**Ashley, Charles**

ASSOCIATE PROFESSOR EMERITUS  
UNH Transition  
A.B., Dartmouth College, 1957  
M.Ed., University of New Hampshire, 1960  
Ed.D., Boston University, 1969

**Ashton-Savage, Audrey**

PRINCIPAL LECTURER  
Marketing  
B.A., 1971, M.B.A., University of New Hampshire, 1978

**Ashwell, Tim**

PRINCIPAL LECTURER EMERITUS  
Kinesiology  
B.A., 1988, M.A., 1989, Ph.D., University of Massachusetts - Amherst, 1994

**Auger, Philip**

EXTENSION EDUCATOR EMERITUS  
Forestry And Wildlife Resources  
B.S.F., University of New Hampshire, 1974

**Awasty, Nikhil**

Assistant Professor  
Management  
B.A., St. Xavier's College, Mumbai, India, 2006  
M.B.A., Narsee Monjee Institute of Manangement Studies, Mubmai, India, 2010  
PhD., Michigan State University, 2022

**Aydelott, Kathrine C.**

Associate Professor, Arts & Humanities Librarian  
Research Learning Services  
B.A., Colby College, 1990  
M.A., 1995, Ph.D., University of Connecticut, 2005  
M.L.I.S., Simmons College, 2006

**Aytur, Semra**

PROFESSOR  
Health Management & Policy  
B.A., Brown University, 1991  
M.P.H., Boston University, 1996  
Ph.D., University of North Carolina, 2005

## B

**Babbitt, Kimberly**

ASSOCIATE DEAN  
Dean's Office - LS & A  
B.S., University of New Hampshire, 1984  
M.S., Texas A & M University, 1988  
Ph.D., University of Florida, 1996

**Baber, Kristine**

ASSOCIATE PROFESSOR EMERITA  
UNH Transition  
B.A., Southern Illinois University - Carbondale, 1970  
M.A., 1981, Ph.D., University of Connecticut, 1983

**Bachrach, David**

PROFESSOR  
History  
B.A., Carleton College, 1994  
M.A., 1997, Ph.D., University of Notre Dame, 2001

**Baer, Emily**

ASSISTANT PROFESSOR  
Political Science  
B.A., Georgetown University, 2011  
Ph.D., University of Minnesota, 2017

**Bahalkeh, Esmaeil**

Assistant Professor  
Health Management & Policy  
B.S., Sharif University of Technology, Iran, 2013  
M.S., Ohio University, 2015  
Ph.D., Purdue University, 2021

**Bailey, April**

Assistant Professor  
Psychology  
B.A., Colgate University, 2014  
Certificate, 2019, Ph.D., Yale University, 2019

**Bailey, Brigitte**

PROFESSOR  
English  
B.A., University of Virginia, 1977  
A.M., 1980, Ph.D., Harvard University, 1985

**Baker, Alan**

ASSOCIATE PROFESSOR EMERITUS  
UNH Transition  
B.A., State University of New York at Binghamton, 1965  
Ph.D., University of Minnesota, 1973

**Balderacchi, Arthur**

PROFESSOR EMERITUS  
UNH Transition  
A.B., Duke University, 1960  
M.F.A., University of Georgia, 1965

**Baldwin, Kenneth**

PROFESSOR EMERITUS  
Mechanical Engineering  
B.S., Northeastern University, 1973  
M.S., University of New Hampshire, 1977  
Ph.D., University of Rhode Island, 1982

**Ballester, Thomas P**

ASSOCIATE PROFESSOR  
Civil and Environmental Engineering  
B.S., 1975, M.S., Pennsylvania State University, 1977  
Ph.D., Colorado State University, 1981

**Balling, Ludwig**

PROFESSOR EMERITUS  
 UNH Transition  
 B.A., Oberlin College, 1960  
 M.A., 1961, Ph.D., Harvard University, 1965

**Banach, Mary**

Emerita  
 UNH Transition  
 B.A., University of Wisconsin - Milwaukee, 1975  
 M.S.W., New York University, 1978  
 D.S.W., Columbia University in the City of New York, 1995

**Barber, Heather**

Emerita  
 UNH Transition  
 B.S., St. Lawrence University, 1978  
 M.S., Pennsylvania State University, 1982  
 Ph.D., University of Oregon, 1992

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Assistant Professor  
 Philosophy  
 B.A., Paris Nanterre University, France, 2010  
 M.A., 2012, M.A., Ecole Normale Supérieure Ulm, Paris, France, 2014  
 M.A., Sciences Po, Paris, France, 2014  
 Ph.D., Ecole Normale Supérieure Ulm, Paris, France, 2018

**Barker, Lawrence**

UNH Transition  
 B.S., University of New Hampshire, 1981  
 M.B.A., Plymouth State University, 1986

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PROFESSOR Emeritus  
 UNH Transition  
 B.A., Clark University, 1979  
 M.S., University of Cincinnati, 1982  
 Ph.D., University of California - Berkeley, 1987

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PRINCIPAL LECTURER EMERITA  
 English  
 B.A., 1989, M.A., 1990, M.A., University of New Hampshire, 1991

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Associate Professor Emerita  
 Management  
 B.A., 1989, M.A., 1992, Ph.D., University of Michigan, 1994

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ASSOCIATE PROFESSOR EMERITUS  
 UNH Transition  
 B.S., 1967, M.S., University of New Hampshire, 1972

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PROFESSOR EMERITUS  
 UNH Transition  
 B.A., 1974, M.A., University of New Hampshire, 1982

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Professor Emeritus  
 UNH Transition  
 B.S., 1982, M.S., 1987, Ed.D., University of Massachusetts - Amherst, 1990

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ASSISTANT PROFESSOR EMERITUS  
 UNH Transition  
 B.S., 1961, M.Ed., St. Lawrence University, 1965

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RESEARCH PROFESSOR EMERITUS  
 UNH Transition  
 B.A., Amherst College, 1971  
 M.S., 1976, Ph.D., University of Delaware, 1979

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PROFESSOR  
 Computer Science  
 M.S., Czech Technical University, Czech Republic, 1987  
 M.S., 1996, Ph.D., University of Denver, 1997

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PROFESSOR  
 UNHL JD Instruction  
 B.S., Cornell University, 1985  
 J.D., University of Pennsylvania, 1990  
 LL.M., Temple University, 1997

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PROFESSOR  
 Mathematics & Statistics  
 B.S., University of Texas at Austin, 1992  
 M.S., 1993, Ph.D., University of Chicago, 1998

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PROFESSOR  
 Chemistry  
 B.S., University of Notre Dame, 1974  
 M.S., University of Illinois at Urbana-Champaign, 1976  
 Ph.D., Colorado State University, 1979

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PROFESSOR  
 Economics  
 B.A., Drew University, 1996  
 M.A., 1999, Ph.D., Syracuse University, 2001

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PROFESSOR EMERITUS  
 UNH Transition  
 A.B., 1961, Ph.D., Harvard University, 1966

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 Natural Resources & The Environment

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STATE EXTENSION SPECIALIST EMERITA  
 UNH Transition  
 B.S., 1974, M.S., Cornell University, 1982

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CLINICAL ASSOCIATE PROFESSOR  
 Social Work  
 B.A., University of New Hampshire, 1995  
 M.A., University of Chicago, 2002

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Research Professor  
Institute on Disability  
B.A., City University of New York, 1976  
M.Ed., Northeastern University, 1981  
Ph.D., Brandeis University, 2000

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ASSOCIATE PROFESSOR EMERITUS  
UNH Transition  
B.A., Carleton College, 1957  
M.A., 1989, Ph.D., Duke University, 1993

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ASSOCIATE PROFESSOR Emerita  
UNH Transition  
B.S., University of Massachusetts - Amherst, 1976  
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Ph.D., Cornell University, 1985

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ASSOCIATE PROFESSOR  
English  
B.A., Hofstra University, 1993  
B.A., 2000, M.A., State University of New York at New Paltz, 2002  
Ph.D., Miami University - Ohio, 2008

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SENIOR LECTURER  
English  
B.A., State University of New York at Purchase, 1996  
M.A., State University of New York at New Paltz, 2002  
Ph.D., Ohio University, 2011

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ASSISTANT PROFESSOR  
Computer Science  
B.S., Bangladesh University of Engineering and Technology, 2003  
M.S., Memorial University - Canada, 2005  
Ph.D., Univ of Waterloo, 2010

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Assoc Dean COLSA-Dir NHAES  
Dean's Office - LS & A  
B.B.A., Loyola University - Maryland, 2005  
M.S., 2007, Ph.D., North Carolina State University, 2009

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SENIOR LECTURER EMERITA  
UNH Transition  
B.S., California State College, 1970  
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Recreation Management & Policy  
B.A., University of New Hampshire, 1989  
M.S., New England College, 1997  
Ph.D., University of New Hampshire, 2005

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PROFESSOR  
Civil and Environmental Engineering  
B.C.E., Georgia Institute of Technology, 1996  
M.S., 1998, Ph.D., Tufts University, 2003

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Music  
B.A., 1985, M.M., Temple University, 1988  
Ph.D., Harvard University, 1994

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ASSOCIATE PROFESSOR EMERITA  
UNH Transition  
B.A., Windham College, 1975  
M.S., Simmons College, 1978  
M.A., University of New Hampshire, 1997

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PROFESSOR EMERITUS  
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B.S., California State College, 1969  
M.A., City University of New York, 1973  
Ph.D., City College of New York, 1974

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Theatre & Dance  
B.F.A., 2012, B.S., Montclair State College, 2012  
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LECTURER  
Computer Science  
B.S., 2006, M.S., University of New Hampshire, 2015

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Recreation Management & Policy  
B.S., Green Mountain College, 2004  
M.S., Brigham Young University, 2010  
Ph.D., Indiana University - Bloomington, 2013

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Natural Resources  
B.S., 1979, M.S., University of New Hampshire, 1992

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Emeritus  
UNH Transition  
B.S., University of Montreal, Canada, 1977  
M.S., 1980, Ph.D., Stanford University, 1984

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Mathematics & Statistics  
B.S., Ursinus College, 2009  
M.S., 2012, Ph.D., University of New Hampshire, 2016

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PROFESSOR

Chemistry

B.S., Pennsylvania State University, 2003

Ph.D., University of Florida, 2008

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D.E.U.G., University of Paris IV Sorbonne, France, 1976

M.A., University of Pittsburgh, 1983

Ph.D., Stanford University, 1988

**Bergeron, R Daniel**

PROFESSOR EMERITUS

UNH Transition

B.S., 1966, Ph.D., Brown University, 1973

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PROFESSOR

Physics

B.S., Lund University, Sweden, 1988

Ph.D., University of Texas at Austin, 1993

**Berlinsky, David**

PROFESSOR

Agriculture, Nutrition, &amp; Food System

B.S., Michigan State University, 1977

M.S., University of New Hampshire, 1981

Ph.D., University of Rhode Island, 1989

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PROFESSOR EMERITUS

UNH Transition

B.S., University of Connecticut, 1966

Ph.D., Cornell University, 1971

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PRINCIPAL LECTURER

Accounting and Finance

B.S., 2002, M.S., University of New Hampshire, 2003

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Agriculture, Nutrition, &amp; Food System

B.S., University of California - San Diego, 2001

M.A., 2004, Ph.D., Boston University, 2012

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PROFESSOR

Business and Public Affairs

B.A., Kenyon College, 1977

M.A., 1980, Ph.D., Indiana University - Bloomington, 1983

**Blair, David**

Lecturer

English

M.F.A., University of North Carolina, 1995

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PROFESSOR EMERITUS

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B.S., 1964, M.S., University at Albany, 1965

Ph.D., University of Massachusetts - Amherst, 1975

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Theatre &amp; Dance

A., 2003, Diploma, Edith Cowan University, Australia, 2003

Diploma, Western Australia Academy of Performing Arts, Australia, 2003

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Emeritus

Computer Science

B.A., University of Southern Maine, 1986

Ph.D., 1995, M.S., University of New Hampshire, 2004

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DEAN AND PROFESSOR EMERITUS

Dean's Office

B.S., Wesleyan College, 1966

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Ph.D., Kent State University, 1972

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ASSOCIATE PROFESSOR EMERITUS

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B.A., Mississippi State University, 1965

Ph.D., University of Illinois at Urbana-Champaign, 1975

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PROFESSOR

Biological Sciences

B.S., Yale University, 1986

Ph.D., University of California - Berkeley, 1993

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PROFESSOR EMERITUS

UNH Transition

B.A., Trinity College - Conn, 1976

M.A., Brown University, 1984

Ph.D., Johns Hopkins University, 1992

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B.A., University of Connecticut, 1977

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Health Management &amp; Policy

B.A., University of Massachusetts - Amherst, 1992

M.S., Univ Colorado/Denver, 1999

M.B.A., University of Massachusetts - Amherst, 2000

Ph.D., George Mason University, 2013

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ASSOCIATE PROFESSOR EMERITUS

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B.E., Syracuse University, 1951

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Occupational Therapy

B.S., New York University, 1979

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EXTENSION EDUCATOR EMERITA

Family Development

B.S., University of Rhode Island, 1972

M.Ed., University of New Hampshire, 1988

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Professor

Communication

B.A., Villanova University, 1995

M.A., 1998, Ph.D., Pennsylvania State University, 2002

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PROFESSOR EMERITUS

UNH Transition

B.S., 1956, M.S., Ohio State University, 1958

Ph.D., Florida State University, 1961

**Bothner, Wallace**

PROFESSOR EMERITUS

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B.A., State University of New York at Binghamton, 1963

Ph.D., University of Wyoming, 1967

**Boucher, Adam**

SENIOR LECTURER

Mathematics & Statistics

B.S., 2001, M.S., 2003, Ph.D., Rensselaer Polytechnic Institute, 2008

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CLINICAL ASSISTANT PROFESSOR

Social Work

B.S., 2006, M.S.W., University of New Hampshire, 2007

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SENIOR LECTURER

Hospitality Management

A.O.S., Culinary Institute of America, 1978

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Chemistry

B.S., Mount Allison University, 1997

B.S., University of Victoria, Canada, 2001

Ph.D., University of Alberta, Canada, 2007

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LECTURER

Civil and Environmental Engineering

B.S.F., University of New Hampshire, 1999

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Emerita

UNH Transition

D.V.M., University of Georgia, 1980

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Classics, Humanities & Ital Studies

B.A., University of California - Los Angeles, 1992

M.A., San Francisco State University, 1997

M.A., 2000, Ph.D., University of California - Los Angeles, 2007

**Boysen, Andrew**

PROFESSOR

Music

B.M., University of Iowa, 1991

M.M., Northwestern University, 1993

D.F.A., 1998, D.M.A., University of Rochester, 1998

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PROFESSOR EMERITUS

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B.S., University of Connecticut, 1962

M.F., Yale University, 1963

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Full Extension State Specialist Professor

Natural Resources

B.S., Nazareth College, 1996

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CLINICAL ASSISTANT PROFESSOR

Nursing

B.A., University of New Hampshire, 1989

A.D.N., New Hampshire Community Techni, 1999

M.S., University of New Hampshire, 2006

Certificate, Metropolitan St Col, 2013

**Bresnahan, Megan**

Assistant Professor, Life Sciences & Agriculture Librarian

Academic and Community Engagement

B.A., University of Arizona, 2004

M.S., University of Michigan, 2007

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ASSISTANT EXTENSION EDUCATOR EMERITA

PEAEMPL-Casual Hourly

B.S., Keene State College (Nh), 1975

**Brettschneider, Marla**

PROFESSOR

Political Science

B.A., State University of New York at Binghamton, 1986

M.A., 1988, Ph.D., New York University, 1993

**Brewer, Jennifer**

ASSOCIATE PROFESSOR

Geography

B.A., University of Michigan, 1989

M.S., University of Maine, 2002

Ph.D., Clark University, 2007

**Brewer, Kathrynne**

ASSISTANT PROFESSOR

Social Work

B.F.A., New York University, 2001

M.S.W., Fordham University, 2008

M.Phil., 2013, Ph.D., Columbia University in the City of New York, 2017

**Brian, Kimberly**

Clinical Assistant Professor

Kinesiology

B.S., 2011, M.S., University of Delaware, 2013



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Assistant Professor  
Kinesiology  
B.S., Plymouth State University, 2009  
M.S., George Washington University, 2012  
Ph.D., University of Delaware, 2016

**Briggs, Janet**

ASSISTANT PROFESSOR EMERITUS  
UNH Transition  
B.S., University of Massachusetts - Amherst, 1962

**Brito, Andre**

ASSOCIATE PROFESSOR  
Agriculture, Nutrition, & Food System  
D.V.M., 1996, M.S., Federal University of Minas Gerais, Brazil, 1999  
Ph.D., University of Wisconsin - Madison, 2004

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Clinical Assistant Professor  
Agriculture, Nutrition, & Food System  
B.S., University of New Hampshire, 2001  
M.S., 2006, D.V.M., Cornell University, 2015

**Brock, Wendy**

EXTENSION STATE SPECIALIST EMERITA  
Youth and Family  
B.S., State University of New York at Plattsburgh, 1971  
M.S., University of Nebraska, 1977

**Brockmann, Stephanie**

Assistant Professor  
Economics  
M.A., Western Ky University, 2011  
Ph.D., University of Wyoming, 2019

**Broderick, Alexis**

Assistant Professor  
History  
B.F.A., Washington University - St Louis, 2009  
M.A., 2014, Ph.D., University of Pennsylvania, 2018

**Bromberg, Daniel**

ASSOCIATE PROFESSOR  
Political Science  
B.A., University at Albany, 2001  
M.P.A., University of Vermont, 2006  
Ph.D., Rutgers University, 2009

**Bronstein, Arna**

Associate Professor Emerita  
UNH Transition  
B.A., Colgate University, 1975  
M.A., 1978, Ph.D., University of Pennsylvania, 1986

**Brooks, Courtney**

PROFESSOR  
UNHL JD Instruction  
B.A., University of Massachusetts - Amherst, 1998  
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Emerita  
UNH Transition  
B.A., University of Texas at Austin, 1974  
M.S.W., Louisiana State University, 1977  
Ph.D., Washington State University, 1986

**Brown, Bonnie**

PROFESSOR  
Biological Sciences  
B.S., University of Alabama Birmingham, 1981  
Ph.D., Old Dominion University, 1989

**Brown, Cliff**

ASSOCIATE PROFESSOR  
Sociology  
B.A., Earlham College, 1987  
M.A., 1992, Ph.D., Emory University, 1996

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PROFESSOR EMERITA  
UNH Transition  
B.A., Wellesley College, 1963  
M.Ed., 1975, Ph.D., University of New Hampshire, 1976  
M.F.A., Warren Wilson College, 1991

**Brown, Roger**

ASSOCIATE PROFESSOR EMERITUS  
UNH Transition  
A.B., Emory University, 1966  
M.A., 1969, Ph.D., University of Kansas, 1971

**Brown, Warren**

ASSOCIATE PROFESSOR EMERITUS  
Political Science  
B.A., Willamette University, 1966  
M.A., 1972, Ph.D., Claremont Graduate University, 1977

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CLINICAL ASSISTANT PROFESSOR  
Kinesiology  
B.S., Georgia Southern University, 1985  
M.Ed., Valdosta State College, 1995

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Agriculture, Nutrition, & Food System  
B.A., University of Pittsburgh, 2007  
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Institute on Disability  
B.A., 1991, M.A., University of Delaware, 1995  
Ph.D., Rutgers University, 2007

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Classics, Humanities & Ital Studies  
B.A., Pomona College, 1976  
M.A., University of Pittsburgh, 1978  
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PROFESSOR

Earth Sciences

B.A., University of Virginia, 1993

Ph.D., University of California - Santa Barbara, 1998

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Professor

Marketing

M.S., 1989, Ph.D., University of Innsbruck, Austria, 1997

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ASSOCIATE PROFESSOR

Mathematics & Statistics

B.S., 1998, M.S., 2005, Ph.D., Technion- Israel Institute of Technology, Israel, 2010

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B.A., 1979, M.A., St. John's University - New York, 1981

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UNHL JD Instruction

B.A., Harvard University, 1983

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PEAEMPL-Casual Hourly

B.S., Christian Brothers University, 1970

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Earth Systems Research Center

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Marine Sciences & Ocean Engineering

B.S., Hobart and William Smith College, 1977

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English

B.A., University of North Carolina at Chapel Hill, 2010

M.A., 2014, Ph.D., Ohio State University, 2016

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PROFESSOR EMERITUS

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B.A., Grinnell College, 1962

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Agriculture, Nutrition,& Food Systm

B.S., 1990, M.B.A., University of New Hampshire, 2001

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Agriculture, Nutrition,& Food Systm

B.S., University of Rhode Island, 1975

M.Ed., Tufts University, 1977

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PROFESSOR EMERITUS

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B.S., Syracuse University, 1963

Diploma, American Academy of Art, 1965

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ASSISTANT EXTENSION EDUCATOR EMERITA

4-H Youth Development

B.A., University of Massachusetts - Amherst, 1970

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Languages, Literatures, & Cultures

B.A., 2005, M.A., 2007, Ph.D., State Pushkin Institute, 2012

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EXTENSION EDUCATOR EMERITA

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B.S., Oregon State University, 1963

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B.S., University of Maine, Farmingto, 1971

M.S., Wageningen Agric University, T, 1977

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Center for Coastal & Ocean Mapping

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B.A., University of New Hampshire, 1975

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**C**

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PROFESSOR EMERITUS

Physics

B.S., George Washington University, 1963

M.S., 1965, Ph.D., University of Illinois at Urbana-Champaign, 1969

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PROFESSOR EMERITUS

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B.A., State University of New York at Oswego, 1974

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Center for Coastal & Ocean Mapping  
M.S., 1994, Ph.D., Heriot-Watt University, Scotland, 1997

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SENIOR LECTURER  
Psychology  
B.S., University of Iowa, 1995  
M.A., 2000, Ph.D., Kent State University, 2004

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Human Development & Family Studies  
B.S., Utah Valley University, 2014  
M.S., Oklahoma State University, 2017  
Ph.D., Florida State University, 2021

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ASSOCIATE PROFESSOR  
Earth Sciences  
B.S., 1994, M.A., Boston College, 1998  
M.A., 2002, Ph.D., Massachusetts Institute of Technology, 2005

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ASSOCIATE PROFESSOR  
Management  
B.A., Allegheny College, 2000  
M., Ohio State University, 2005  
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English  
B.A., 2006, M.A.T., University of New Hampshire, 2007

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Mathematics & Statistics  
B.S., Bridgewater State University, 1992  
M.S., 1995, Ph.D., University of New Hampshire, 1999

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Emerita  
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B.S., Marycrest College, 1971  
M.S., Boston College, 1977  
Ph.D., Swansea University, United Kingdom, 2010

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Chemistry  
B.S., Carleton University, 2001  
M.S., McGill University, Canada, 2004  
Ph.D., University of Western Ontario, Canada, 2009

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Emeritus  
UNH Transition  
B.S., 1981, M.O.E., University of New Hampshire, 1987

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SENIOR LECTURER  
Art and Art History  
B.F.A., State University of New York at Purchase, 2001  
M.F.A., Mass College of Art, 2006

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UNH Transition  
B.A., Grinnell College, 1979  
M.F.S., School for International Training, 1982

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PROFESSOR EMERITA  
UNH Transition  
B.S., University of Massachusetts - Amherst, 1974  
M.S., University of Wisconsin, 1976  
Ph.D., University of California - Davis, 1981

**Carey, Tomasen**

SENIOR LECTURER  
English  
B.A., 1987, M.Ed., University of New Hampshire, 1992

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ASSOCIATE PROFESSOR  
Art and Art History  
B.A., College of William and Mary, 1991  
M.F.A., Boston University, 1993  
MTS, Harvard University, 1999

**Carnicelli, Thomas**

PROFESSOR EMERITUS  
UNH Transition  
A.B., Princeton University, 1958  
M.A., 1960, Ph.D., Harvard University, 1966

**Caron, Rosemary M.**

PROFESSOR  
Health Management & Policy  
B.A., Regis College, 1990  
Ph.D., Dartmouth College, 1996  
M.P.H., Boston University, 1998

**Carr, Russell**

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UNH Transition  
B.S., Brigham Young University, 1980  
M.S., 1983, Ph.D., University of Rochester, 1984

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Resource Acquisition and Discovery  
B.A., University of New Hampshire, 1991  
M.L.S., Simmons College, 1998  
M.B.A., University of New Hampshire, 2005

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PROFESSOR EMERITUS  
UNH Transition  
A.B., La Tech Univ, 1966  
M.A., Western Michigan University, 1968  
Ph.D., Michigan State University, 1974

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RESEARCH ASSISTANT PROFESSOR  
Carsey School  
B.A., 2007, M.A., 2009, Ph.D., University of New Hampshire, 2014

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ASSISTANT PROFESSOR  
Political Science  
B.A., Whitman College, 1997  
M.A., 2003, M.P.A., University of Washington, 2004  
M.A., 2005, Ph.D., University of California - Berkeley, 2012

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Emeritus  
UNH Transition  
B.S.E., University of Michigan, 1975  
M.S., Stanford University, 1976  
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ASSOCIATE PROFESSOR  
Social Work  
A.A., Orange County Community College, 1968  
B.A., State University of New York, 1970  
M.S.W., University of New Hampshire, 1998  
Ph.D., Boston College, 2003

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Computer Science  
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Languages, Literatures, & Cultures  
B.A., Hood College, 1994  
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Languages, Literatures, & Cultures  
B.A., University of Puerto Rico, 1988  
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UNHL Library  
B.A., Stonehill College, 1981  
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PROFESSOR EMERITUS  
UNH Transition  
B.S., Elon University, 1964  
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Ph.D., University of New Hampshire, 1972

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PROFESSOR EMERITUS  
PEAEMPL-Faculty Salary  
B.A., 1971, M.A., 1976, Ph.D., University of Pennsylvania, 1980

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ASSISTANT PROFESSOR  
Accounting and Finance  
B.S., Pennsylvania State University, 2008  
M.S., University of Illinois at Urbana-Champaign, 2011  
Ph.D., Washington State University, 2019

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CLINICAL ASSISTANT PROFESSOR  
Agriculture, Nutrition, & Food System  
B.S., University of New Hampshire, 2011  
M.S., University of Maine, 2014

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LECTURER  
Applied Engineering & Sciences  
B.S., Wentworth Institute of Technology, 2003  
M.S., Northeastern University, 2007

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UNH Transition  
A.A.S., 1979, B.S., 1986, M.S., University of New Hampshire, 1988

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Emeritus  
UNH Transition  
B.S.E.E., 1974, M.S.E.E., 1976, Ph.D., Ohio University, 1982

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Research Associate Professor  
Marine Sciences & Ocean Engineering  
B.S., University of Wisconsin, 1985  
M.S., Texas A & M University, 1993  
Ph.D., University of New Hampshire, 2013

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UNH Transition  
A.A., Shasta College, 1969  
B.S., University of California - Davis, 1971  
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PROFESSOR  
Physics - Joint Positions  
B.A., Yale University, 1990  
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Agriculture, Nutrition, & Food System  
B.S., 1986, M.O.E., University of New Hampshire, 1995

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Computer Science  
B.S., 2015, M.S., University of North Florida, 2015  
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Psychology  
B.A., 2002, M.A., California State University, 2009  
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Natural Resources & The Environment

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Computer Science  
B.S., 1993, M.S., 1993, Ph.D., National Polytechnic Institute of Toulouse, France, 1997

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A.S., Mott Community College, 1962  
A.B., University of Michigan, 1965  
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B.A., 1980, M.A., Brigham Young University, 1982  
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Psychology  
M.A., University de San Carlos, Guatemala, 1989  
M.A., 1995, Ph.D., University of California - Santa Cruz, 1999

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Languages, Literatures, & Cultures  
B.S., Instituto Tech Monterrey, 1991  
M.A., 1994, M.A., Ohio University, 1999  
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EXTENSION SPECIALIST EMERITUS  
Youth and Family  
B.S., Keene State College (Nh), 1977  
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Decisions Sciences  
B.S., Tianjin University, China, 2012  
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Electrical & Computer Eng Dept  
B.S., Nanjing Univ of Posts and Tele, 2011  
M.S., Chinese Academy of Sciences, China, 2015  
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ASSOCIATE PROFESSOR  
Management  
B.A., 2006, M.A., Shandong University, China, 2009  
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Communication Sciences & Disorders  
B.S., Chung Shan Medical University, Taiwan, 2006  
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Theatre & Dance  
B.F.A., Taipei Natl Univ of the Arts, 2000  
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Molecular, Cellular, & Biomedical  
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Molecular, Cellular, & Biomedical  
B.S., Peking University, China, 2000  
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Mechanical Engineering  
B.S., University of Virginia, 1993  
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Languages, Literatures, & Cultures  
B.A., University of Craiova, Romania, 1996  
M.A., University of Kentucky, 2004  
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English  
B.A., St. Catherine University, 1987  
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Education  
B.A., 1991, M.A., Ewha Womans University, Korea, 1993  
Ed.M., 2001, Ed.D., Columbia University in the City of New York, 2005

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UNHL Legal Skills  
BA, College of the Holy Cross, 2004  
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UNH Transition  
A.B., Princeton University, 1974  
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PROFESSOR  
Art and Art History  
B.F.A., 1991, M.F.A., Queens College of the City University of New York, 1993

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Molecular, Cellular, & Biomedical  
B.S., Wuhan University, China, 1995  
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B.A., University of New Hampshire, 1967  
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C.A.G.S., 1984, B.A., University of New Hampshire, 2008

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B.A., Ripon College, 1966  
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Accounting and Finance  
B.S., 1994, M.S., University of Florida, 1994  
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Classics, Humanities & Ital Studies  
B.A., University of New Hampshire, 1971  
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Nursing  
B.S., University of Central Florida, 2013  
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B.A., University of New Hampshire, 1962  
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Decisions Sciences  
B.S., Bryant University, 1988

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B.S.E.E., University of New Hampshire, 1956  
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B.S., University of New Hampshire, 1968  
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Physics - Joint Positions  
B.S., University of Illinois at Urbana-Champaign, 1982  
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B.S., 1956, M.S., University of New Hampshire, 1958

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B.S., Salve Regina University, 2014  
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English  
B.A., Middlebury College, 2002  
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Psychology  
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B.S., Husson College, 1990  
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B.S., 1970, M.S., Virginia Polytechnic Institute and State University, 1972  
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B.S., University of New Hampshire, 2004  
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Women's and Gender Studies  
A.B., Bryn Mawr College, 1970  
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M.A., 2005, M.L.I.S., University of Southern Mississippi, 2005  
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Natural Resources & The Environment  
B.S., Rutgers University, 1979  
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B.A., 1981, M.A., 1983, Ph.D., Washington University - St Louis, 1988

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Education  
B.A., Loyola University - Maryland, 1988  
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Agriculture, Nutrition, & Food System  
B.S., University of New Hampshire, 1986  
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Ph.D., University of New Hampshire, 2001

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ASSOCIATE PROFESSOR EMERITUS  
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B.A., Connecticut College, 1976  
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Earth Systems Research Center  
B.A., Villanova University, 1998  
Ph.D., University of New Hampshire, 2001  
M.S., Antioch University New England, 2005

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PROFESSOR  
Economics  
B.A., Eastern Illinois University, 1982  
Ph.D., University of North Carolina at Chapel Hill, 1987

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ASSOC DEAN-LIBERAL ARTS  
Dean's Office - Liberal Arts  
B.M., Bradley University, 1995  
M.M., 1997, D.M.A., University of Illinois at Urbana-Champaign, 2001

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Clinical Assistant Professor  
Molecular, Cellular, & Biomedical  
B.S., University of New Hampshire, 2015  
M.B.A., Southern New Hampshire University, 2020

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Civil and Environmental Engineering  
A.B., 1981, B.S., University of Illinois at Urbana-Champaign, 1981  
M.S., 1991, Ph.D., Cornell University, 1992

**Cook, Summer**

ASSOCIATE PROFESSOR  
Kinesiology  
B.S., East Stroudsburg University, 1999  
M.S., 2002, Ph.D., Syracuse University, 2009

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LECTURER  
Life Sciences  
B.A., Smith College, 2008  
M.A., College of William and Mary, 2012

**Cooper, Barbara**

PROFESSOR EMERITA  
UNH Transition  
B.A., 1966, M.A., 1967, Ph.D., University of Wisconsin, 1974

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Associate Professor

Education

B.S., University of New Hampshire, 2004

M.S., 2010, Ph.D., University of California, 2015

**Corcoran, Ellen**

ASSOCIATE PROFESSOR EMERITA

UNH Transition

B.A., Bryn Mawr College, 1962

M.A.T., 1968, Ph.D., New York University, 1972

**Corvey, Candace**

VICE PRESIDENT EMERITA

PEAEMPL-Casual Salary

B.S., Wake Forest University, 1970

M.Ed., North Carolina State University, 1974

M.B.A., Harvard University, 1980

**Cote, Rick H**

PROFESSOR

Molecular, Cellular, & Biomedical

B.S., Tufts University, 1974

Ph.D., University of Wisconsin, 1980

**Couse, Leslie**

EXECUTIVE DIRECTOR-ENGAGEMENT & FACULTY DEVELOPMENT

Engagement and Faculty Development

B.S.Ed., State University of New York at Cortland, 1980

M.Ed., State University of New York at Brockport, 1985

M.S., Russell Sage College, 1993

Ph.D., Syracuse University, 2001

**Cowen, Sharon**

Community and Economic Development

B.S., 1975, M.S., Ohio State University, 1981

**Cox, Trish Haneman**

CLINICAL ASSOCIATE PROFESSOR

Social Work

B.S., Trinity College - Conn, 1995

M.S.Ed., Bank Street College of Education, 2000

M.S.W., University of New Hampshire, 2008

**Craig, Patricia**

ASSOCIATE PROFESSOR

Recreation Management & Policy

B.S., University of Scranton, 1987

M.Ed., Temple University, 1997

Ph.D., University of New Hampshire, 2010

**Crepeau, Elizabeth**

PROFESSOR EMERITA

UNH Transition

B.S., 1966, M.A., 1988, Ph.D., University of New Hampshire, 1994

**Croce, Ronald**

PROFESSOR

Kinesiology

B.S., Brooklyn College of the City University of New York, 1973

M.Ed., Temple University, 1975

Ph.D., University of New Mexico, 1983

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LECTURER EMERITUS

UNH Library

B.A., Keene State College (Nh), 1971

AMLS, University of Michigan, 1974

A.A.S., University of New Hampshire, 1977

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FULL EXTENSION STATE SPECIALIST/PROFESSOR EMERITA

Youth and Family

B.S., University of Maine, 1970

M.S., Oregon State University, 1978

**Crow, Garrett**

PROFESSOR EMERITUS

Biological Sciences

A.B., Taylor University, 1965

M.S., 1968, Ph.D., Michigan State University, 1974

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ASSISTANT PROFESSOR

Languages, Literatures, & Cultures

B.A., Renmin University of China, 2002

M.A., Peking University, China, 2005

Ph.D., New York University, 2013

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PROFESSOR EMERITA

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B.S., 1976, M.S., Rutgers University, 1978

Ph.D., University of Illinois at Urbana-Champaign, 1982

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SENIOR LECTURER

Biological Sciences

B.A., Amherst College, 2005

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Principal Lecturer

Classics, Humanities & Ital Studies

B.A., Grinnell College, 1998

M.A., University of Kansas, 2001

M.A., 2007, Ph.D., Indiana University, 2009

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ASSOCIATE PROFESSOR EMERITUS

Communication

B.A., University of North Dakota, 1972

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Lecturer

Civil and Environmental Engineering

B.S., 2007, M.S., University of New Hampshire, 2009

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Agriculture, Nutrition, & Food System  
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Civil and Environmental Engineering  
B.E., Sardar Patel University, India, 2001  
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CLINICAL ASSISTANT PROFESSOR  
Social Work  
B.A., Ithaca College, 2000  
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Earth Sciences  
B.S., Montana State University, 1987  
M.S., 1990, Ph.D., New Mexico Institute of Mining and Technology, 1994

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Professor  
UNHL Clinic  
B.A., California State University, 1999  
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Emeritus  
UNH Transition  
B.S., California Polytechnic State University - San Luis Obispo, 1980  
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B.S., Antioch College, 1958  
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Communication Arts and Science  
B.A., Texas A & M University, 1994  
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Social Work  
B.A., North Adams St Coll, 1981  
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B.S., University of Illinois at Urbana-Champaign, 1973  
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B.A., 1961, M.A., University of Mississippi, 1967

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A.B., Boston College, 1960  
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B.S.E., Princeton University, 1972  
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Political Science  
B.A., Stanford University, 2006  
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Marketing  
B.A., Rowan University, 1977  
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Earth Systems Research Center  
B.S., University of Puget Sound, 1981  
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Computer Science  
B.S., 2002, M.S., Goethe University, Germany, 2002  
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Center for Coastal & Ocean Mapping  
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Dean's Office - Liberal Arts  
B.Soc.Sci., 1980, M.Soc.Sci., University College Dublin, Ireland, 1983  
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B.S.N., Thomas Jefferson University of, 1981  
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A.B., Dartmouth College, 1960  
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Security Studies  
B.A., Eckerd College, 1996  
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B.A., University of California - Santa Barbara, 1971  
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Forestry And Wildlife Resources  
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B.A., University of New Hampshire, 1994  
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ALM, Harvard University, 2005  
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History  
B.A., Cornell University, 1987  
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History  
B.A., Stanford University, 1993  
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Philosophy  
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Inst for Health Policy & Practic  
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B.S., University of Rhode Island, 1967  
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Communication  
B.P.A., 2007, M.A., Carleton University, 2009  
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Management  
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Psychology  
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Certificate, University of Western Ontario, Canada, 1986  
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Physics - Joint Positions  
B.S., University of California, 1986  
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Agriculture, Nutrition, & Food System  
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Management  
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Physics  
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Psychology

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Theatre & Dance

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 B.S., Cairo University, Egypt, 1967  
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 Space Science Center  
 B.S., University of Malta, 1966  
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 Natural Resources  
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Languages, Literatures, &amp; Cultures

Staatsexamen, Free University of Berlin, Germany, 1974

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BA, Lehigh University, 2006

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Licence, 1985, Ph.D., Universidad de Valladolid, Spain, 1990  
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B.S., 1979, M.S., Colorado State University, 1986  
Ph.D., University of New Hampshire, 1995

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RESEARCH PROFESSOR  
Biological Sciences  
B.S., Florida State University, 1972  
M.S., University of Central Florida, 1981  
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PROFESSOR EMERITUS  
UNH Transition  
B.A., 1965, M.B.A., Michigan State University, 1967  
Ph.D., University of Colorado at Boulder, 1972

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PROFESSOR  
Mechanical Engineering  
B.S., Carnegie Mellon University, 1975  
Ph.D., Northwestern University, 1981

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PROFESSOR  
Marketing  
B.A., Gordon College, 1977  
M.B.A., 1980, M.S., 1995, Ph.D., Indiana University, 1997

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CLINICAL ASSOCIATE PROFESSOR  
Agriculture, Nutrition, & Food System  
B.S., Rutgers University, 2003  
D.V.M., Cornell University, 2007

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History  
B.A., University of Rochester, 1983  
M.A., 1987, Ph.D., University of California - Berkeley, 1993

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UNH Transition  
B.S., 1976, M.S., University of Massachusetts - Amherst, 1991

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ASSOCIATE PROFESSOR  
Music  
B.A., Luther College, 1993  
M.M., Indiana University, 1996  
D.M., Florida State University, 2006

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Lecturer  
Molecular, Cellular, & Biomedical

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PROFESSOR  
Chemical Engineering  
B.S.E.T., Indian Institutes of Technology, India, 1993  
Ph.D., Pennsylvania State University, 1999

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PROFESSOR EMERITUS  
UNH Transition  
B.A., Pomona College, 1960  
M.S., Purdue University, 1962  
Ph.D., University of South Carolina, 1967

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Associate Professor  
Decisions Sciences  
B. Com., National University of Lesotho, South Africa, 1998  
M.B.A., 2002, Ph.D., Kent State University, 2006

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Lecturer  
Health Management & Policy  
B.A., Cornell University, 2001  
M.S., State University of New York, 2004  
Ph.D., Massachusetts Institute of Technology, 2010  
M.S., University of New Hampshire, 2019

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Assistant Professor  
Mechanical Engineering  
B.S., 2010, M.S., 2012, Ph.D., Pohang Univ of Sci and Tech, 2016

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ASSOCIATE PROFESSOR  
English  
B.A., University of California - Davis, 1986  
M.A., Sonoma State University, 1993  
Ph.D., City University of New York, 2000

**Haddad (UNH Extension), Nada**

UNH Transition  
M.S., American University of Beirut, 1983

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PROFESSOR  
Mathematics & Statistics  
B.S., Michigan State University, 1967  
M.A., University of Wisconsin, 1968  
Ph.D., Indiana University - Purdue University Fort Wayne, 1975

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ASSOCIATE DEAN EMERITUS  
UNH Transition  
B.A., 1963, M.A., University of Massachusetts - Amherst, 1968  
Ph.D., University of New Hampshire, 1976

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PROFESSOR EMERITA  
UNH Transition  
B.S., Simmons College, 1963  
M.A., Barnard College, 1964  
Ph.D., University of North Carolina, 1971

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EXTENSION SPECIALIST EMERITUS  
UNH Transition  
B.S., Brown University, 1977  
M.S., Colorado State University, 1986

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ASSOCIATE PROFESSOR  
English  
B.A., Dartmouth College, 1990  
M.J., University of California - Berkeley, 1994

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Lecturer  
Sustainability Institute  
BS, Dartmouth College, 1998  
MS, 2007, PhD, University of California, Davis, 2012

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ASSOCIATE PROFESSOR  
Agriculture, Nutrition, & Food System  
B.A., Dartmouth College, 1997  
M.S., 2007, Ph.D., University of California - Davis, 2011

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Lecturer  
Management  
B.A., University of New Hampshire, 2004  
M.A., American University, 2007  
Ed.D., Plymouth State University, 2018

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PROFESSOR EMERITA  
UNH Transition  
B.A., Boston University, 1965  
M.S., Southern Connecticut State University, 1968  
Ph.D., University of Toronto, Canada, 1975

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LECTURER EMERITA  
PEAEMPL-Faculty Salary  
B.A., Bowdoin College, 1993  
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ASSOCIATE PROFESSOR  
Chemical Engineering  
B.S., 2003, Ph.D., Case Western Reserve University, 2010

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ASSOCIATE PROFESSOR  
Life Sciences  
B.S., Old Dominion University, 1983  
M.S., 1995, Ph.D., University of Connecticut, 1996

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PROFESSOR  
Natural Resources & The Environment  
B.A., University of Notre Dame, 1976  
M.S., University of Massachusetts - Amherst, 1981  
Ph.D., Virginia Polytechnic Institute and State University, 1989

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Marine Sciences & Ocean Engineering  
A.S., Elgin Community Coll, 1989  
B.S., Southern Illinois University, 1991  
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PROFESSOR  
Sociology  
B.A., University of California - Santa Barbara, 1970  
M.A., 1974, Ph.D., University of Colorado at Boulder, 1978

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Civil and Environmental Engineering  
B.S., Huazhong University of Science, 2011  
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Music  
B.M., 2013, M.M., Academie Superieure de Musique de Strasbourg, France, 2015  
Diploma, Indiana University, 2017  
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Emeritus  
UNH Transition  
B.A., 1961, M.A., Miami University - Ohio, 1963  
Ph.D., University of Toronto, Canada, 1970

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Accounting and Finance  
B.S., Bentley College, 1997  
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B.S., 1968, M.S., Brigham Young University, 1971  
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B.A., Connecticut College, 1973  
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Kinesiology  
A.B., Bowdoin College, 1970  
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Nursing  
B.S.N., Duke University, 1976  
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ASSOCIATE PROFESSOR EMERITA  
Reference  
B.A., University of Rhode Island, 1980  
M.S., Simmons College, 1982  
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Professor Emeritus  
Psychology  
B.A., Hampshire College, 1971  
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B.S., Massachusetts Institute of Technology, 1968  
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B.A., 1965, Ph.D., University of California - Berkeley, 1970

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Human Development & Family Studies  
B.A., Emmanuel College, 2010  
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Nursing  
B.S., 2004, M.S., University of New Hampshire, 2011

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Anthropology  
B.S., Skidmore College, 1994  
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B.A., New College, 1969  
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B.S., 1961, M.S., Ohio State University, 1962  
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Recreation Management & Policy  
B.S., Texas A & M University, 2008  
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Biological Sciences  
B.S., University of Maine, 2003  
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D., University of Rhode Island, 2013

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Management  
B.S., University of Connecticut, 2000  
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English  
B.A., Vassar College, 1996  
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Music  
B.M., 1982, M.M., Johns Hopkins University, 1984  
Diploma, Guildhall School Music & Drama, England, 1986  
M.M., Johns Hopkins University, 1992  
M.A., 1996, D.M.A., 1997, Ph.D., University of Rochester, 2004  
M.M., Johns Hopkins University,

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Accounting and Finance  
B. Com., 1985, M. Com., University of Canterbury, New Zealand, 1987  
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Management  
B.S., Univ of Lowell, 1966  
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Ed.D., Boston University, 1979

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Management  
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B.S., 1978, M.S., Purdue University, 1979  
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Computer Science  
B.S., 1988, M.S., McGill University, Canada, 1991  
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Ph.D., Princeton University, 2001  
Ph.D., Brown University, 2013

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Accounting and Finance  
B.S., Shanghai University of International Business and Economics, China, 2008  
M.B.A., University of Central Arkansas, 2009  
Ph.D., University of Kansas, 2016

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Communication  
B.A., Drew University, 1996  
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Ph.D., University of Illinois at Urbana-Champaign, 2011

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Communication  
B.S., Oregon State University, 1990  
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PROFESSOR EMERITUS  
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B.S., University of Maine, 1962  
M.Ed., Duquesne University, 1964  
Ph.D., Kent State University, 1967

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PROFESSOR EMERITUS  
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O, University of Munich, Germany, 1961  
Diploma, University Heidelberg, Germany, 1964  
Ph.D., University of Hamburg, Germany, 1966

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Assistant Professor  
Communication  
B.F.A., 2008, M.L.S., University of North Carolina, 2011  
M.A., Appalachian State University, 2013  
Ph.D., Syracuse University, 2020

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PRINCIPAL LECTURER  
Psychology  
B.A., College of Wooster, 1983  
M.A., 1986, Ph.D., University of New Hampshire, 1993

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Emeritus  
Dean's Office/Administration  
A.B., University of Wisconsin, 1967  
Ph.D., Harvard University, 1972  
M.L.S., Simmons College, 1974

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PROFESSOR EMERITUS  
UNHL Business Service Center

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SENIOR LECTURER  
Kinesiology  
B.S., University of New Hampshire, 1988  
A.S., N H Technical Inst, 1993

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Emeritus  
UNH Transition  
B.S., 1973, M.S., 1974, Ph.D., University of Pennsylvania, 1980

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Agriculture, Nutrition,& Food System

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Professor  
Economics  
B.S.E., Tulane University, 1993  
Ph.D., University of Pennsylvania, 2000

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ASSOCIATE PROFESSOR  
English  
B.A., University of New Hampshire, 1978

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Senior Lecturer  
Psychology  
B.S., St. Lawrence University, 1978  
M.Ed., Harvard University, 1983  
Ed.D., Boston University, 1990

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PROFESSOR EMERITUS  
UNHL Business Service Center  
B.S., Indiana University of Pennsylvania, 1959  
M.A., Temple University, 1964  
Ph.D., Georgetown University, 1968

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PROFESSOR  
Mathematics & Statistics  
B.A., 1979, M.A., State University of New York at Buffalo, 1981  
Ph.D., University at Albany, 1988

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LECTURER

Education

B.S., SUNY College of Environmental Science and Forestry, 1992

M.S., State University of New York at Potsdam, 1995

Ph.D., Boston College, 2006

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PROFESSOR EMERITA

UNH Transition

B.A., Skidmore College, 1970

A.A., 1977, A.M., 1977, Ph.D., Harvard University, 1986

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PROFESSOR EMERITUS

Philosophy

B.A., Auburn University, 1966

M.A., 1969, Ph.D., University of Georgia, 1972

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ASSOCIATE PROFESSOR Emeritus

Health Management &amp; Policy

B.S., 1972, M.P.H., 1974, Ph.D., University of Pittsburgh, 1978

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ASSOCIATE PROFESSOR

Mathematics &amp; Statistics

B.S., University of Florida, 1979

M.S., 1982, Ph.D., Northwestern University, 1985

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ASSOCIATE PROFESSOR EMERITUS

UNH Transition

B., Rensselaer Polytechnic Institute, 1954

M.S., Cornell University, 1958

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Senior Lecturer &amp; Assistant Director

Sign Language Interpreting

A.S., Remington College, 1987

B.A., Gallaudet University, 2006

M.S., 2008, Ed.D., Lamar University, 2021

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ASSOCIATE PROFESSOR

Art and Art History

B.F.A., University of New Mexico, 1998

M.F.A., Maryland Institute, 2004

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ASSOCIATE PROFESSOR

Physics

B.S., Occidental College, 2005

M.S., 2008, Ph.D., Brown University, 2013

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Nursing

B.S., University of New England, 2008

M.S., University of New Hampshire, 2010

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B.S., 1965, M.S., 1965, Ph.D., Massachusetts Institute of Technology, 1968

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PROFESSOR

Physics

B.S., University of New Hampshire, 1987

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SENIOR LECTURER

Languages, Literatures, &amp; Cultures

B.A., 2006, M.A., University of Arizona, 2008

Ph.D., Ohio State University, 2014

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PROFESSOR EMERITUS

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B.A., Boston University, 1975

B.A., Pennsylvania State University, 1979

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Languages, Literatures, &amp; Cultures

B.A., University of Virginia, 1984

M.A., 1987, Ph.D., University of Wisconsin - Madison, 1993

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ASSOCIATE PROFESSOR

Economics

B.S., East Carolina University, 2010

M.A., Ohio State University, 2011

M.S., East Carolina University, 2011

Ph.D., Ohio State University, 2016

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DEAN AND PROFESSOR EMERITA

Dean's Office - Liberal Arts

B.A., Mount Holyoke College, 1967

M.A., 1968, Ph.D., University of California - Los Angeles, 1973

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Accounting and Finance

B.B.A., 2008, M.B.A., University of Dhaka, 2010

M.S.F., Clark University, 2012

Ph.D., Florida Intl University, 2019

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RESEARCH ASSISTANT PROFESSOR

Civil and Environmental Engineering

B.S., University of New Hampshire, 1995

M.A., School for International Train, 2003

Ph.D., University of New Hampshire, 2015

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B.A., 1963, M.A., 1966, Ph.D., University of Western Ontario, Canada, 1977

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PROFESSOR EMERITUS  
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B.S., 1949, M.S., Michigan State University, 1951  
Ph.D., Pennsylvania State University, 1954

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Center Director, CMDR  
Institute on Disability  
B.A., Stockton University, 1988  
M.A., 1991, Ph.D., University of New Hampshire, 1997

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UNH Transition  
B.S., University of Maine, 1972  
M.F., Duke University, 1974  
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M., Vermont Law School, So Royalto, 1983

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B.S., Michigan State University, 1964  
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Ph.D., Ohio State University, 1973

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B.A., Otterbein College, 1969  
M.S., 1975, Ph.D., University of Rhode Island, 1980

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PROFESSOR  
Anthropology  
B.A., University of Delaware, 2000  
M.A., 2002, Ph.D., University of Michigan, 2006

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EMERITUS PROFESSOR  
Communication Arts and Science  
B.S., University of Northern Colorado, 1978  
M.S., McDaniel College, 1991  
Ph.D., Boston University, 2001

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Molecular, Cellular, & Biomedical  
B.S., Michigan State University, 1978  
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Space Science Center  
B.A, National Central University (Taiwan), 2000  
M.A., 2004, Ph.D., Boston University, 2008

### Huang, Ju-Chin

PROFESSOR  
Economics  
B.S., National Taiwan University, Taiwan, 1985  
M.S., 1988, Ph.D., North Carolina State University, 1994

### Hubbard, Colin

PROFESSOR EMERITUS  
PEAEMPL-Emeritus  
B.S.Chem., 1961, Ph.D., Univ of Sheffield Eng, 1964

### Huddleston, Mark

UNH PRESIDENT EMERITUS  
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B.A., State University of New York at Buffalo, 1972  
M.A., 1973, Ph.D., University of Wisconsin - Madison, 1978

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PROFESSOR  
Earth Sciences - Joint Positions  
B.A., Oxford Univ-Eng, 1983  
M.S., Southampton University, UK, 1984  
Ph.D., Dalhousie University, Canada, 1988

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Lecturer  
Chemistry  
Ph.D., University of CA, Irvine, 2018

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Institute on Disability  
A.A., Cape Cod Community College, 1976  
B.A., Westfield State College, 1979  
M.Ed., University of New Hampshire, 1997  
Ph.D., University of North Carolina at Chapel Hill, 2013

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Ocean Process Analysis Lab  
B.S., Trinity College - Conn, 2000  
M.S., University of New Hampshire, 2002

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Senior Lecturer  
Mathematics & Statistics  
B.A., Caldwell Coll for Women, 1996  
M.S., 1999, Ph.D., University of New Hampshire, 2005

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DEAN EMERITUS  
UNHL Business Service Center

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Education

### I

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Clinical Assistant Professor  
Kinesiology  
B.S., University of Alabama, 2014  
M.S., University of Iowa, 2016

**Ingram, Lionel**

PRINCIPAL LECTURER EMERITUS

Political Science

B.S., United States Military Academy, 1963

M.P.A., 1966, Ph.D., Harvard University, 1995

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PROFESSOR

Hospitality Management

B.B.A., Ohio University, 1985

M.B.A., Miami University - Ohio, 1986

Ph.D., Ohio State University, 1991

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Accounting and Finance

B.A., Coe College, 2013

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UNH Transition

A.B., Michigan State University, 1950

M.A., University of Michigan, 1954

Ph.D., Michigan State University, 1963

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Youth and Family

B.S., State University of New York at Plattsburgh, 1973

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English

B.A., University of New Hampshire, 1991

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SENIOR LECTURER

Communication

B.A., Univ of Arkansas, 1986

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Ph.D., Rensselaer Polytechnic Institute, 2002

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Civil and Environmental Engineering

B.S., Brown University, 1987

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Ph.D., Cornell University, 1997

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Communication Arts and Science

B.A., Smith College, 1981

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B.A., 1961, M.A., 1966, M.S., 1968, Ph.D., University of Minnesota, 1973

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Health Management &amp; Policy

J.D., Mass School of Law, Andover MA, 2000

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B.A., Miami University - Ohio, 2006

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Molecular, Cellular, &amp; Biomedical

B.A., Trinity College, Dublin, 2005

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BA, Cambridge College, 2008

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Social Work  
B.A., 2005, M.S.W., Seoul National University, Seoul, Korea, 2011  
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Chemical Engineering  
B.S., Seoul National University, Korea, 2001  
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Mechanical Engineering  
B.S., University of Vermont, 1969  
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Applied Engineering & Sciences  
B.S., Shanghai University, China, 1997  
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Applied Engineering & Sciences  
B.S., 2000, M.S., 2002, Ph.D., University of New Hampshire, 2010

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Earth Sciences  
B.S., University of Minnesota Duluth, 1996  
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Sociology  
B.A., University of Michigan, 1972  
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Life Sciences  
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Thompson School of Applied Science  
B.S., University of New Hampshire, 1979  
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B.S., Emory and Henry College, 1968  
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Chemistry  
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Carsey School

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ASSOCIATE PROFESSOR EMERITUS  
PEAEMPL-Casual Salary  
B.A., Allegheny College, 1966  
M.S.W., Boston University, 1972  
Ph.D., Smith College, 1982

**Jonas, Michael**

ASSOCIATE PROFESSOR  
Applied Engineering & Sciences  
B.S., 1987, M.S., College of William and Mary, 1989  
Ph.D., Tufts University, 2003

**Jones, Lisa**

RESEARCH ASSOCIATE PROFESSOR  
Psychology  
B.A., University of Virginia, 1992  
M.A., 1997, Ph.D., University of Rhode Island, 1999

**Jones, Stephen**

RESEARCH ASSOCIATE PROFESSOR  
Natural Resources & The Environment  
B.S., University of Maine, 1976  
M.S., 1980, Ph.D., University of Wisconsin, 1983

**Jones, Wayne**

PROVOST & VICE PRESIDENT FOR ACADEMIC AFFAIRS  
Provost Office  
Ph.D., University of North Carolina, 1991  
B.S., Saint Michael's College, 1997

**Jorgensen, Nathan**

ASSOCIATE PROFESSOR  
Music  
B.M., University of Kansas, 1999  
M.M., University of Missouri - Columbia, 2003  
D.M.A., University of Kansas, 2010

# K

## **Kaen, Fred**

PROFESSOR EMERITUS  
UNH Transition  
B.S., Lehigh University, 1963  
M.B.A., 1968, Ph.D., University of Michigan, 1972

## **Kalargyrou, Valentini**

ASSOCIATE PROFESSOR  
Hospitality Management  
B.S., Athens University of Economics and Business, 1987  
B.B.A., 1990, M.Sc., 2005, Ph.D., University of Nevada - Las Vegas, 2009

## **Kalinowski, Michael**

ASSOCIATE PROFESSOR EMERITUS  
UNH Transition  
B.A., Bennington College, 1970  
M.Ed., 1972, Ed.D., University of Massachusetts - Amherst, 1976

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CLINICAL ASSOCIATE PROFESSOR  
Nursing  
B.S., Colby-Sawyer College, 1989  
M.S., Northeastern University, 1997  
DNP, University of New Hampshire, 2016  
Ph.D., Duquesne University, 2021

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Assistant Professor  
Civil and Environmental Engineering  
M.S., 2014, Ph.D., Iowa State University, 2018

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UNH Transition  
B.S., Salve Regina University, 1973  
M.S., 1977, Ph.D., University at Albany, 1984

## **Karaivanova, Katerina**

SENIOR LECTURER  
Psychology  
B.A., Kenyon College, 2010  
M.A., 2013, M.S., 2016, Ph.D., University of New Hampshire, 2016

## **Karkour, Islam**

LECTURER  
Languages, Literatures, & Cultures  
B.S., Al-Azhar University, Egypt, 2005  
M.A., University of Manchester, England, 2011  
Ph.D., University of New Hampshire, 2018

## **Karson, Marvin**

PROFESSOR EMERITUS  
UNH Transition  
B.B.A., City College of New York, 1959  
M.A., Johns Hopkins University, 1961  
Ph.D., Nc State University, 1967

## **Kastrisios, Christos**

Research Assistant Professor  
Center for Coastal & Ocean Mapping  
B.Sc., Hellenic Naval Academy, Piraeus, Greece, 2001  
M.P.S., University of Maryland, 2013  
Ph.D., National Tech Univ. of Athens, 2017

## **Kaufmann, Richard**

PROFESSOR EMERITUS  
UNH Transition  
B.S., California Institute of Technology, 1957  
M.S., 1958, Ph.D., Yale University, 1960

## **Kaye, David**

PROFESSOR  
Theatre & Dance  
B.S., Castleton State College, 1984  
M.F.A., Brandeis University, 1993

## **Kayser, John**

ASSOCIATE PROFESSOR EMERITUS  
UNH Transition  
B.A., University of New Hampshire, 1962  
M.A., Ohio State University, 1964  
Ph.D., Claremont Graduate University, 1969

## **Kazura, Kerry**

ASSOCIATE PROFESSOR  
Human Development & Family Studies  
B.A., University of Southern Maine, 1989  
M.S., 1992, Ph.D., Auburn University, 1995

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ASSOCIATE PROFESSOR  
Physics - Joint Positions  
B.S., Davidson College, 2000  
M.S., 2003, Ph.D., West Virginia University, 2006

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Assistant Professor  
Kinesiology  
B.S., 2014, M.S., 2016, Ph.D., George Mason University, 2020

## **Kennedy, Gail**

UNH Transition  
B.A., Fairfield University, 1974  
M.S.W., Columbia University in the City of New York, 1976

## **Kerns, Georgia**

ASSOCIATE PROFESSOR EMERITA  
UNH Transition  
B.S.E., 1969, M.Ed., University of Delaware, 1975  
M.Ed., University of New Hampshire, 1983  
Ph.D., University of Kansas, 1987

## **Khanlari, Moein**

ASSISTANT PROFESSOR  
Marketing  
B.S., Sharif University of Technology, Iran, 2005  
M.B.A., University of Tehran, Iran, 2009  
Ph.D., University of Alberta, Canada, 2016

**Khleif, Bud**

PROFESSOR EMERITUS  
UNH Transition  
B.A., Hebrew University, 1952  
M.A., University of Michigan, 1954  
Ph.D., Johns Hopkins University, 1957

**Kibler, James**

Lecturer  
Economics  
B.A., Virginia Polytechnic Institute and State University, 1998  
M.B.A., Duke University, 2009  
M.A., University of New Hampshire, 2017

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Professor  
Communication  
B.A., University of California - Santa Cruz, 1986  
M.A., 1998, Ph.D., University of California - Santa Barbara, 2003

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PEAEMPL-Faculty Salary  
B.S., Southern Connecticut State University, 1969  
M.S., University of New Hampshire, 1971

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Professor Emeritus  
UNH Transition  
B.M., The New England Conservatory of Music, 1973  
M.F.A., 1977, Ph.D., Brandeis University, 1984

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SENIOR LECTURER  
Accounting and Finance  
B.A., Colorado College, 1978  
M.B.A., Dartmouth College, 1980

**Kilcrease, Kelly**

ASSOCIATE PROFESSOR  
Business and Public Affairs  
B.A., University of South Florida, 1986  
M.B.A., Tampa College, 1988  
Ph.D., Union Institute & University, 1992

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Assistant Professor  
Kinesiology  
B.A., Messiah University (College), 2009  
M.A., Eastern Mennonite University, 2013  
Ph.D., University of Illinois at Urbana-Champaign, 2019

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ASSOCIATE PROFESSOR  
Social Work  
B.A., Yonsei University, Seoul, Korea, 2003  
M.A., Seoul National University, Korea, 2005  
M.S.W., 2007, Ph.D., University of Michigan, 2014

**Kim, Inchan**

ASSISTANT PROFESSOR  
Decisions Sciences  
B.B.A., Hyupsung University, S Korea, 2006  
M.S., Yonsei University, Seoul, Korea, 2009  
Ph.D., University of Oklahoma, 2015

**Kim, Soo Hyon**

ASSOCIATE PROFESSOR  
English  
B.A., Korea University, Seoul, 2005  
M.A., University of Illinois at Urbana-Champaign, 2008  
Ph.D., Michigan State University, 2013

**Kim, Young Jo**

ASSOCIATE PROFESSOR  
Chemical Engineering  
B.S., Sogang University, 2004  
Ph.D., University of Missouri - Columbia, 2010

**Kimball, Robert**

ASSOCIATE PROFESSOR EMERITUS  
UNH Transition  
B.S., 1941, M.A., University of New Hampshire, 1952

**Kinghorn, Deborah**

Professor Emerita  
UNH Transition  
B.A., SUNY College at Fredonia, 1976  
M.F.A., Trinity University -Texas, 1981

**Kinner, Nancy E.**

PROFESSOR  
Civil and Environmental Engineering  
B.A., Cornell University, 1976  
M.S., 1980, Ph.D., University of New Hampshire, 1983

**Kinsey, Brad**

PROFESSOR  
Mechanical Engineering  
B.S., University of Michigan, 1992  
M.S., 1998, Ph.D., Northwestern University, 2001

**Kirkpatrick, John**

Emeritus  
Dean of Students  
B.A., Colby College, 1977  
M.A., 1979, Ph.D., University of New Hampshire, 1983

**Kirsch, Nicholas**

Professor  
Electrical & Computer Eng Dept  
B.S., University of Wisconsin - Madison, 2003  
M.S., 2006, Ph.D., Drexel University, 2009

**Kislat, Fabian**

ASSISTANT PROFESSOR  
Physics  
M.S., 2008, Ph.D., Humboldt-Universität zu Berlin, Germany, 2011

**Kistler, Lynn**

PROFESSOR

Physics - Joint Positions

B.S., Harvey Mudd College, 1981

M.S., 1983, Ph.D., University of Maryland, 1987

**Klein, Anita S.**

ASSOCIATE PROFESSOR Emerita

UNH Transition

B.A., University of Rochester, 1975

Ph.D., Michigan State University, 1981

**Klenotic, Jeffrey**

ASSOCIATE PROFESSOR

Communication Arts and Science

B.A., Pennsylvania State University, 1985

M.A., 1988, Ph.D., University of Massachusetts - Amherst, 1996

**Kloepper, Laura**

Biological Sciences

**Knezevic, Marko**

Professor

Mechanical Engineering

B.S., 2004, M.S., University of Novi Sad, Serbia, 2004

Ph.D., Drexel University, 2009

**Knight, Suzann**

EXTENSION PROFESSOR AND SPECIALIST EMERITA

PEAEMPL-Faculty Salary

B.S., University of Massachusetts - Amherst, 1972

M.A., Keene State College (Nh), 1978

M.S., University of New Hampshire, 1991

**Knowles, Clark**

PRINCIPAL LECTURER

English

B.A., George Mason University, 1988

M.A., University of New Hampshire, 1998

M.F.A., Bennington College, 2005

**Kolekar, Pramila**

Lecturer

Languages, Literatures, &amp; Cultures

B.Com., 1986, LLB., Bangalore University, India, 1989

Diploma, Diplomatic Academy, Austria, 1993

M.A., Karnatak University, India, 1994

Ph.D., Boston College, 2018

**Komonchak, Bernadette**

ASSOCIATE PROFESSOR EMERITA

UNH Transition

B.S., State University of New York at Plattsburgh, 1954

M.A., 1967, Ph.D., University of Arizona, 1974

**Konen, Ian**

LECTURER

Chemistry

B.A., Northwestern University, 1995

D, Stanford University, 2003

**Konzett, Delia Malia Caparoso**

PROFESSOR

English

B.A., Georgia State University, 1989

M.A., 1991, Ph.D., University of Chicago, 1997

**Konzett, Matthias**

PRINCIPAL LECTURER

English

M.A., University of Innsbruck, Austria, 1985

M.A., 1988, Ph.D., Emory University, 1991

Ph.D., University of Chicago, 1995

**Kothari, Mrityunjay**

Assistant Professor

Mechanical Engineering

B. Tech., Indian Institute of Technology Kanpur, 2013

Sc.M., 2016, Ph.D., Brown University, 2019

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Assistant Professor

Music

**Kovach, Adrienne**

ASSOCIATE PROFESSOR

Natural Resources &amp; The Environment

B.S., University of Kansas, 1990

Ph.D., North Carolina State University, 1998

**Kowalski, Stanley**

SENIOR LECTURER

UNHL Intl Tech Transfer Institute

B.S., Pennsylvania State University, 1975

B.S., University of Pittsburgh, 1980

Ph.D., Cornell University, 1989

J.D., Franklin Pierce Law Center, 2005

**Kraft, L. Gordon**

PROFESSOR EMERITUS

UNH Transition

B.S., University of Pennsylvania, 1971

M.S., University of New Hampshire, 1973

Ph.D., University of Connecticut, 1977

**Krasner, James**

PROFESSOR

English

B.A., Hampshire College, 1983

M.A., 1985, Ph.D., University of Pennsylvania, 1989

**Kraus, John**

DIRECTOR EMERITUS

Provost's Business Service Center

B.A., Norwich University, 1964

O, 1976, Ph.D., University of Iowa, 1978

**Krzanowski, James**

Emeritus

UNH Transition

B.E., Stevens Institute of Technology, 1978

M.S., 1981, Ph.D., Massachusetts Institute of Technology, 1983

**Kucharek, Harald**

RESEARCH PROFESSOR  
Space Science Center  
Ph.D., Technical University of Munich, 1984  
M.S., University of Regensburg, Germany, 1986  
Ph.D., Technical University of Munich, 1989

**Kukenberger, Michael**

ASSOCIATE PROFESSOR  
Management  
B.A., University of Maine, 1998  
M.B.A., University of New Hampshire, 2005  
Ph.D., University of Connecticut, 2012

**Kulik, Michael**

Lecturer  
Computer Science  
B.S., 2009, M.S., University of New Hampshire, 2016

**Kun, Andrew**

PROFESSOR  
Electrical & Computer Eng Dept  
B.S., 1992, M.S., 1994, Ph.D., University of New Hampshire, 1997

**Kushner, Richard**

SENIOR LECTURER EMERITUS  
PEAEMPL-Faculty Salary  
B.A., American International College, 1969  
M.A., 1974, Ph.D., University of New Hampshire, 1974

# L

**La Valley, Kenneth John**

V Provost, Univ Outrch & Engmt  
Administration  
B.S., University of New Hampshire, 1993  
M.S., 1996, Ph.D., University of Rhode Island, 2005

**Labbe, Michelle**

CLINICAL ASSISTANT PROFESSOR  
Molecular, Cellular, & Biomedical  
B.S., University of New Hampshire, 1996  
M.B.A., Southern New Hampshire University, 2011

**LaBrecque, Alex**

Assistant Professor  
Marketing  
B.A., 2016, M.S., 2018, Ph.D., Michigan State University, 2021

**LaCourse, John**

PROFESSOR  
Electrical & Computer Eng Dept  
B.A., 1974, M.S., 1977, Ph.D., University of Connecticut, 1981

**Lahiri, Smita**

LECTURER  
Anthropology  
B.A., Bryn Mawr College, 1992  
M.A., 1997, Ph.D., Cornell University, 2002

**Laird, Jo**

ASSOCIATE PROFESSOR  
Earth Sciences  
B.A., University of California - San Diego, 1969  
Ph.D., California Institute of Technology, 1977

**Lambert, Robert**

PROFESSOR EMERITUS  
UNH Transition  
B.S., St. Lawrence University, 1952  
M.A., 1954, Ph.D., Harvard University, 1963

**Lan, Tu**

ASSISTANT PROFESSOR  
Geography  
B.S., Peking University, China, 2006  
M.S., Chinese University of Hong Kong, 2007  
Ph.D., University of North Carolina, 2014

**Landau, Cynthia**

VISITING PROFESSOR EMERITA  
PEAEMPL-Faculty Salary  
J.D., Franklin Pierce Law Center, 1980

**Lane, Peter**

PROFESSOR  
Management  
B.A., University of New Hampshire, 1981  
M.B.A., University of Massachusetts - Amherst, 1992  
Ph.D., University of Connecticut, 1996

**Lanier, Douglas**

PROFESSOR  
English  
B.A., Stetson University, 1977  
M.A., 1980, Ph.D., Duke University, 1988

**Lannamann, John**

Associate Professor Emeritus  
UNH Transition  
B.S., Babson College, 1977  
M.A., 1980, Ph.D., University of Massachusetts - Amherst, 1983

**Larkin, Edward**

Professor Emeritus  
UNH Transition  
B.A., Saint Peter's University, 1971  
M.A., St. John's College, 1980  
Ph.D., University of Pennsylvania, 1986

**LaRoche, Dain**

Assoc Dean for Research, College of Health & Human Services  
Kinesiology  
B.S., University of New Hampshire, 1996  
M.S., University of Massachusetts - Amherst, 1998  
Ph.D., University of Utah, 2004

**Larson, Barbara**

ASSOCIATE PROFESSOR EMERITA  
UNH Transition  
B.A., Stanford University, 1962  
M.A., Harvard University, 1964  
M.Phil., 1974, Ph.D., Barnard College, 1975



**Laudano, Andrew**

ASSOCIATE PROFESSOR EMERITUS

UNH Transition

B.S., 1974, M.S., Southern Connecticut State University, 1976

Ph.D., University of California - San Diego, 1981

**Laue, Thomas**

PROFESSOR EMERITUS

UNH Transition

B.A., Johns Hopkins University, 1971

Ph.D., University of Connecticut, 1981

**Lauer, Josh**

ASSOCIATE PROFESSOR

Communication

B.A., Indiana University of Pennsylvania, 1992

M.L.I.S., University of Pittsburgh, 1997

M.A., 2005, Ph.D., University of Pennsylvania, 2008

**Laxague, Nathan**

Assistant Professor

Mechanical Engineering

B.S., 2011, Ph.D., University of Miami, 2016

**Lazdowski, Yvette**

ASSOCIATE PROFESSOR

Business and Public Affairs

B.S., Franklin Pierce College, 1984

M.B.A., Plymouth State University, 2004

D.B.A, Argosy University- CA, 2007

**Leach, Todd**

Clinical Professor

Education

B.S., Worcester State University, 1983

M.B.A., Bentley College, 1985

Ph.D., Northeastern University, 2008

**LeBlanc, Christopher**

ASSOCIATE PROFESSOR

Applied Engineering &amp; Sciences

B.S., University of Massachusetts - Amherst, 1997

B.S., University of Massachusetts - Lowell, 1997

M.S., University of Vermont, 2007

**LeBlanc, Ronald**

PROFESSOR EMERITUS

UNH Transition

B.S., United States Air Force Academy, 1971

B.A., 1977, M.A., 1979, Ph.D., University of Washington, 1984

**Lee, Honggi**

Assistant Professor

Management

B.S., University of Michigan, 2004

M.B.A., Indiana University, 2011

Ph.D., Duke University, 2020

**Lee, Lina**

PROFESSOR

Languages, Literatures, &amp; Cultures

B.A., Fu Jen Catholic University, China, 1979

M.A., University of North Texas, 1986

Ph.D., University of Texas at Austin, 1992

**Lee, Martin**

PROFESSOR EMERITUS

UNH Transition

B.S., Stanford University, 1966

Ph.D., University of Chicago, 1971

**Lee, Noele**

LECTURER

Decisions Sciences

B.S., 1990, M.B.A., Rensselaer Polytechnic Institute, 1992

**Lee, Thomas**

ASSOCIATE PROFESSOR EMERITUS

UNH Transition

B.S., SUNY College of Environmental Science and Forestry, 1973

M.S., University of Alberta, Canada, 1976

Ph.D., University of Illinois at Urbana-Champaign, 1980

**Leese, Michael**

Associate Professor

History

B.A., 2003, M.A., University of Connecticut, 2004

Ph.D., University of Michigan, 2014

**Leichtman, Michelle**

PROFESSOR

Psychology

B.A., Wellesley College, 1985

M.A., 1991, Ph.D., Cornell University, 1994

**Leitzel, Joan**

USNH Common Codes Group

M.A., Brown University, 1961

Ph.D., Indiana University, 1965

B.A., Hanover College, 1968

**Lemos, Scott**

LECTURER

Management

B.S., Bryant University, 2010

M.A., 2013, Ph.D., University of New Hampshire, 2019

**Lent, Robin**

LECTURER EMERITA

English

B.A., Washington University, 1968

M.S., Barnard College, 1970

M.A., University of New Hampshire, 1988

**Lepler, Jessica**

ASSOCIATE PROFESSOR

History

B.A., Tulane University, 2000

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**Lerch, Barbara**

ASSOCIATE PROFESSOR EMERITA  
UNH Transition  
B.A., University of Maine at Augusta, 1969  
M.L.S., Sch of General Studies, 1972  
M.A., University of New Hampshire, 1982

**Lessard, Marc**

PROFESSOR  
Physics - Joint Positions  
B.S., University of New Hampshire, 1983  
Ph.D., Dartmouth College, 1997

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PROFESSOR  
Physics - Joint Positions  
B.S., University of New Hampshire, 1983  
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Research Professor Emeritus  
PEAEMPL-Faculty Salary  
A.S., George Washington University, 1977  
B.A., 1983, M.S., University of New Hampshire, 1985  
Ph.D., University of Maine, 1989

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ASSISTANT PROFESSOR  
Earth Sciences - Joint Positions  
B.S., 2007, Ph.D., University of Miami, 2012

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EXTENSION EDUCATOR EMERITA  
UNH Transition  
B.S., Granite State College, 1996  
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**Levy, Marcia**

Clinical Associate Professor  
UNHL JD Instruction  
J.D., Lewis and Clark College, 1980

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ASSOCIATE PROFESSOR EMERITUS  
UNH Transition  
B.S., 1963, M.S., Southern Connecticut State University, 1967  
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**Lewis, James**

ASSOCIATE PROFESSOR Emeritus  
Health Management & Policy  
B.A., University of Pittsburgh, 1972  
M.M., Northwestern University, 1974  
D.Sc., Johns Hopkins University, 1985

**Lewis, Kendra**

Assoc State Spec Professor  
Youth and Family  
B.A., California State University, 2007  
M.S., 2010, Ph.D., Oregon State University, 2010

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Chemistry  
B.S., Beijing Normal University, 2008  
Ph.D., Purdue University, 2014

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Clinical Associate Professor & Director, MPH Program  
Health Management & Policy  
M.B.A., Southern New Hampshire University, 1989  
M.A., 2000, Ph.D., Brandeis University, 2001

**Li, Gonghu**

PROFESSOR  
Chemistry  
B.S., Hebei Normal University, China, 1997  
M.S., Chinese Academy of Sciences, China, 2000  
Ph.D., University of Iowa, 2005

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Accounting and Finance  
B.S., 2005, M.S., Southern Illinois University, 2007  
Ph.D., Georgia State University, 2014

**Li, Jun**

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Management  
M.A., Beijing University, China, 1999  
Ph.D., Texas A & M University, 2004  
B.A., Beijing University, China, 2005

**Li, Linqing**

Assistant Professor  
Chemical Engineering  
B.S., University of Science and Technology, 2007  
Ph.D., University of Delaware, 2013

**Li, Linyuan**

PROFESSOR  
Mathematics & Statistics  
B.S., Xuzhou Teachers College, China, 1985  
M.S., East China Normal University, China, 1988  
M.S., University of New Mexico, 1997  
Ph.D., Michigan State University, 2002

**Li, Tiffany**

Assistant Professor  
UNHL JD Instruction  
B.A., University of California, 2010  
J.D., Georgetown University, 2014

**Licciardi, Joseph**

PROFESSOR  
Earth Sciences  
B.A., State University of New York at Geneseo, 1992  
M.S., 1995, Ph.D., Oregon State University, 2000

**Lieber, Rochelle**

PROFESSOR  
English  
A.B., Vassar College, 1976  
Ph.D., Massachusetts Institute of Technology, 1980

**Lightbody, Anne**

ASSOCIATE PROFESSOR

Earth Sciences

B.S., 1999, M.S., Yale University, 1999

M.S., 2004, Ph.D., Massachusetts Institute of Technology, 2007

**Limbert, David**

PROFESSOR EMERITUS

UNH Transition

B.S., Iowa State University, 1964

M.S., 1965, Ph.D., Case Western Reserve University, 1969

**Linder, Ernst**

Professor Emeritus

UNH Transition

Diploma, University of Zurich, Switzerland, 1978

M.S., Union College - New York, 1980

Ph.D., Pennsylvania State University, 1987

**Lindsay, Bruce**

PROFESSOR EMERITUS

UNH Transition

B.A., King's College - Pennsylvania, 1971

M.S., 1973, Ph.D., University of Massachusetts - Amherst, 1976

**Lippmann, Thomas**

Professor

Earth Sciences

B.A., Linfield College, 1985

M.S., 1989, Ph.D., Oregon State University, 1992

**Liset, Kaitlynn**

Clinical Assistant Professor

Nursing

B.S., 2011, M.S., University of New Hampshire, 2014

**Litvaitis, John**

PROFESSOR EMERITUS

UNH Transition

B.S., University of New Hampshire, 1975

M.S., Oklahoma State University, 1978

Ph.D., University of Maine, 1984

**Litvaitis, Marian**

PROFESSOR Emerita

UNH Transition

B.S., 1980, M.S., Clemson University, 1982

Ph.D., University of Maine, 1985

**Liu, Ningyu**

PROFESSOR

Physics

B.S., 1998, M.S., Zhejiang University, China, 2001

Ph.D., Pennsylvania State University, 2006

**Liu, Yixin**

PROFESSOR

Accounting and Finance

B.A., Nankai University, China, 1998

M.S., Southern Illinois University, 2000

Ph.D., University of Iowa, 2007

**Lockwood, Mary Katherine**

Emerita

UNH Transition

B.S., Davidson College, 1977

M.S., Pennsylvania State University, 1981

Ph.D., University of California, 1989

**Loder, Theodore**

PROFESSOR EMERITUS

UNH Transition

B.A., University of Rochester, 1962

M.S., Lehigh University, 1965

Ph.D., University of Alaska, 1971

**Lofty, John**

PROFESSOR EMERITUS

English

B.Ed., University of London, United Kingdom, 1969

M.A., Tennessee State University, 1978

Ph.D., University of Michigan, 1986

**Lombard, Jacqueline**

Lecturer

Art and Art History

**Lonergan, Judith**

EXTENSION SPECIALIST EMERITA

UNH Transition

M.O.E., University of New Hampshire, 1979

**Long, Elena**

ASSISTANT PROFESSOR

Physics

B.S., Juniata College, 2006

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**Long, Valerie**

EXTENSION PROFESSOR AND SPECIALIST EMERITA

UNH Transition

B.S., University of Maine, 1979

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**Lopate, Clifford**

RESEARCH ASSOCIATE PROFESSOR

Space Science Center

B.A., Swarthmore College, 1982

Ph.D., 1983, M.S., University of Chicago, 1988

**Lord, Susan**

Emerita

UNH Transition

B.A., 1975, B.S.W., University of New Hampshire, 1975

M.S.W., Smith College, 1979

Ph.D., University of New Hampshire, 2004

**Lord, William**

EXTENSION PROFESSOR AND SPECIALIST EMERITUS

PEAEMPL-Casual Salary

M.S., University of Massachusetts - Amherst, 1972

**Loughnane, Chris**

Assistant Professor, Engineering & Physical Sciences Librarian  
 Research Learning Services  
 M.A., University of Edinburgh, 2007  
 M.Sc., City University London, 2012  
 Ph.D., University of Glasgow, 2020

**Lovell, Michele**

CLINICAL ASSISTANT PROFESSOR  
 Nursing  
 B.S., 1990, M.S., University of New Hampshire, 2006

**Lu Yan, (Lu is surname)**

Professor Emerita  
 UNH Transition  
 B.A., Fudan University, China, 1982  
 M.A., Michigan State University, 1989  
 M.A., 1993, Ph.D., Cornell University, 1996

**Lugalla, Joe**

PROFESSOR EMERITUS  
 UNH Transition  
 B.A., 1982, M.A., University of Dar-Es-Salaam, Tanzania, 1983  
 Diploma, University of Kassel, Germany, 1990  
 Ph.D., University of Bremen, Germany, 1990

**Lugaz, Noe**

RESEARCH PROFESSOR  
 Space Science Center  
 M.S., 2003, Ph.D., University of Michigan, 2007

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PROFESSOR EMERITA  
 UNH Transition  
 B.A., College of Wooster, 1967  
 M.A., 1968, Ph.D., University of Chicago, 1973

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Emerita  
 PEAEMPL-Casual Hourly  
 B.S., University of Massachusetts - Amherst, 1975  
 M.S., Boston University, 1979

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CLINICAL ASSISTANT PROFESSOR  
 Social Work  
 B.A., University of Wisconsin, 1992  
 M.S.W., Smith College, 1995  
 M.A., 2003, Ph.D., Brandeis University, 2010

**Luther, Robin**

UNH Transition  
 B.S., 1981, M.Ed., Rutgers University, 1985

**Lyon, Alynna**

PROFESSOR  
 Political Science  
 B.A., 1991, M.A., New Mexico State University at Alamogordo, 1993  
 Ph.D., University of South Carolina, 1999

**Lyon, Mark**

ASSOCIATE PROFESSOR  
 Mathematics & Statistics  
 B.S., 2002, M.S., Brigham Young University, 2003  
 Ph.D., California Institute of Technology, 2009

**Lyons, Anthony**

RESEARCH PROFESSOR  
 Center for Coastal & Ocean Mapping  
 B.S., Henderson State University, 1988  
 M.S., 1991, Ph.D., Texas A & M University, 1995

**M****MacFarlane, Lisa**

PROFESSOR  
 English  
 A.B., Princeton University, 1979  
 M.A., 1983, Ph.D., University of Michigan, 1987

**MacHardy, William**

PROFESSOR EMERITUS  
 UNH Transition  
 B.S., 1958, M.Ed., University of Maine, 1965  
 M.S., Univ of Nebraska Omaha, 1966  
 Ph.D., University of Rhode Island, 1970

**MacLea, Kyle**

ASSOCIATE PROFESSOR  
 Life Sciences  
 A.B., Cornell University, 1997  
 Ph.D., Dartmouth College, 2003

**MacManes, Matthew**

ASSOCIATE PROFESSOR  
 Molecular, Cellular, & Biomedical  
 A.A.S., Broome Comm College, 1999  
 B.S., University of Michigan, 2005  
 Ph.D., University of California - Berkeley, 2011

**Macpherson, Andrew**

ASSISTANT PROFESSOR  
 Security Studies  
 B.A., Mercyhurst College, 1999  
 M.A., London School of Economics, 2000  
 Ph.D., Northeastern University, 2018

**Madigan, Sean**

LECTURER  
 English  
 B.S., 2002, M.A., 2005, Ph.D., University of Delaware, 2009

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EXTENSION FIELD SPECIALIST EMERITUS  
 PEAEMPL-Casual Hourly  
 B.S., Keene State College (Nh), 1975  
 M.Ed., Plymouth State University, 1987

**Magnifico, Alecia**

ASSOCIATE PROFESSOR  
 English  
 B.A., Swarthmore College, 2000  
 M.S., 2007, Ph.D., University of Wisconsin - Madison, 2010

**Magnusson, Matthew**

LECTURER

Computer Science

B.S., 1997, M.B.A., University of New Hampshire, 2005

M.S., Georgia Institute of Technology, 2017

**Mahmud, MD Shaad**

ASSISTANT PROFESSOR

Electrical &amp; Computer Eng Dept

B.S., American International University Bangladesh (AIUB), 2012

M.S., 2016, Ph.D., University of Massachusetts - Dartmouth, 2018

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RESEARCH ASSISTANT PROFESSOR

PEAEMPL-Casual Salary

M.S., 2007, Ph.D., University of New Hampshire, 2014

**Mair, Robert**

Professor Emeritus

UNH Transition

A.B., 1972, Sc.M., 1975, Ph.D., Brown University, 1979

**Maiya, Sahitya**

Assistant Professor

Human Development &amp; Family Studies

B.A., Christ University, Bangalore, India, 2014

M.A., Tata Institute of Social Sciences, Mumbai, India, 2016

Ph.D., University of Missouri, 2020

**Malarte-Feldman, Claire**

PROFESSOR EMERITA

UNH Transition

D, 1970, Licence, 1971, Maitrise, Universite Paul Valery, France, 1972

Ph.D., University of California - Davis, 1984

**Malley, James**

PROFESSOR

Civil and Environmental Engineering

B.S., Rutgers University, 1980

M.S., 1984, B.S., 1987, Ph.D., University of Massachusetts - Amherst, 1988

**Mallory, Bruce**

PROFESSOR EMERITUS

UNH Transition

B.A., 1971, M.Ed., Allegheny College, 1972

Ph.D., George Peabody College of Vanderbilt University, 1979

**Malloy, Joanne**

RESEARCH ASSOCIATE PROFESSOR

Institute on Disability

B.A., University of Massachusetts - Amherst, 1976

M.S., Univ of Tenn Knoxville, 1981

Ph.D., University of New Hampshire, 2011

**Malone, Mary Fran**

PROFESSOR

Political Science

B.A., Saint Joseph's University, 1995

M.A., 2000, Ph.D., University of Pittsburgh, 2004

**Manalo, Alberto**

Emeritus

UNH Transition

B.S., University of The Phillipines, Philippines, 1976

M.S., 1978, Ph.D., Kansas State University, 1985

**Mancus, Gibran**

Assistant Professor

Nursing

BSN, University of Nebraska, 2010

MSN-Ed, Daemen College, 2013

Ph.D., John Hopkins School of Nursing, 2018

**Mandel, Tracy**

Assistant Professor

Mechanical Engineering

B.S., Cornell University, 2012

M.S., 2013, Ph.D., Stanford University, 2018

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PRINCIPAL LECTURER

Psychology

B.A., Oregon State University, 1985

M.A., Humboldt State University, 1994

M.A., 1997, Ph.D., University of New Hampshire, 2000

**Manseau, Melissa**

LECTURER

Theatre &amp; Dance

B.A., University of New Hampshire, 1996

M.M., University of Northern Iowa, 1999

**March, Thomas**

PROFESSOR EMERITUS

UNH Transition

B.S., 1974, M.A., Cornell University, 1977

**Margolin, Aaron**

EMERITUS PROFESSOR

UNH Transition

B.S., 1982, Ph.D., University of Arizona, 1986

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LECTURER

Molecular, Cellular, &amp; Biomedical

A.A.S., 1980, B.F.A., Rochester Institute of Technology, 1981

B.S., 2005, M.A., University of New Hampshire, 2011

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SENIOR LECTURER

Theatre &amp; Dance

B.A., University of New Hampshire, 1999

**Marone, Adele**

UNH Transition

B.S., Adelphi University, 1985

B.S., 1998, M.S., University of New Hampshire, 2007

**Marr, Jacqueline**

NH Veterinary Diagnostic Laboratory



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ASSOCIATE PROFESSOR EMERITUS

UNH Transition

A.B., Bowdoin College, 1951

M.A., 1954, Ph.D., Princeton University, 1971

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Associate Professor Emeritus

Languages, Literatures, &amp; Cultures

Licenciatura, Univ of Barcelona, 1976

M.A., University of Illinois at Urbana-Champaign, 1978

Licenciatura, Univ of Barcelona, 1983

Ph.D., University of Illinois at Urbana-Champaign, 1988

**Martin, Mary**

RESEARCH ASSISTANT PROFESSOR

Earth Systems Research Center

A.A.S., 1977, B.S., 1988, Ph.D., University of New Hampshire, 1994

**Marvel, Krista**

Lecturer

Hospitality Management

A.S., 2008, B.A., Le Cordon Bleu, 2010

M.B.A., Johnson &amp; Wales University Pro, 2016

**Marx, Jerry**

ASSOCIATE PROFESSOR

Social Work

B.S., University of Southern Maine, 1981

M.S.W., 1984, D.S.W., Boston College, 1994

**Masucci, Peter**

PRINCIPAL LECTURER

Marketing

B.S., Boston University, 1970

M.B.A., Clark University, 1984

**Mathur, Virendra**

PROFESSOR EMERITUS

UNH Transition

B.S., Angra University, India, 1949

B.S., Banaras Hindu University, 1953

M.S., 1961, Ph.D., University of Missouri - Rolla, 1970

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Research Assistant Professor

Marine Sciences &amp; Ocean Engineering

B.S., 2003, M.S., 2005, Ph.D., Hokkaido University, Japan, 2008

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ASSOCIATE PROFESSOR

Physics

B.A., Dartmouth College, 1996

Ph.D., University of Maryland, 2003

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Clinical Assistant Professor

Occupational Therapy

B.S., 2016, M.S., University of New Hampshire, 2017

Ph.D., Massachusetts General Hospital Institute of Health Professions, expected-5/2022

**Mautz, William**

PROFESSOR EMERITUS

Natural Resources &amp; The Environment

B.S., Wisconsin Conservatory of Music, 1965

M.S., 1967, Ph.D., Michigan State University, 1969

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Assistant Professor

Education

M.S., 2015, Ph.D., University of Wisconsin - Madison, 2021

B.Ed., Satya Wacana Christian University, Indonesia,

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EXTENSION EDUCATOR EMERITA

UNH Transition

M.A.T., University of New Hampshire, 1978

**Mayer, John D.**

PROFESSOR

Psychology

B.A., University of Michigan, 1975

M.A., 1979, Ph.D., Case Western Reserve University, 1982

**Mayer, Larry**

PROFESSOR

Earth Sciences - Joint Positions

B.S., University of Rhode Island, 1973

Ph.D., University of California, 1979

**Mayne, Howard**

Emeritus

Chemistry

B.S., 1974, M.S., 1975, Ph.D., University of Manchester, England, 1977

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Professor Emerita

UNH Transition

B.A., Mills College (Calif), 1972

**McCann, Michael**

PROFESSOR

UNHL JD Instruction

B.A., Georgetown University, 1998

J.D., University of Virginia, 2002

LL.M., Harvard Law School, 2005

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Senior Lecturer

Mathematics &amp; Statistics

B.S., Rutgers University, 2003

M.A., University of Texas, 2007

Ph.D., University of New Hampshire, 2015

**McConnell, Mark**

PROFESSOR

Physics - Joint Positions

B.S., Case Western Reserve University, 1980

Ph.D., University of New Hampshire, 1987

**McConnell, Maryse**

ASSOCIATE PROFESSOR EMERITUS

UNH Transition

B.F.A., Cleveland Institute of Art, 1971

M.F.A., Alfred University, 1973

**McCoy, Katie**

Clinical Assistant Professor  
Social Work  
B.S., University of New Hampshire, 1995  
M.S., Boston College, 1999

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ASSOCIATE DEAN  
Dean's Office - CEPS  
A.B., Dartmouth College, 1988  
M.S., 1992, Ph.D., University of New Hampshire, 1997

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CLINICAL ASSISTANT PROFESSOR  
Education  
B.A., University of Kansas, 2004  
M.A., University of Michigan, 2005  
Ph.D., University of New Hampshire, 2016

**McDowell, Bill**

PROFESSOR  
Natural Resources & The Environment  
B.A., Amherst College, 1975  
Ph.D., Cornell University, 1982

**McGaughy, Jill**

PROFESSOR  
Psychology  
B.A., Bradley University, 1991  
M.A., 1993, Ph.D., Ohio State University, 1998

**McGrath, Robert**

Professor  
Health Management & Policy  
B.S., University of New Hampshire, 1996  
M.S., Harvard University, 1998  
M.A., 2000, Ph.D., Brandeis University, 2006

**McHugh, John**

PROFESSOR  
Mechanical Engineering  
B.S., 1978, Ph.D., University of Michigan, 1986

**McIlroy, James**

Senior Lecturer  
Marketing  
B.S., 1995, M.B.A., University of New Hampshire, 2002

**McKinsey, Martin**

ASSOCIATE PROFESSOR  
English  
B.A., Hampshire College, 1977  
M.A., Syracuse University, 1990  
M.A., 1998, Ph.D., University of Virginia, 2001

**McLarnon, Christopher**

SENIOR LECTURER  
Chemical Engineering  
B.S., 1987, M.S., 1989, Ph.D., University of New Hampshire, 1996

**McLaughlin, Kevin**

SENIOR LECTURER  
Accounting and Finance  
B.S.B.A., Northeastern University, 1994  
M.S., Boston College, 1999

**McLaughlin, Sean**

LECTURER  
Recreation Management & Policy  
B.A., Chico State College, 1995  
M.S., University of New Hampshire, 2007

**McMahon, Gregory**

PROFESSOR  
Classics, Humanities & Ital Studies  
B.A., University of Kansas, 1975  
M.A., Miami University - Ohio, 1979  
Ph.D., University of Chicago, 1988

**McNamara, Mei-Ling J**

Lecturer  
English

**McNamara, Paul**

Professor  
Philosophy  
B.A., City University of New York, 1976  
M.A., University of Missouri - Columbia, 1980  
Ph.D., University of Massachusetts - Amherst, 1990

**McNamara, Scott**

Assistant Professor  
Kinesiology  
B.S., 2012, M.Ed., Wayne State University, 2013  
Ph.D., Texas Woman's Univ, 2018

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Professor Emerita  
UNH Transition  
B.A., 1978, M.A., 1980, Ph.D., University of Massachusetts - Amherst, 1982

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Emerita  
UNH Transition  
B.S., University of New Hampshire, 1983  
M.S.W., University of Connecticut, 1987

**McQuaid, Amanda Murby**

Natural Resources

**Meadows, Dennis**

PROFESSOR EMERITUS  
UNH Transition  
B.A., Carleton College, 1964  
Ph.D., Massachusetts Institute of Technology, 1969

**Meibert, Carolyn**

Associate Professor Emerita  
UNH Transition  
B.A., 1974, Ph.D., Boston University, 1978

**Meeker, Bonnie**

EXTENSION SPECIALIST EMERITA  
UNH Transition  
B.S., Oregon State University, 1957  
M.S., University of New Hampshire, 1977

**Meeker, Loren**

PROFESSOR EMERITUS  
UNH Transition  
B.A., 1959, B.S., Oregon State University, 1959  
M.S., 1962, Ph.D., Stanford University, 1965  
M.S., Univ of Aston-England, 1969

**Meginniss, Anne**

Clinical Assistant Professor  
Nursing  
B.S., University of Delaware, 1998  
M.S.N., Graceland University- IA, 2009

**Meiton, Fredrik**

ASSOCIATE PROFESSOR  
History  
B.A., Lund University, Sweden, 2006  
M.Phil., Oxford Univ-Eng, 2008  
Ph.D., New York University, 2015

**Melanson, Leigh Anne**

UNH Transition  
M.A., University of New Hampshire, 2003

**Mellyn, Elizabeth**

ASSOCIATE PROFESSOR  
History  
B.A., University of Chicago, 1999  
M.A., 2002, Ph.D., Harvard University, 2007

**Melvin, Donald**

ASSOCIATE PROFESSOR EMERITUS  
UNH Transition  
B.S., University of New Hampshire, 1955  
MENGR, Yale University, 1957  
Ph.D., Syracuse University, 1971

**Mena, Noereem**

Assistant Professor  
Agriculture, Nutrition,& Food System

**Mennel, Robert**

PROFESSOR EMERITUS  
UNH Transition  
B.A., Denison University, 1960  
M.A., 1965, Ph.D., Ohio State University, 1969

**Meredith, Dawn**

PROFESSOR  
Physics  
B.A., St. John's College, 1980  
M.S., 1984, Ph.D., California Institute of Technology, 1987

**Merenda, Michael**

Professor Emeritus  
UNH Transition  
M.B.A., Northeastern University, 1972  
Ph.D., University of Massachusetts - Amherst, 1978  
B.S., Northeastern University,

**Merton, Andrew**

PROFESSOR EMERITUS  
UNH Transition  
B.A., University of New Hampshire, 1967

**Messner, Richard**

ASSOCIATE PROFESSOR  
Electrical & Computer Eng Dept  
B.S., 1979, M.S., Clarkson College, 1981  
Ph.D., Clarkson University, 1984

**Metting, Fred**

PROFESSOR EMERITUS  
UNH Transition  
B.S., Ohio University, 1968  
M.A., Kent State University, 1970  
Ph.D., University of New Hampshire, 1976

**Meyrowitz, Joshua**

PROFESSOR EMERITUS  
UNH Transition  
B.A., 1972, M.A., City University of New York, 1974  
Ph.D., New York University, 1978

**Mian, Nicholas**

Associate Professor  
Life Sciences  
A.B., Bowdoin College, 2002  
M.A., Boston University, 2007  
M.A., 2009, Ph.D., University of Massachusetts - Boston, 2013

**Michael, Amy**

Assistant Professor  
Anthropology  
B.A., University of Iowa, 2006  
M.A., 2009, Ph.D., Michigan State University, 2016

**Michalak, Clarissa**

Clinical Assistant Professor  
Nursing  
M.S., Towson University, 2012  
Post-Master, University of Mass Medical, 2015  
DNP, New York University, 2018

**Michaud, Michelle**

SENIOR LECTURER  
Communication  
B.A., 2001, M.A., University of Maine, 2004

**Mignanelli, Michael**

Lecturer  
Classics, Humanities & Ital Studies  
Certificate, Intercollegiate Center for Classical Studies, Italy, 2015  
B.A., University of New Hampshire, 2016  
M.A., 2018, Certificate, 2020, Ph.D., University of Texas at Austin, 2022

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RESEARCH PROFESSOR  
Center for Acoustics Res. And Educ.  
B.A., Harvard University, 1996  
M.S., UMass- Dartmouth, 2000  
Ph.D., University of Rhode Island, 2006

**Miles, Russell**

SENIOR LECTURER  
Decisions Sciences  
B.S.M.E., 1990, M.B.A., University of New Hampshire, 1990

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ASSOCIATE PROFESSOR  
Accounting and Finance  
B.B.A., 2002, Ph.D., University of Georgia, 2008

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PROFESSOR EMERITUS  
UNH Transition  
A.B., Dartmouth College, 1943  
M.A., 1948, Ph.D., Barnard College, 1955

**Miller, Glen**

PROFESSOR  
Chemistry  
B.S.Chem., 1987, Ph.D., Clarkson University, 1991

**Miller, John**

ASSOCIATE PROFESSOR  
Kinesiology  
B.S., Brooklyn College of the City University of New York, 1981  
M.S., Long Island University, 1983  
Ph.D., University of Maryland, 1992

**Miller, Lisa C**

ASSOCIATE PROFESSOR  
English  
B.A., 1980, M.A., University of New Hampshire, 1988

**Miller, W. Thomas**

PROFESSOR EMERITUS  
Electrical & Computer Eng Dept  
B.S., 1972, M.S., 1974, Ph.D., Pennsylvania State University, 1977

**Mills, Richard**

ASSOCIATE PROFESSOR EMERITUS  
UNH Transition  
B.S., Rose Polytechnic Inst, 1962  
M.A., 1964, Ph.D., Indiana University - Bloomington, 1967

**Miloro, Keri**

Clinical Assistant Professor  
Communication Sciences & Disorders  
B.S., 1998, M.S., University of New Hampshire, 2000  
C.A.G.S., Boston University, 2014

**Min, Sophia**

Associate Professor  
Kinesiology  
B.S., 2004, M.S., Hanyang University, South Korea, 2007  
Ph.D., University of Georgia, 2014

**Minocha, Subhash**

Emeritus  
UNH Transition  
B.S., 1968, M.S., Panjab University, India, 1969  
Ph.D., University of Washington, 1974

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Emeritus  
UNH Transition  
B.S., 1968, M.S., Panjab University, India, 1969  
Ph.D., University of Washington, 1974

**Mitchell, Frank**

EXTENSION PROFESSOR AND SPECIALIST EMERITUS  
PEAEMPL-Casual Salary  
A.A.S., 1974, B.S., 1976, M.S., University of New Hampshire, 1979

**Mitchell, James**

ASSOCIATE PROFESSOR EMERITUS  
UNH Transition  
B.S., University of New Hampshire, 1957  
M.S., 1960, Ph.D., Pennsylvania State University, 1969

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RESEARCH PROFESSOR  
Family Research Lab  
B.A., 1994, M.A., Rhode Island College, 1996  
Ph.D., University of Rhode Island, 1999

**Mizusawa, Lee**

SENIOR LECTURER  
Management  
B.A., Yale University, 1975  
M.B.A., Stanford University, 1980

**Mo, Weiwei**

Associate Professor  
Civil and Environmental Engineering  
B.S., Shanghai Jiao Tong University, China, 2008  
M.S., 2011, Ph.D., University of South Florida, 2012

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PROFESSOR EMERITUS  
PEAEMPL-Faculty Salary  
Diploma, 1973, Ph.D., Ruhr University Bochum, Germany, 1977

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Senior Lecturer  
Civil and Environmental Engineering  
B.Sc., Islamic Azad University, Iran, 2006  
M.Sc., University of Tabriz, Iran, 2009  
Ph.D., University of Nebraska, 2014  
M.Sc., University of Arizona, 2019

**Mohr, Robert**

ASSOCIATE PROFESSOR  
Economics  
B.A., University of Virginia, 1993  
M.S., 1998, Ph.D., University of Texas at Austin, 2001

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Assistant Professor  
Natural Resources & The Environment  
B.S., 2006, M.S., University of Missouri - Columbia, 2008  
Ph.D., Michigan State University, 2018

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CLINICAL ASSISTANT PROFESSOR  
Molecular, Cellular, & Biomedical  
B.S., 2011, D.V.M., University of Tennessee, 2015

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LECTURER  
Languages, Literatures, & Cultures  
B.A., 2007, M.A., University of Florida, 2009  
M.A., 2016, Ph.D., University of Kentucky, 2018

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SENIOR LECTURER  
Molecular, Cellular, & Biomedical  
B.S., University of Rochester, 2001  
Ph.D., Tufts University, 2009

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INSTRUMENTATION SCIENTIST EMERITUS  
UNH Transition  
B.A., University of New Hampshire, 1972

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DIRECTOR AND PROFESSOR EMERITUS  
Complex Systems Research Center  
B.S., University of North Carolina, 1963  
Ph.D., University of Virginia, 1969

**Moore, Gregg**

Associate Professor  
Biological Sciences  
B.S., Tufts University, 1994  
M.S., 1997, Ph.D., Boston University, 2003

**Moore, Joseph**

CLINICAL PROFESSOR EMERITUS  
UNH Transition  
B.S., Trinity College - Conn, 1966  
D.V.M., University of Pennsylvania, 1970

**Moore, Sean**

PROFESSOR  
English  
B.A., University of Massachusetts - Amherst, 1991  
M.A., Georgetown University, 1995  
Ph.D., Duke University, 2003

**Moran, Catherine L**

PRINCIPAL LECTURER  
Sociology  
B.A., University of New England, 1994  
M.Sc., London School of Economics, 1996  
Ph.D., University of New Hampshire, 2004

**Morgan, Ann**

ASSOCIATE PROFESSOR EMERITA  
UNH Transition  
B.A., Hanover College, 1974  
M.S., Pennsylvania State University, 1976

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Clinical Assistant Professor  
Communication Sciences & Disorders  
B.S., University of New Hampshire, 2005  
M.S., Arizona State University, 2007

**Morrison, James**

PROFESSOR EMERITUS  
UNH Transition  
B.S., Franklin Marshall College, 1958  
Ph.D., Northwestern University, 1963

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Lecturer  
Theatre & Dance  
B.A., Oberlin College, 2003  
M.F.A., Columbia University in the City of New York, 2008

**Mortensen, David**

PROFESSOR  
Agriculture, Nutrition, & Food System  
B.A., Drew University, 1978  
M.S., Duke University, 1983  
Ph.D., North Carolina State University, 1987

**Moses, Jennifer**

Professor Emerita  
UNH Transition  
B.F.A., Temple University, 1983  
M.F.A., Indiana University - Bloomington, 1987

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CLINICAL ASSOCIATE PROFESSOR Emeritus  
PEAEMPL-Faculty Salary  
B.A., Northeastern University, 1971  
M.Ed., Springfield College, 1972  
C.A.G.S., University of New Hampshire, 1977  
Ph.D., Ohio University, 1979

**Mosher, David**

PROFESSOR  
Earth Sciences - Joint Positions  
B.S., Acadia University, 1983  
M.S., Memorial University - Canada, 1987  
Ph.D., Dalhousie University, Canada, 1993

**Mosley, Marissa**

Assistant Professor  
Human Development & Family Studies  
B.A., Syracuse University, 2013  
M.A., University of San Diego, 2016  
Ph.D., Florida State University, Expected-4/2022



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Research Associate Professor  
Space Science Center  
B.S., National and Kapodistrian University of Athens, Greece, 1987  
M.S., 1989, Ph.D., Univ of Sussex, 1995

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PROFESSOR  
Civil and Environmental Engineering  
B.S., Utah State University, 1998  
M.S., 2003, Ph.D., University of Vermont, 2006

**Moyer, Judith**

RESEARCH ASSISTANT PROFESSOR EMERITA  
History  
B.A., 1968, M.A.T., 1970, M.A., 1995, Ph.D., University of New Hampshire, 2000

**Moynihan, Robert**

PROFESSOR EMERITUS  
UNH Transition  
B.S., University of New Hampshire, 1968  
M.B.A., University of Akron, 1973

**Mu, Bing**

Assistant Professor  
Mechanical Engineering  
Ph.D., 2009, M.S., University of Victoria, Canada, 2013  
B.Eng., Northwestern Polytechnic Univ, 2017

**Mulligan, Shelley**

ASSOCIATE PROFESSOR  
Occupational Therapy  
B.S., University of Western Ontario, Canada, 1985  
M.S., Colorado State University, 1990  
Ph.D., University of Washington, 1997

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LECTURER  
Languages, Literatures, & Cultures  
B.A., Monterey Institute, 1989  
M.A., University of Salamanca, Spain, 2007

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ASSOCIATE PROFESSOR EMERITA  
PEAEMPL-Casual Hourly  
B.A., State University of New York at Plattsburgh, 1973  
M., Adelphi University, 1985  
Certificate, University of Wisconsin - Madison, 1997  
Ph.D., Arizona State University, 1998

**Murphy, William**

PROFESSOR  
UNHL JD Instruction  
B.A., Denison University, 1971  
J.D., Pennsylvania State University, 1974  
M.B.A., 1981, D.B.A, Harvard University, 1987

**Musinsky, Ellen**

VISITING PROFESSOR EMERITA  
PEAEMPL-Faculty Salary  
B.A., University of Vermont, 1972  
J.D., Northeastern University, 1975

**N****Nahin, Paul**

PROFESSOR EMERITUS  
UNH Transition  
B.S.E.E., Stanford University, 1962  
M.S.E.E., California Institute of Technology, 1963  
Ph.D., University of California - Irvine, 1972

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PRINCIPAL LECTURER  
Computer Science  
B.S., University of Mysore, India, 1985  
M.S., University of Massachusetts - Lowell, 1990

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PROFESSOR  
Theatre & Dance  
B.F.A., 1974, M.F.A., The Boston Conservatory, 1990

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ASSISTANT PROFESSOR  
Accounting and Finance  
B.S.B.A., Roger Williams University, 2008  
M.S., University of Connecticut, 2010  
Ph.D., Florida State University, 2016

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UNH Transition  
B.S., 1967, M.B.A., Cornell University, 1968  
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Mechanical Engineering  
B.S., Technical University of Sofia, 2007  
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Molecular, Cellular, & Biomedical  
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Biological Sciences  
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Security Studies  
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Mathematics & Statistics  
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Social Work  
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Communication Arts and Science  
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English  
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Agriculture, Nutrition, &amp; Food System

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Applied Engineering &amp; Sciences

M.S., University of Rochester, 1987

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BA, University of Florida, 2006

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Mathematics &amp; Statistics

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Management

M.S., Univ Paris, 1978

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Decisions Sciences

B.S., Bogazici University, Turkey, 1999

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B.A., University of Wisconsin - Madison, 1976

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B.A., University of Massachusetts - Amherst, 1995

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B.S., Istanbul Tech U Turkey, 2007

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Decisions Sciences

B.S., TOBB Univer of Econ &amp; Engineer, 2008

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Mechanical Engineering  
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Earth Sciences - Joint Positions  
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B.A., Princeton University, 1984  
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Psychology  
B.A., Saint Anselm's College, 1999  
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Justice Studies Program  
B.A., University of Southern Maine, 1997  
M.A., 2000, M.S., 2003, Ph.D., University of New Hampshire, 2003

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B.S., 2011, M.S., Boston College, 2014

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Physics  
M. S., Moscow Inst. of Physics and Technology, 2009  
Ph.D., University of Maryland, 2014

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Management

B.A., Harvard University, 1991

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Anthropology

M.A., Moscow State Linguistic University, Russia, 1996

MTS, Emory University, 1999

M.A., 2002, Ph.D., Syracuse University, 2006

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Youth and Family

B.A., Plymouth State University, 1976

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Natural Resources

B.A., Connecticut College, 1982

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Computer Science

B.S., Univerzita Komenskeho, Bratislava, Slovakia, 2005

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Accounting and Finance

B.B.A., 2005, M.S., Financial Univ, Russian Fed, 2007

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Ph.D., Middle Tennessee State University, 2016

Ph.D., University of Florida, 2020

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Occupational Therapy

B.S., Green Mountain College, 1995

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B.Ar., Pennsylvania State University, 1969

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Marketing

B.S., University of Colorado at Boulder, 1991

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M.S., University of Colorado at Boulder, 2005

Ph.D., University of Cincinnati, 2008

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Nursing

B.S., University of Portland, 1999

M.S., 2018, DNP, Liberty University, 2020

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Agriculture, Nutrition, &amp; Food System

B.S., 2010, M.S., Illinois State University, 2012

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Administration

B.S., 1974, M.P.A., 1975, Ph.D., University of New Hampshire, 1996

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Psychology

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Business and Public Affairs

B.S., State University of New York, 1998

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B.A., Saint Francis University, 1963

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Ph.D., 1964, M.S., Wayne State University, 1966

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B.S., 1996, M.S., Northern Michigan Univ, 2000

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B.S., Massachusetts Institute of Technology, 1979

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B.A., University of Cincinnati, 1983  
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B.S., 2005, M.S., University of Rhode Island, 2007  
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Languages, Literatures, &amp; Cultures

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Natural Resources &amp; The Environment

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B.S., Texas Tech University, 1993

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Security Studies  
B.S., 1984, M.A., 1988, Ph.D., University of Wisconsin, 1994

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B.A., University of New Hampshire, 1974  
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Human Development & Family Studies  
B.S., University of New Hampshire, 2005  
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Theatre & Dance  
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Political Science  
B.A., Johns Hopkins University, 1979  
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Agriculture, Nutrition,& Food Systm  
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Communication  
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B.A., 2007, B.S., Winthrop University, 2007  
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B.A., University of New Hampshire, 1992

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**Ripley, David**

Professor Emeritus

UNH Transition

B.A., Harvard University, 1970

M.M., The New England Conservatory of Music, 1977

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PROFESSOR

English

B.A., University of Massachusetts - Dartmouth, 1975

M.F.A., University of Arizona, 1982

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ASSOCIATE PROFESSOR EMERITA

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A.B., Connecticut College, 1967

M.A., University of South Florida, 1969

Ed.D., University of Rochester, 1982

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Assoc State Spec Professor

Natural Resources

B.S., University of New Hampshire, 2003

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B.A., 1953, M.S.W., West Virginia University, 1970

Ph.D., Brandeis University, 1975

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Biological Sciences

B.S., Washington State University, 1974

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B.F.A., 1969, M.F.A., United States International University, 1971

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SENIOR LECTURER

Classics, Humanities &amp; Ital Studies

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Ph.D., Brown University, 2012

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Natural Resources &amp; The Environment

B.A., Western Illinois University, 1981

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Ph.D., University of Illinois at Urbana-Champaign, 1990

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PROFESSOR

Communication Sciences &amp; Disorders

B.A., Boston University, 1976

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Ph.D., Case Western Reserve University, 1984

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CLINICAL ASSISTANT PROFESSOR

Nursing

B.S., University of New Hampshire, 2013

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B.A., University of Vermont, 1966

M.S., 1970, Ph.D., University of Maryland, 1972

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B.S., University of Surrey, United Kingdom, 1969

M.S., Institute of Biology, London, United Kingdom, 1977

Ph.D., University of Surrey, United Kingdom, 1977

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History

B.A., 1989, M.A., The New School, 1992

M.Phil., 1995, Ph.D., Columbia University in the City of New York, 2000

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ASSOCIATE STATE SPECIALIST

Community and Economic Development

B.A., Dartmouth College, 2004

M.S., 2007, Ph.D., University of New Hampshire, 2011

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Lecturer

Accounting and Finance

B.S., 2006, M.S., University of New Hampshire, 2007

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B.A., East Carolina University, 1977

M.A., 1980, M.L.S., University of Maryland, 1980

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B.A., Univ De Costa Rica, San Jose, 1976

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Mechanical Engineering  
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Natural Resources & The Environment  
B.A., Bowdoin College, 1997  
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Classics, Humanities & Ital Studies  
B.A., Hamilton College, 1992  
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Economics  
B.A., 1999, M.S., Universidad de San Andrés, Buenos Aires, Argentina, 2001  
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Computer Science  
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B.S., Boston University, 1950  
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UNH Transition  
B.S., University of California - Riverside, 1970  
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B.S., University of California - Riverside, 1970  
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SENIOR LECTURER  
Women's and Gender Studies  
B.A., University of New Hampshire, 1996  
M.A., University of Northern Iowa, 2000  
M.A., University of New Hampshire, 2002  
Ph.D., Bowling Green State University, 2009

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Music  
M.M., 2017, Ph.D., University of Miami, 2020

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Center for Coastal & Ocean Mapping  
M.S., Novosibirsk State University, 1978  
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Applied Engineering & Sciences  
B.S., 1984, M.S., Politehnica University of Bucharest, Romania, 1984  
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Sociology  
B.A., University of North Carolina at Chapel Hill, 1989  
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LECTURER  
Mathematics & Statistics  
B.S., Gordon College, 2011  
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Economics  
B.S., Middle East Tech Univ, 1996  
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 Ocean Process Analysis Lab  
 B.A., 1980, M.S., University of Southern Maine, 1990  
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 B.A., Tufts University, 1963  
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 Education  
 B.A., Fordham University, 1981  
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 History  
 B.A., University of California - San Diego, 1979  
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 Philosophy  
 B.A., Oberlin College, 1986  
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 B.S.N., Northeastern University, 1978  
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 Physics  
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 B.A., 1957, M.S., University of New Hampshire, 1959  
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 Marketing  
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 B.A., University of New Hampshire, 1969  
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 Classics, Humanities & Ital Studies  
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 Political Science  
 B.A., Villanova University, 1990  
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 Communication Sciences & Disorders  
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 A.B., Bryn Mawr College, 2009  
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 B.A., Yale University, 1976  
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 B.A., New York University, 1966  
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 Security Studies  
 B.S., Saint John's Univ (Minn), 1979  
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PEAEMPL-Faculty Salary  
B.A., 1975, M.A., University of New Hampshire, 1977  
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B.A., Dartmouth College, 1978  
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M.O.E., University of New Hampshire, 1980

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LECTURER  
Anthropology  
B.A., Wake Forest University, 2007

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Hospitality Management  
B.A., Heilbronn University, Heilbronn, Germany, 2001  
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Education  
B.A., State University of New York at Geneseo, 1984  
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B.S., 1969, M.S., 1970, Ph.D., University of Wisconsin, 1974

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Physics - Joint Positions  
B.A., Oberlin College, 1990  
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Recreation Management & Policy  
B.S., 2001, M.S., West Virginia University, 2005  
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**Schweickart, Patrocinio**

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UNH Transition  
B.S., University of The Philippines, Philippines, 1963  
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PEAEMPL-Casual Hourly  
B.S., University of Massachusetts - Lowell, 1976  
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Kinesiology  
B.S., Univ of Wisc-Lacrosse, 2015  
MSE, 2016, Ph.D., University of Kansas, 2019

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PROFESSOR EMERITA  
Biological Sciences  
B.A., Wellesley College, 1961  
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PROFESSOR EMERITUS  
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B.S., Drexel University, 1961  
M.Ed., University of New Hampshire, 1973

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LECTURER  
Economics  
B.A., Dartmouth College, 2007  
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English  
B.A., Washington University - St Louis, 2006  
M.A., 2010, M.Phil., 2010, Ph.D., Yale University, 2012

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Recreation Management & Policy  
B.A., New England College, 1994  
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UNH Transition  
A.B., Bates College, 1966  
M.A., 1968, Ph.D., University of Arizona, 1973  
M.P.H., Harvard University, 1979

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CLINICAL PROFESSOR  
Kinesiology  
B.S., University of Pittsburgh, 1982  
M.S., University of Arizona, 1984

**Seichepine, Daniel**

ASSOCIATE PROFESSOR

Life Sciences

B.A., California State University, 2002

M.A., 2005, Ph.D., 2011, Post-doctor, Boston University, 2013

**Seidel, Alice**

ASSOCIATE PROFESSOR EMERITUS

UNH Transition

B.S., University of Wisconsin, 1963

M.P.H., University of Michigan, 1972

Ed.D., Vanderbilt University, 1994

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PROFESSOR EMERITUS

UNH Transition

A.B., Hobart and William Smith College, 1967

M.P.A., 1972, Ph.D., Pennsylvania State University, 1976

**Seiler, David**

PROFESSOR EMERITUS

UNH Transition

B.M., 1965, M.M., University of Wisconsin - Madison, 1979

**Seitz, Rudi**

PROFESSOR

Chemistry

A.B., Princeton University, 1965

Ph.D., Massachusetts Institute of Technology, 1970

**Senier, Siobhan**

PROFESSOR

Women's and Gender Studies

A.B., Bowdoin College, 1987

M.A., 1992, Ph.D., University of Illinois at Urbana-Champaign, 1997

**Shaffer, Laurie R.**

Assistant Professor

Sign Language Interpreting

B.A., Hamilton College, 1983

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ASSOCIATE PROFESSOR

Social Work

B.A., 1990, M.S.W., State University of New York at Buffalo, 1993

Ph.D., University of Virginia, 2000

**Sharkey, Judy**

PROFESSOR

Education

B.A., Franklin Pierce College, 1984

M.A.T., School for International Training, 1990

Ph.D., Pennsylvania State University, 2000

**Sharp, Dayle**

CLINICAL PROFESSOR

Nursing

B.S.N., University of New Hampshire, 1992

M.S.N., Idaho State University, 1999

Ph.D., University of Texas at El Paso, 2005

M.P.H., Univ of Texas Houston, 2008

DNP, University of Texas at El Paso, 2014

**Sharp, Erin Hiley**

Associate Dean

Dean's Office - Health &amp; Human Svcs

B.S., Virginia Commonwealth University, 1999

M.S., 2003, Ph.D., Pennsylvania State University, 2006

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ASSOCIATE PROFESSOR

Mathematics &amp; Statistics

B.A., Wesleyan College, 2004

M.A., University of Georgia, 2007

Ph.D., University of Miami, 2011

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Emeritus

PEAEMPL-Faculty Salary

B.A., 1980, M.B.A., Wilfrid Laurier University, Canada, 1984

Ph.D., University of Western Ontario, Canada, 1995

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PROFESSOR

Mathematics &amp; Statistics

B.S., 1993, M.S., Nanjing University, China, 1996

Ph.D., University of Pennsylvania, 2004

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PROFESSOR EMERITUS

UNH Transition

B.S., University of Illinois at Urbana-Champaign, 1960

M.S., 1962, Ph.D., California Institute of Technology, 1966

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ASSOCIATE PROFESSOR

Anthropology

B.A., Bard College, 1984

Ph.D., City University of New York, 1997

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PROFESSOR EMERITA

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B.A., Marlboro College, 1972

Ph.D., Brown University, 1983

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ASSOCIATE PROFESSOR

English

B.A., 1977, M.A., University of Poona, India, 1979

M.A., 1982, Ph.D., University of Rochester, 1987

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RESEARCH ASSOCIATE PROFESSOR

Earth Systems Research Center

B.S., 1981, M.S., 1983, Ph.D., Hydrometeorological University, 1996

**Shippee-Rice, Raelene**

ASSOCIATE PROFESSOR EMERITA

UNH Transition

B.S., Fitchburg State College, 1960

Diploma, Cook County School of Nursing, 1960

B.S.N., Carroll College, 1964

M.S., University of Rochester, 1979

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PROFESSOR EMERITUS  
 UNH Transition  
 B.S., Tufts University, 1960  
 M.B.A., University of Massachusetts - Amherst, 1963  
 Ph.D., University of Wisconsin, 1968

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PROFESSOR EMERITUS  
 UNH Transition  
 B.S., Juniata College, 1959  
 M.A., 1961, Ph.D., Pennsylvania State University, 1964

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RESEARCH PROFESSOR EMERITUS  
 PEAEMPL-Faculty Salary  
 B.A., Plymouth State University, 1972  
 M.S., University of Rhode Island, 1976  
 Ph.D., University of Alaska, 1981

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PROFESSOR  
 Mathematics & Statistics  
 B.A., 1985, B.S., University of Rochester, 1985  
 Ph.D., Imperial College London, United Kingdom, 1988

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PROFESSOR  
 Mathematics & Statistics  
 M.S., 1972, Ph.D., Saint Petersburg State University, Russia, 1985

**Sias, Jo**

PROFESSOR  
 Civil and Environmental Engineering  
 B.S., University of New Hampshire, 1994  
 M.S., 1996, Ph.D., North Carolina State University, 2001

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Full Extension State Spec/Prof  
 Food and Agriculture  
 B.A., Dartmouth College, 1994  
 Ph.D., Cornell University, 1999

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CLINICAL ASSOCIATE PROFESSOR  
 Molecular, Cellular, & Biomedical  
 B.A., Reed College, 1992  
 D.V.M., Tufts University, 1999  
 M.S., University of Connecticut, 2004

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ASSOCIATE PROFESSOR  
 Political Science  
 B.A., Rutgers University, 1979  
 M.A., 1983, Ph.D., Johns Hopkins University, 1988

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 Education  
 B.A., Middlebury College, 1998  
 M.F.A., Vermont College of Fine Arts, 2005  
 Ed.D., University of Pennsylvania, 2017

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LECTURER  
 Decisions Sciences  
 B.A., State University of New York, 1994  
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 B.A., New York University, 1967

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 Natural Resources & The Environment  
 A.A.S., 2007, B.S., 2010, M.S., University of New Hampshire, 2013

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 Social Work  
 A.A., Austin Comm College (Mn), 1989  
 B.S., Texas State University, 1993  
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 Ph.D., Prairie View A&M University, 2019

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 Nursing  
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 B.A., University of Chicago, 1952  
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 A.B., Queens College of the City University of New York, 1961  
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 UNH Transition  
 B.S.E.E., University of Madras, India, 1956  
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 B.S.N., Massachusetts Institute of Technology, 1952  
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 Physics  
 B.S., 1995, Ph.D., Temple University, 2004

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University Archivist, Interim Special Collections Librarian  
 Dean's Office/Administration  
 B.A., Mount Holyoke College, 1991  
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 Classics, Humanities & Ital Studies  
 B.S., Hillsdale College, 2005  
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 Space Science Center  
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 Computer Science  
 M., University of New Hampshire, 1997

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 English  
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 Philosophy  
 B.A., Vassar College, 1994  
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 Classics, Humanities & Ital Studies  
 B.A., Mary Wash Coll (Univ Va), 1993  
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 Natural Resources & The Environment  
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 Occupational Therapy  
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 Philosophy  
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 Electrical & Computer Eng Dept  
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 Decisions Sciences  
 B.A., Villanova University, 1972  
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 Geography  
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 Electrical & Computer Eng Dept  
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Accounting and Finance  
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Life Sciences  
B.S., State University of New York at Oswego, 1983  
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