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GRADUATE SCHOOL ACADEMIC CATALOG

The Academic Catalog is intended to provide general information about the University of New Hampshire and program requirements. It 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.

Degree and program requirements in the 2023/2024 Academic Catalog apply to students who enter the University between July 1, 2023 and June 30, 2024.

Introduction

The University of New Hampshire enrolls 13,000+ undergraduate students and 2,400+ graduate students across the Durham, Manchester, Concord and online campuses and has a full-time faculty of more than 600. A comprehensive research university, it retains the look and feel of a New England liberal arts college with a faculty dedicated to teaching. The University is ideally located within easy driving distance to the White Mountains, the Seacoast area of New Hampshire, and Boston.

UNH is a land--, sea--, and space--grant research university. It comprises the following academic units: the College of Engineering and Physical Sciences; College of Liberal Arts; College of Life Sciences and Agriculture, which includes the Thompson School of Applied Science; College of Health and Human Services; College of Professional Studies (Manchester and Online Divisions); Peter T. Paul College of Business and Economics; University of New Hampshire Franklin Pierce School of Law in Concord; and the Graduate School.

The University System of New Hampshire, of which UNH is a member, also includes Keene State College, and Plymouth State University.

The University awarded its first Ph.D. in 1896, placing it among the earliest American universities to award that degree. Doctoral programs in their present form began in the 1950s.

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 though 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

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 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.

Academic Regulations and Degree Requirements

It is the student's responsibility to become familiar with the academic regulations and degree requirements of the Graduate School as well as the special requirements of their own academic program. The general requirements of the Graduate School are found in the catalog. Individual program requirements may be found in the catalog or obtained from the respective department.

http://www.gradschool.unh.edu/

Academic Integrity

Academic integrity 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 policy can be found in the annual publication of the Student Rights, Rules, and Responsibilities.

Academic Standards

Academic Standards

- Graduate credit is only granted for courses completed with a grade of B- or higher. Individual programs may have stricter requirements, and those are published with their degree program requirements.
- Graduate students receiving grades below "B--" in **9 or more credits**, including undergraduate courses taken while a graduate student, may be dismissed from the Graduate School.[1]
- Graduate students enrolled under the accelerated master's program receiving any grade below "B--" in a graduate course while in dual status may be dismissed and have their admission to the Graduate School withdrawn.
- Graduate students will have a maximum of two opportunities to successfully complete final examinations for the master's or Ed.S. degree.
- Doctoral students will have a maximum of two opportunities to successfully complete qualifying or final examinations for the Ph.D. degree.
- Graduate students admitted on a conditional basis must meet the conditions as stated in the letter of admission in order to remain in the Graduate School.
- Graduate students MUST have a cumulative GPA of 3.0 or higher in order to graduate.

[1] Each individual program may set and announce standards for coursework, examinations, and/or research achievement that are more rigorous than the Graduate School standard. Thus, students may be dismissed if they accumulate fewer than 9 credits below the "B--" level, and/or fail to make adequate progress in other aspects of their graduate program.

Appeals Procedure

Policy and Appeals Procedure for Graduate Students Dismissed for Failure to Make Satisfactory Academic Progress or Professional, Ethical, or Behavioral Misconduct

The process by which a student can be dismissed for violations of academic standards or violations of professional, ethical, and/or behavioral expectations of the program is outlined below along with the process by which such decisions can be appealed.

Dismissal for Failure to Make Satisfactory Academic Progress

(Note: This procedure is not available to graduate students who have received failing grades in 9 or more credits.)

A department chairperson or a graduate program coordinator, upon the recommendation of the appropriate faculty committee, may recommend dismissal for a student who is failing to make satisfactory academic progress in their program. This recommendation shall be forwarded in writing to the associate dean of the Graduate School with a copy to the affected student. The associate dean of the Graduate School will act on the faculty recommendation and inform the student and the graduate program coordinator or department chair of the action taken. A student disagreeing with the action taken should make every effort to resolve the situation through informal discussions with the individuals involved in the decision. If the recommendation to dismiss is changed at this point, the associate dean will be notified and after review will notify the student of the decision. If the decision to dismiss stands, a student wishing to enter a formal appeal shall follow the procedure outlined below. A student who has been dismissed for failure to make satisfactory academic progress may, with the permission of the dean of the Graduate School, enroll as a special student in courses in his/her program pending a final decision on the appeal.

Dismissal for Professional, Ethical, or Behavioral Misconduct

Graduate students shall conduct themselves in a manner consistent with the norms and practices of their program and/or discipline.

A department chairperson or graduate program coordinator, upon the recommendation of the appropriate faculty committee at the department/program level, may recommend dismissal for a student who is failing to meet the professional, ethical, and behavioral expectations of the program or otherwise fails to act in ways that are consistent with the norms and standards of the profession or discipline. This recommendation shall be forwarded in writing to the associate dean of the Graduate School with a copy to the affected student. The associate dean of the Graduate School shall act on the faculty recommendation and inform the student and the graduate program coordinator or department chair of the action taken. A student disagreeing with the action taken should make every effort to resolve the situation through informal discussions with the individuals involved in the decision. If the recommendation to dismiss is changed at this point, the associate dean will be notified and after review will notify the student of the decision. If the decision to dismiss stands, a student wishing to enter a formal appeal shall follow the procedure outlined below. A student who has been dismissed for professional, ethical, or behavioral misconduct may, with the permission of the dean of the Graduate School, enroll as a special student in courses in his/her program pending a final decision on the appeal.

Appeals Process for Graduate Students Dismissed for Failure to Make Satisfactory Academic Progress or Professional, Ethical, or Behavioral Misconduct

Step 1: The student shall request that the faculty member or committee making the original recommendation reconsider their decision, generally within 10 working days after the receipt of the official decision from the Graduate School. The student's request shall be written and shall contain any information which the student feels warrants a reconsideration of the decision. A copy of the request shall be sent to the dean of the Graduate School. As soon as possible after receiving this request, the faculty member or committee group will reconsider their decision and notify the student and the dean of the Graduate School of the result of their deliberations in writing. If the original recommendation is reversed at Step 1, the associate dean will review the new material and act on the recommendation and inform all parties involved.

Step 2: If the student is not satisfied with the decision reached in Step 1, they may request that the chairperson of the appropriate department or program convene a meeting of all graduate faculty members in the

department or program to review the decision, generally within 10 working days after the receipt of the official decision reached in Step 1. The student's request shall be in writing, and a copy shall be sent to the dean of the Graduate School. In some cases, participation from all graduate faculty in the meeting may be unfeasible, and in these cases the chairperson will notify the student in advance of the faculty who are unable to attend, and to consider delay to allow greater attendance either if the student so requests or if the availability for attendance is very low. After the meeting, the chairperson will provide the student and the dean of the Graduate School with written notification of the decision of the faculty. If the recommendation to dismiss is reversed by the graduate faculty, the associate dean will again review the case, act on the recommendation and inform all parties involved.

Step 3: If the student is dissatisfied with the decision reached in Step 2, they may request that the dean of the Graduate School review the decision, generally within 10 working days after the receipt of the official decision reached in Step 2. The student must request such a review in writing and stipulate the reasons for dissatisfaction with the decisions reached in the earlier steps in the review procedure. Within a reasonable period of time, the dean of the Graduate School will hold separate meetings with the student and the appropriate faculty and the associate dean to discuss the case. After these meetings and after reviewing any other information deemed appropriate, the dean of the Graduate School will inform the college dean about the appeal process to date. In consultation with the Graduate Council, the dean of the Graduate School will then arrive at a final decision, which will be communicated in writing to the student, the department or program faculty, and the college dean.

In Steps 1 and 2, the student may, at the discretion of the faculty body involved in hearing the appeal, be present to state their case during the review of the appeal. A member of the University community may appear with the student, as an adviser, before the dean of the Graduate School and before any faculty meeting, which the student is permitted to attend. An adviser may be present, but may not directly participate, in any of these proceedings. Students shall not be present during deliberations.

Approved by the Graduate Council, April 6th, 2010.

Amended with approval by the Graduate Council November 3rd, 2017.

Credit Transfer

A maximum of **12 credits** taken by a student prior to matriculation (internal and external combined) can be applied to a degree program. Transfer credits must be formally approved and appear on the UNH transcript to count towards the degree requirements.

External to UNH

Students may request that a maximum of two courses, for up to **8 credits** of graduate level coursework from an accredited institution authorized to grant graduate degrees, be transferred to count toward their graduate program. Courses must be at the graduate level and cannot have been used or be in the process of being used in earning another graduate degree or certificate or have been taken while completing a bachelor's degree. A grade of **B** or better must have been earned. Students must formally request and be approved for a credit transfer in order to have the credits count towards their degree.

Transfer of credits must be recommended by the program faculty and approved by the dean of the Graduate School. Students taking courses at another university for transfer after enrolling at UNH should obtain approval of their adviser and the graduate dean prior to enrolling in the course.

International Universities

Students requesting credit transfer from an international university must have their transcript evaluated by a third party before submitting a transfer request. World Education Services (WES) (https://www.wes.org) is the preferred evaluator, but other evaluation services can be accepted. Students can request that the evaluation service send the final transcript evaluation directly to the Graduate School.

Internal to UNH

A maximum of **12 credits** completed by a non-degree student in UNH graduate courses (800 or 900 level) at UNH may, upon approval of the dean of the Graduate School, be applied to a student's degree program. Each program's faculty retain discretion regarding the maximum number of graduate credits that will be recommended for approval (not exceeding 12). Students must formally request and be approved for a credit transfer in order to have the courses count towards their degree requirements.

Non-Degree Credit Transfer for Certificate Programs

No more than half of the required credits for a certificate can be taken at UNH prior to matriculation (enrollment in the program after admission) in a certificate program. All coursework in a certificate program must be taken at UNH. Courses may be applied to only one certificate program but may also be applied to a master's or doctoral degree program at UNH. Students must submit a Transfer Credit Form in order to have these courses applied to a certificate or degree program.

Continuing Education Units

The Continuing Education Unit (CEU) is a nationally recognized method of quantifying the time spent in the classroom during professional development and training activities. Ten hours of instruction = 1.0 CEU. One hour of instruction = 0.1 CEU. CEUs are not transferable as graduate credit.

Degree Requirements

Doctoral Degree Requirements

Ph.D.

The degree of **doctor of philosophy** is conferred on qualified candidates who have passed an oral or written examination(s) on the subject matter of their field of study, who have completed an original investigation in this field and have embodied the results in an acceptable dissertation, and who have passed an oral examination in defense of the dissertation. The degree of doctor of philosophy is essentially a research degree.

DNP

The degree of **doctor of nursing practice** is a practice based doctorate that prepares nurses for the highest level of specialized nursing practice. DNP graduates are prepared to translate evidence into practice, improve systems of care, and measure health outcomes in diverse settings. Graduates of the DNP program are prepared for culturally competent, evidence-based, system-based care, interprofessional collaboration and leadership. DNP graduates are distinguished by their abilities to:

- Affect practice
- Design and implement programs that improve health and healthcare delivery

- Apply data management and informatics skills to evaluate programs, outcomes, and care systems
- Influence health policy

OTD

The **doctor of occupational therapy** is an entry-level clinical doctoral degree designed to prepare students to enter the profession with strong foundational skills in occupational therapy assessment and intervention, advanced training in clinical skills, leadership, clinical research, and program development. Requirements include coursework, fieldwork experiences, and a capstone.

Responsible Conduct of Research

As a land-grant institution, the University of New Hampshire (UNH) is accountable to New Hampshire residents and to the University community to ensure the ethical and safe conduct of research and scholarly activity. As an institution of higher education that prides itself on extensive research endeavors and the involvement of undergraduates and graduate students in research projects, UNH has an obligation to teach and actively promote integrity in research and scholarship.

To fulfill its obligations, UNH has embarked on a program on the responsible conduct of research and scholarly activity (RCR) to:

- Raise the consciousness of faculty, staff, and students regarding the ethical and responsible conduct of research and scholarly activity#
- Establish a knowledge base that defines normative and/or professional behavior to assist faculty, staff, and students in making ethical and responsible decisions in the conduct of research and scholarly activity# and
- Foster an institutional culture of integrity in research and scholarly activity.

To support these efforts, the Graduate Council has mandated that all incoming Ph.D. students complete RCR training approved by the Graduate School by the end of their first semester. For more information, visit the RCR website.

Guidance Committee

A guidance committee should be appointed by the program faculty as soon as possible after a student has begun study for the Ph.D. degree. The committee assists the student in outlining a program and preparing for the qualifying examination, and administers the examination.

Residency

A minimum of three academic years of graduate study is required for the Ph.D degree. Resident graduate work done at other universities may be counted toward the minimum requirement upon approval of the guidance committee and the dean of the Graduate School, but one full academic year must be in residence at the University of New Hampshire. In individual cases, the major department and the dean of the Graduate School may grant permission to pursue the research for the dissertation at another institution where access to special facilities would be advantageous.

Credits

Each program specifies the number of courses required for the Ph.D. degree.

The DNP program requires 21-33 credit hours.

Doctoral Research (999)

A minimum of two semesters of registration in Doctoral Research is required for Ph.D students. However, Ph.D. students at candidacy must register for 999 each semester during the academic year, even if the minimum requirement has been met. Although Doctoral Research (999) is 0 credits, it grants full time student status.

Degree Candidacy

A Ph.D. student is advanced to candidacy for the degree by the dean of the Graduate School upon recommendation of the graduate program coordinator after the student has passed the qualifying examination, met the language or proficiency requirements as are deemed desirable by the student's program, declared a topic for dissertation research, and fully formed their doctoral dissertation committee. **Students are expected to file an Advancement to Candidacy form with the Graduate School as soon as possible after all of the requirements for candidacy have been met.** Ph.D. students at candidacy must register for Doctoral Research (999) each semester during the academic year until the degree is awarded.

Note: If the doctoral candidacy form is received before the final day to register for the current semester, then candidacy shall be effective immediately. If the form is received after the final day to register for the current semester then candidacy shall be effective at the start of the following semester. Candidacy will not be backdated.

Qualifying Examination

The qualifying examination, which must be taken at UNH, is required and may be written, oral, or both. This examination will test:

1. the student's general knowledge in the student's major and minor work and
2. the student's fitness for engaging in research, particularly in the subject proposed for the dissertation.

The chairperson of the student's program will communicate the examination results to the Graduate School dean. (See academic standards for details.)

Language/Research Proficiency

Each doctoral program has its own language and/or research proficiency requirements. These requirements can be found in the individual program descriptions.

Doctoral Committee

When a Ph.D. student advances to candidacy, a doctoral committee will be appointed to supervise and pass on the dissertation and administer the final examination. This committee will be nominated by the department of major concentration and appointed by the dean of the Graduate School. It shall normally consist of a minimum of five members, usually three from the major department and two from related departments. The dean of the Graduate School is an ex officio member of all doctoral committees.

Doctoral Dissertation

The dissertation must be a significant contribution to scholarship in the student's discipline, demonstrating the student's ability to conduct independent and original research and to communicate the results of the research through a coherent, integrated, and mature piece of writing.

Final Defense

A copy of the completed dissertation must be made available to the members of the examining committee two weeks before the final examination date.

The final oral examination is conducted by the doctoral committee and is intended to give the candidate an opportunity to defend the dissertation. While it is desirable for all committee members to participate in dissertation defenses, whether in person or through virtual means such as conference calls or video conferencing, outside scholars are not required to be present at the defense. Departments will determine how to obtain meaningful and substantive evaluations from external members in consultation with the Graduate School. A written final examination, on subject matter not covered in the qualifying examination, may also be required. This written examination is conducted by the major department. These final examinations must be completed by the date listed in the Graduate School calendar. After consultation with the major program, the dean of the Graduate School may appoint, for participation in the final oral examination, additional members of the faculty under whom the student has worked. The doctoral committee alone shall decide on the merits of the candidate's performance by a majority vote.

Submission of Dissertation

The final approved dissertation must be submitted for publication by ProQuest via the UNH ETD Administrator website by the appropriate deadline as published in the Graduate School calendar. Bound copies are available for purchase through ProQuest at the time of submission. Students should check with their department to determine if a bound copy is required. Students may choose to copyright their thesis at the time of publication. All fees are to be paid by the student at the time of submission. If the dissertation material is further published, it should be designated as having been accepted as a doctoral dissertation by the University of New Hampshire.

Doctoral Time Limit

The Ph.D. must be completed within eight years of matriculation (enrollment after admission) or within seven years if the student entered with a master's degree in the same field. A Ph.D. student must be advanced to candidacy within five years after matriculation or within four years if the student entered with a master's in the same field.

The DNP, OTD, Ed.S. degrees must be completed within 4 years.

Master's Degree Requirements

Credits

A minimum of **30 graduate credits** is required for all master's degrees. Many programs require substantially more than the minimum 30 credits. Individual program requirements are outlined in the program descriptions of this catalog. Graduate credits are normally earned in courses numbered 800-999. In rare cases graduate degree students may petition to earn graduate credit for up to 12 credits in 700-level courses, provided the credits are taken in a program other than the one in which the student is seeking the degree and provided such courses are approved by the student's adviser, graduate program coordinator, and the dean of the Graduate School. Such courses must be taken for a letter grade. Petitions must include what additional requirements or expectations will be required of the student to make the course a graduate level experience. **Petition requests must be made prior to enrolling in the course and are not guaranteed.**

Residency

A student will normally spend at least one calendar year, or the equivalent, in satisfying the requirements for the degree.

Capstone Experience

The most appropriate capstone experience(s) for each program is determined by the faculty of each program. Such experiences may include a single integrative course, a performance, an internship or praxis, a portfolio, a scholarly paper or essay, an examination, a research problem, a research project, or a research thesis, and are subject to approval of the dean of the Graduate School. All master's degrees at UNH must include a capstone experience.

Capstone - Non--thesis Option

Requirements for non-thesis capstone experiences must be clearly articulated by each program. Capstone experiences, with the exception of capstone courses, must be approved by a committee of at least two faculty members in the student's program and approved by the graduate program coordinator. All capstone experiences must be completed by the end of the final examination period of the graduation date for which the degree is to be conferred.

Capstone - Thesis Option

Students who are in a thesis program are required to conduct research and prepare a scholarly paper under the guidance of a faculty committee for submission to the Graduate School. Guidelines on the purpose, framework, and process for the thesis should be clearly articulated by each program. Students writing a thesis should obtain a copy of the *Thesis and Dissertation Manual* from the Graduate School website at www.gradschool.unh.edu. Students in thesis programs may also be required to pass a final examination. The regulations concerning this exam are the same as those in the non-thesis option. The thesis committee will normally also serve as the examining committee.

Non-Terminal Master's Degrees

Ph.D. students, with the approval of their department, may petition to earn a non-terminal master's degree while completing the Ph.D. degree. Students must complete the master's degree requirements for their particular program as noted in the Graduate Catalog. Petitions should be submitted to the Graduate School at the start of the semester in which graduation is desired.

Master's Time Limit

All graduate work for any master's degree must normally be completed within **four years** from the date of matriculation (enrollment following admission) in the program. Progress toward the degree will be carefully monitored by the advisor and the Graduate School to ensure that adequate advancement is made toward the completion of the program and that any deficiencies noted at the time of admission are removed. Students failing to make adequate advancement toward completion of the program are subject to dismissal in advance of the four-year time limit. Extensions to the four-year time limit will be considered on a case-by-case basis.

Master's Thesis

Thesis Credit

During their degree program, a student completing a thesis must enroll in **at least 6 but no more than 10** thesis credits. Students are advised to review their program's degree requirements as the exact number of required thesis credits within each program can vary. The exact number

of thesis credits that are required for each degree will be determined by the faculty of the individual programs. Students are not eligible to receive credit for any more than the maximum number of thesis credits required by the degree and are expected to monitor their registration to ensure that they do not exceed the maximum. No thesis credit shall be given until the completed thesis has been approved by the thesis committee and accepted by the Graduate School. Satisfactory acceptance of the thesis will be recorded as a credit (CR).

Thesis Committee

A master's thesis must be approved by a committee composed of a regular member of the graduate faculty under whose direction it was written and two other members of the graduate faculty nominated by the department chairperson or graduate program coordinator and appointed by the dean of the Graduate School. Individuals who are not regular members of the graduate faculty may be nominated to serve on committees in accordance with individual program policies.

Submission of Thesis

The final approved thesis must be submitted for publication by ProQuest via the UNH ETD Administrator website by the appropriate deadline as published in the Graduate School calendar. Bound copies are available for purchase through ProQuest at the time of submission. Students should check with their department to determine if a bound copy is required. Students may choose to copyright their thesis at the time of publication. All fees are to be paid by the student at the time of submission.

Educational Specialist Degree

Requirements for completion of the educational specialist degree (Ed.S.) are found under the program descriptions of the Department of Education. A student can petition to count a maximum of 12 credits, not previously applied to a degree program and taken prior to admission to the Ed.S., toward a Ed.S. program.

Certificate Programs

Graduate certificate programs require the completion of at least 4 graduate courses for a minimum of 12 credits of graduate course work (800- or 900-level courses) organized in a coherent and logical manner to provide knowledge and expertise relevant to a specific aspect of professional and/or personal development. All coursework in a certificate program must be taken at UNH.

Courses may be applied to only one certificate program but may also be applied to a master's or doctoral degree program at UNH. There are no upper limits to the number of credits that maybe applied to a degree program provided the courses fulfill a degree requirement.

Only courses completed with a grade of B- or higher may be used to fulfill certificate requirements. A student who receives more than one grade below B- will be required to withdraw from the certificate program.

CERTIFICATE TIME LIMIT

All course work for a certificate must be completed within 3 years from the date of matriculation (enrollment) in the program after admission.

Non-Degree Credit Transfer for Certificate programs

No more than half of the required credits for a certificate can be taken at UNH prior to matriculation (enrollment in the program after admission) in a certificate program. Courses may be applied to only one certificate program but may also be applied to a master's or doctoral degree program at UNH. Students must submit a Transfer Credit Form in order to have these courses applied to a certificate or degree program.

Registration

Students enrolled only in a certificate program are exempt from the Graduate School's continuous enrollment policy.

Tuition

Tuition for NH residents in certificate programs will be equal to the rates for NH resident graduate degree students. Tuition for out-of-state students will be 10% above the resident rate, unless the student is also enrolled in a degree program, in which case the nonresident or New England Regional rate will apply. Students enrolled only in certificate programs are not eligible for graduate assistantships or scholarships unless specifically awarded by the sponsoring program, but may be eligible for need-based aid through the UNH Financial Aid Office. Students enrolled in degree programs as well as certificate programs are eligible for all forms of graduate financial support.

Dual Degrees

The Graduate School allows UNH students to pursue two degrees at UNH and count credits toward both degrees under the circumstances detailed below. Such credit will be granted only for graded coursework completed with a grade of "B--" or higher. Application of such credit toward a student's program for a second degree is subject to departmental recommendation and approval by the Graduate School. Dual degrees should be interpreted to include separate majors within the same degree, or a combination of two different degrees. Students will receive separate diplomas for each degree program. **Note: Dual degrees will NOT be awarded retroactively.**

1. **Accelerated Master's.** Qualified senior students at the University of New Hampshire may be admitted to an approved accelerated graduate program in the Graduate School provided they have followed normal application procedures# they must have been admitted for the semester in which they wish to enroll in courses for dual credit. A 3.20 cumulative grade point average is normally required to be considered for the program. Students are normally admitted prior to the start of their senior year. Students who have been admitted to the program may register for a maximum of 12 credits of 800-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 the bachelor's and master's degrees. Up to 8 credits, upon recommendation of the department and approval of the Graduate School, may count towards both the bachelor's degree and a graduate certificate. For more information and a list of eligible programs, visit: https://gradschool.unh.edu/academics/accelerated-masters-program.
2. **Consecutive Master's Degrees.** Enrollment in consecutive master's degrees refers to admission and matriculation in a second master's degree program at the University of New Hampshire after the completion of the requirements for a first master's degree earned at the University of New Hampshire. A student may apply up to 12 credits earned in the first master's degree awarded at the University of New Hampshire toward a second master's degree with approval of the student's graduate advisory committee and/or graduate program coordinator in the second master's program. Thesis or research credits from the first program may not be counted toward the requirements of the second program.

3. **Concurrent Dual Degrees.** Enrollment in concurrent dual degrees occurs when a student is admitted to and matriculated in two graduate degree programs at the University of New Hampshire simultaneously. A student may pursue concurrent degrees only with approval of the appropriate graduate program coordinator(s) and the dean of the Graduate School. With approval of the student's graduate advisory committee(s) and/or the graduate program coordinator(s), a student may apply up to 12 University of New Hampshire credits earned in one master's degree toward the requirements for a second master's degree. A student must complete the capstone requirements for both programs. Completion of degree requirements for the two programs need not be at the same time.
4. **Integrated Dual Degrees.** Integrated dual degrees occurs when two graduate programs have formalized a program of study which creates an integrated program linking the two disciplines, while continuing to award separate degrees. Students must be admitted to both programs and complete the requirements for both degrees. Integrated dual degree programs may include a single admissions process, submission of a single thesis or capstone experience, and a single advisory committee composed of members from both programs. The number of required credit hours for integrated dual degrees must not be less than 80 percent of the total minimum hours required to complete each degree separately. Integrated dual degree programs must be approved by the Graduate Council and the dean of the Graduate School.
5. **Cotutelle Ph.D. Agreements with International Universities.** A cotutelle is a Ph.D. jointly awarded by two universities from different countries. Under such an arrangement, a doctoral student completes the requirements of the Ph.D. program in both the home and partner university, conducts dissertation research collaboratively, sequentially, and for roughly equal amounts of time in both universities, and is supervised by a faculty member from each of the universities. The dissertation is then examined by a committee whose members are drawn from both institutions. A degree is awarded from each university with acknowledgment on the transcript of the cotutelle. All cotutelles must have a fully approved cotutelle agreement signed by multiple institutional representatives at both universities including the Office of International Students and Scholars (OISS). UNH faculty or students interested in developing a cotutelle should contact the Graduate School to get detailed instructions about what is required for a cotutelle agreement and the associated approval process.

All standard policies relating to time to degree, residency requirements, academic standards, and minimum GPA required to graduate apply to any dual-degree arrangement.

If the student withdraws from one of the participating programs, the dual-degree arrangement is automatically nullified.

If a student's tuition is funded by one or more units, it is up to the funding unit to decide if tuition may cover courses taken solely for completion of the second program.

Graduate Courses

Graduate credits may be earned in courses numbered from 800 through 999, or under limited circumstances in courses numbered at the 700 level.

The faculty of each graduate program prescribes the courses that make up the degree program. In addition, the Graduate School has general requirements for master's and doctoral degree programs.

800- and 900--Level Courses

800- and 900-- level courses are offered for graduate credit only and therefore are open only to admitted graduate students or non--degree students with a minimum of a bachelor's degree.

700-Level Courses

700-level courses are advanced undergraduate courses. In rare cases graduate degree students may petition to earn graduate credit for up to 12 credits in 700-level courses, provided the credits are taken in a program other than the one in which the student is seeking the degree and provided such courses are approved by the student's adviser, graduate program coordinator, and the dean of the Graduate School. Such courses must be taken for a letter grade. Petitions must include what additional requirements or expectations will be required of the student to make the course a graduate level experience. **Petition requests must be made prior to enrolling in the course and are not guaranteed.** Petition forms are available at https://gradschool.unh.edu/academics/forms-policies.

Simultaneous 700/800 Courses

800-level courses may be cross-listed with 700-level courses and taught simultaneously to both graduate and undergraduate students. While the content of the course is the same, the requirements and expectations of the students differ substantially with assignments, examinations, projects and analyses demonstrating a broader depth of understanding, sophistication and skills for students enrolled at the 800-level. Students must be enrolled in the 800 level of the course in order to obtain graduate credit.

Graduate credit will not be given for any courses (700--level or simultaneous 700/800 level) that have freshmen or sophomores enrolled. The Graduate School monitors those advanced-level undergraduate courses that are co-listed and co--taught with 800-level graduate courses to ensure that only advanced-level undergraduates are enrolled.

Graduate Grading

Grades

Letter grades: The following grades are used at the University: A (4.0), A- (3.67), B+ (3.33), B (3.0), B-- (2.67), C+ (2.33), C (2.0), C- (1.67), D+ (1.33), D (1.0), D- (.67), F (0). Graduate credit is only granted for courses completed with a grade of B- or higher. Individual programs may have stricter requirements, and those are published with their degree program requirements.

AF Grades: An "AF" grade, Administrative F, is assigned for failure to either drop or complete a course. An "AF" is considered the same as an "F."

Credit/Fail Grades: A "CR" grade is assigned for complete, approved theses and dissertations, as well as other approved courses and seminars.

Pass/Fail Grades: Graduate courses cannot be taken pass/fail. A graduate student may petition to take undergraduate courses on a pass/fail basis. Such a petition must be approved by the end of the add period

for the term the course is taken. Courses at the 700-level approved for graduate credit cannot be taken for pass/fail.

Audit Grades: An "AU" grade is assigned for completion of courses for which an audit was granted. No credit is earned.

Incomplete Grades: An "IC" grade is assigned with the approval of the instructor for excused unfinished work only. The work must be completed and submitted to the instructor by the date agreed upon with the instructor, but not later than the last day of classes of the semester immediately following the one in which the incomplete was granted (800- and 900-level courses only# mid-semester deadline for 400--, 500--, 600--, and 700-level courses). If extraordinary circumstances arise, a petition requesting additional time may be submitted. The petition, listing a specific deadline for completion, must be approved by the instructor, the student's adviser, and graduate program coordinator before being submitted to the Graduate School. An extension will be granted by the dean only under unusual circumstances and will usually not exceed one calendar year from the end of the semester in which the course was originally taken. An incomplete grade becomes an "F" if not resolved or if a petition for an extension is not approved within the allotted time period. This policy also applies to students who withdraw from the University or who are on an approved leave of absence.

IA Grades: An "IA" grade is assigned for approved continuing courses such as thesis or doctoral research and remains on the record until the course requirements are completed. In the case of doctoral research, the "IA" grades remain on the official transcript for all semesters prior to the completion of the degree. The "IA" grade for the final term of enrollment will be changed to "CR" to signify successful completion of the dissertation.

W Grades: If a student, for compelling nonacademic reasons, submits an approved petition to drop a course during the withdrawal period, a notation of "W" will be shown on the student's academic record. The specific withdrawal deadlines can be found on the UNH Academic Calendar. Failure to officially withdraw will result in an AF grade, which is maintained on the official student record and included in the grade point average (GPA). Not attending classes does not constitute an automatic withdrawal.

Appeals: Every instructor must be prepared to discuss and explain the basis for her or his evaluation of students. If, after consulting the instructor, a student still believes that he or she was treated unfairly, he or she has the right to seek redress from the chairperson of the department or program in which the course is offered. Under exceptional circumstances, a final appeal may be made to the dean of the college or school in which the program is offered.

Repeated courses: Repeating a course does not remove the original course or grade from the record. If the course numbers and/or titles do not match exactly, graduate students must obtain written permission of their adviser, graduate program coordinator, and the endorsement of the Graduate School dean before the adjustment will be made. Only the most recent grade is included in the cumulative grade-point average# only the most recent credit, if any, is included in the cumulative credits earned. A course may only be repeated once. Only repeated courses taken at UNH will alter the cumulative grade-point average.

Examinations

Examinations at the end of each semester may be given in any course, but all such examinations must be scheduled and given at the time they are scheduled with the following exceptions: Practical examinations covering laboratory work may be given during the last five days of classes preceding the examination period. In courses of a modular nature with several instructors, the instructor of the final module may schedule a final examination during the last week of classes if approval is first obtained from the college dean. These exceptions apart, no announced oral or written test may be given during the last five days of classes preceding the examination period. If a student is scheduled for more than two final exams in one day and chooses to take only two final exams on that day, the middle exam will be rescheduled. The instructor, in consultation with the student, will schedule a makeup exam.

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). Academic work includes, but is not limited to, direct faculty instruction, e-learning, recitation, laboratory work, studio work, fieldwork, 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.

Graduation

Graduate degrees are conferred three times per year (September 1, December 31, and May *(date varies)*). All students **MUST** file an intent--to-graduate through Webcat by the appropriate deadline specified on the UNH Academic Calendar. Students who do not file an intent-to-graduate will not have their degree awarded. More information on this process is available on the Graduate School's website.

All degree requirements and coursework must be completed prior to the degree conferral date. Graduate students MUST have a cumulative GPA of 3.0 or higher in order to graduate.

Commencement

The annual commencement ceremony is held in May.

Doctoral, Master's, Ed.S., and certificate students who earned their degrees in the preceding September and December are invited to participate in commencement ceremonies in May. Master's, Ed.S., and certificate students who expect to complete their degree program in May, as well as those who expect to complete their programs at the end of the summer term following the commencement ceremony (September), are eligible to participate in the May commencement ceremony.

Doctoral students must have completed all requirements for the degree by the published deadlines for May in order to participate in the May ceremony.

All graduate students who intend to participate in the May ceremony must register to attend through the Commencement Office.

For more information on how to register for commencement please visit the UNH Commencement Website.

Transcripts

Official academic records are maintained in the Office of the Registrar at the University of New Hampshire. A student is required to satisfy University accounts before the Registrar will issue an official transcript and/or diploma as evidence of work done at the University.

Information and Policy

Graduate Education

The mission of the Graduate School is to provide innovative, responsive, and accessible master's and doctoral degree programs of the highest quality to graduate students. Our programs foster a close interdependence between research and classroom teaching. The 600 graduate faculty members and more than 2,400 graduate students at UNH work together to develop new theoretical and empirical acknowledge, design innovative methods and technologies to discover and disseminate that knowledge, and engage in undergraduate and graduate state-of-the--art teaching. The Graduate School is a source of intellectual capital for the University, the region, and the nation.

UNH is the primary institution within the University System of New Hampshire responsible for providing graduate programs that meet state, regional, and national needs and the only one at which doctoral programs are offered. Other units of the University System do offer some master's degree programs.

The Graduate School is led by the dean, who implements the policies of the graduate faculty. The dean is advised by the Graduate Council, which is composed of elected faculty members and graduate student representatives.

Graduate School

www.gradschool.unh.edu

The Graduate School provides assistance to prospective and current students from the time of their first inquiry about graduate study until completion of their graduate programs. Students are encouraged to contact the Graduate School staff with questions regarding academic policy, financial assistance (scholarships, fellowships, and travel grants), and availability of University services.

Graduate Council

The Graduate Council is comprised of 13 graduate faculty members and four graduate students. The council advises the dean of the Graduate School on policies concerning graduate education and is responsible to the graduate faculty for recommendations concerning new graduate programs and curricular changes. Standing committees of the council include the doctoral program committee, the master's program committee, the student affairs committee, and program review committee.

Certificate Programs

The purpose of graduate certificate programs is to serve the needs of both matriculated and non-degree students interested in developing specific skills and knowledge for personal and/or professional development. Graduate certificate programs are credit-based, taught by regular or associate members of the graduate faculty, and normally aligned with existing graduate education curricula.

Master's Programs

The University offers master's degree programs in a wide variety of disciplines, which can serve either as professional terminal degrees or as intermediate degrees for those intending to pursue further graduate study. In many programs, students can elect options that will permit them to study one aspect of a discipline in depth by preparing a thesis or to gain a broader mastery of a discipline by electing to take coursework in lieu of a thesis.

Doctoral Programs

The University offers doctoral programs in those disciplines that have both the faculty and facilities to support high quality advanced graduate education. Care has also been taken to ensure that the programs will make a significant contribution to the opportunities for doctoral education in the New England region. Doctoral education properly focuses on preparing the student to contribute to the growth of knowledge through research. Most doctoral programs also provide opportunities for students to work as teaching assistants and to participate in seminars on teaching led by experienced faculty members. After receiving a dual grounding in the development and communication of knowledge, graduates from UNH doctoral programs have gone on to pursue a wide range of careers.

Interdisciplinary Programs

The Graduate School encourages and supports interdisciplinary study within existing programs and in the form of new and innovative graduate curricula. While self--designed courses of study are not available at the University, many of our programs offer a range of electives, cross--disciplinary study, and independent projects that allow students to tailor their work to reflect individual interests. This is especially true at the doctoral level. In addition, the Graduate School oversees intercollegiate programs that involve faculty and coursework from more than one school or college. Intercollegiate programs offer students the opportunity to pursue new and emerging fields of study that draw upon multiple disciplines, leading to solid disciplinary foundations as well as cross--disciplinary skills useful for solving new social and scientific problems. Opportunities for interdisciplinary research are also available in the institutes and centers at the University.

UNH Online

https://online.unh.edu/

UNH Online students receive the same high quality education and University of New Hampshire diploma as students studying on campus. Online programs & courses offer flexibility, intimate class sizes, and high quality technology solutions to enhance the learning experience.

McNair Graduate Opportunity Program

www.unh.edu/mcnair

The mission of the McNair Scholars Program is to prepare talented, highly motivated UNH undergraduates for entrance to PhD programs in all fields of study. The program aims to promote and nurture the next generation of faculty, researchers, and scholars by providing academic and social support services in the form of academic year internships and summer research fellowships.

Graduate Student Senate

The Graduate Student Senate (GSS) is the official voice of UNH's graduate student body. We work hard to advocate for graduate students,

representing their interests across UNH and the university system. We also work to engage the state legislature and foster a sense of community and social engagement among graduate students on campus.

Communication to Students

University communications are sent to students through the following channels:

WEBCAT

Students receive billing statements, register, and view grades, student accounts, and financial aid awards through Webcat, a part of MyUNH.

UNIVERSITY E-MAIL

Important notifications are sent to students by many departments and offices via a UNH e-mail address that is assigned by the University. Students are responsible for checking this e--mail address on a regular basis.

MYUNH

Course material and University announcements are available through MyUNH, a student portal system.

MAIL TO PERMANENT ADDRESS

Some notifications are sent in the student's name to the permanent mailing address.

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 handbook publication, Student Rights, Rules, and Responsibilities, 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 Advising and Career Center 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.

All aforementioned publications are available in alternate formats upon request.

Academic and Support Services

Community, Equity and Diversity

https://www.unh.edu/inclusive/

The University of New Hampshire is committed to building and nurturing an environment of inclusive excellence where all students, faculty, and staff can thrive. We also are committed to providing open and inclusive access for all alumni, volunteers, learners, employees, and visitors seeking to participate in our programs and activities. We venture to sustain a campus environment that fosters mutual respect and understanding. We believe diversity, equity, accessibility, and inclusion are foundational values inextricably linked to achieving our core educational mission and embrace the many characteristics of our community members that make them uniquely themselves. Here, you belong and all are welcome.

The Beauregard Center

https://www.unh.edu/beauregardcenter

The Aulbani J. Beauregard Center is committed to working collaboratively with the whole UNH community to create a more inclusive, equitable, and socially just campus through education, advising, advocacy and community building. Through the lens of intersectionality, the center works closely with underrepresented and ally students to empower their development and growth in order to thrive socially and academically. We also work with faculty, staff and administrators around issues concerning campus climate.

Health & Wellness

https://www.unh.edu/health/

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 (AAAHC).

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.

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.

Information Technology (IT)

https://www.unh.edu/it

UNH Information Technology delivers network and communications infrastructure, as well as provides IT services that support students, faculty & staff with learning & research. For a complete list of services and to learn more visit the UNH IT Service Catalog. For information on how to use the services, visit the Self-Help Knowledge Base.

International Students and Scholars

https://www.unh.edu/global/international-students

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 or call (603) 862-1288.

Center for International Education and Global Engagement

https://www.unh.edu/global/about

The Center for International Education's mission is to promote and facilitate global learning and responsible world citizenship. The center helps UNH students, faculty, and New Hampshire citizens gain international knowledge and experience in order to better understand the complexities of world affairs and effectively respond to the global issues affecting their lives and livelihood. International knowledge, intercultural competence, and global preparedness are at the core of CIE's mission. CIE achieves its mission through its support of the *Report of the President's Panel on Internationalizing UNH* and through the following programmatic activities:

International Affairs Dual Major
To help students of every major develop critical global understanding, foreign language competency, and international experience

Study Abroad
For a new perspective and valuable first–hand experience in countries around the world

Scholarship Opportunities
To make direct international learning available to students with financial need

N.H. International Seminars
By eminent UNH and visiting scholars to engage the community on important international issue

Faculty Development
To support faculty to explore research and collaborations abroad to enrich classroom teaching and the UNH community

Library

www.library.unh.edu

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.

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.

Military & Veteran Services

www.unh.edu/veterans

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.

- Durham Campus - unh.veterans@unh.edu, 603-862-0643
- CPS, Manchester Division - jennifer.hashem@unh.edu, 603-641-4329
- CPS, Granite State Division - karie.thomson@granite.edu, 603-513-1364

Psychological and Counseling Services

http://www.unh.edu/pacs

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.

Sexual Harassment and Rape Prevention Program (SHARPP)

www.unh.edu/sharpp.

SHARPP is a University of New Hampshire program overseen by Student Life, dedicated to providing free and confidential services to survivors of Interpersonal Violence (sexual violence, relationship abuse, sexual harassment, childhood abuse, and stalking) as well as their allies. We also provide education, outreach, and training on the above topics as well as on consent, bystander intervention, and healthy relationships to the greater University community.

Student Accessibility Services

http://www.unh.edu/studentaccessibility

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; or visit http://www.unh.edu/studentaccessibility.

https://www.gradschool.unh.edu/

Academic Calendar 2023/2024

Fall

Full Semester Classes Begin	August 28
Term 1 Classes Begin	August 28
Labor Day, University Holiday	September 4
Mid-Semester Break; no classes	October 9
Mid-Semester	October 13
Term 1 Last Day of Classes	October 20
Term 2 Classes Begin	October 30
Election Day - no exams scheduled	November 7
Classes follow Friday schedule	November 7
Veteran's Day, University holiday	November 10
Thanksgiving holiday	November 22-24
Classes resume	November 27
Full Semester Last day of classes	December 11
Reading day, final exams begin at 6:00 p.m.	December 12
Final Exams end	December 19
Term 2 Last Day of Classes	December 22

January Term

Online classes begin	December 27
New Year's Day; University Holiday	January 1
On campus classes begin	January 2
Martin Luther King, Jr. Day; University Holiday	January 15
Last day of classes	January 19

Spring

Full Semester Classes Begin	January 23
Term 3 Classes Begin	January 23
Mid-Semester	March 8
Term 3 Last Day of Classes	March 15
Spring recess	March 18-22
Full Semester Classes resume	March 25
Term 4 Classes Begin	March 25
Full Semester Last day of classes	May 6

Reading Day or Curtailed Operation Make up Day	May 7
Reading Day	May 8
Final exams begin	May 9
Final exams end	May 15
Term 4 Last Day of Classes	May 17
Commencement	May 18

Summer

Full Semester Classes Begin	May 20
Memorial Day, University Holiday	May 27
Term 5 Classes Begin	May 28
Juneteenth, University Holiday	June 19
Independence Day, University Holiday	July 4
Term 5 Last Day of Classes	July 19
Full Semester Last Day of Classes	August 9

Admissions

In this section, you'll find details regarding the University's admission and course registration process. Please contact us at the Graduate School or at the Registrar's Office if you need further clarification. We will be happy to answer your questions regarding University procedures and policy.

Applying for Admission

Persons holding a baccalaureate degree from an accredited college or university may apply for admission to the Graduate School. Admission is both limited and competitive and is based solely upon academic qualifications and potential of the individual.

All application materials become part of the permanent records of the University of New Hampshire and will not be returned. Access to this material is limited under the Family Educational Rights and Privacy Act of 1974. Applicants who are not admitted, or who are admitted and do not register in the Graduate School, do not have access to their application files. Materials received as part of the application process will not be duplicated for personal use by the applicant or forwarded to a third party. Materials received from applicants who do not complete their application, who are not admitted, or who are admitted and do not register are held for one year before being destroyed.

Application procedures, including deadlines and program--specific requirements, are available at the Graduate School website, http://www.gradschool.unh.edu.

Applicants from Countries Outside the United States

In addition to the above requirements, all applicants from non--English--speaking countries must request official English proficiency test scores be sent by the testing agency. For the most current testing requirements and a list of accepted tests, please see our test scores webpage: gradschool.unh.edu/admissions/test-scores. A financial declaration on official University forms is also required should you be admitted. A four-year baccalaureate degree, or equivalent, is normally the minimum academic certification required for admission. Applications from residents of foreign countries will be considered only for regular full-time admission.

Application Deadlines

Application deadlines for admission and financial aid vary by program. These are updated on an annual basis and may be found on each of the program pages. Application deadlines may vary by student populations, including current UNH undergraduates and international students. Links to all current program pages and deadlines can be found on the Graduate School website.

Incomplete Applications

Applications that remain incomplete after the deadline for a program has passed, or after the first day of classes of the term for which admission was desired, will be placed in an inactive status. A written request is required to reactivate an application.

Application Review

Once an application is complete, it is reviewed by an admissions committee of graduate faculty members, which makes recommendations to the Graduate School. The Graduate School will review these recommendations and make the final decision. While applicants with bachelor's degrees may apply directly to certain doctoral programs, the Graduate School also reserves the right to offer applicants admission at the master's degree level in its place.

Admission

Official offers of admission from the Graduate School are made for a specific term and year in one of the following categories: regular or conditional. Applicants who are in the final year of an undergraduate or, in some cases, a graduate degree program are contingent upon the successful completion of that degree program.

An official final transcript showing final grades and the awarding of the degree must be received by the Graduate School before the student may enroll for the graduate program. Transcripts from all previous post-secondary institutions must be submitted and applicants must disclose any previous academic or disciplinary sanctions that resulted in their temporary or permanent separation from a previous post-secondary institution. If it is found that previous academic or disciplinary separations were not disclosed, applicants may face denial and admitted students may face dismissal from their academic program.

Regular Admission

Regular admission may be offered to applicants whose academic records and supporting documents indicate that they are fully qualified to undertake graduate study in their chosen fields.

Conditional Admission

Conditional admission may be offered to applicants whose academic records indicate deficiencies but suggest some promise of success in graduate study. Students offered conditional admission must meet the specific requirements stated at the time of their admission to remain in the Graduate School.

Deferred Admission

Applicants who cannot enroll in the term for which admission was offered may request to have their admission deferred for up to one year. Students who request a deferral, and who are not currently active in another degree program, are responsible for dropping any courses they may be currently enrolled in at the time they request the deferral. Such requests must be in writing and will be considered only once. Because enrollments are limited and competition for admission may vary from year to year, such requests may not be granted. Applicants who have received approved deferment of their admission cannot register for graduate coursework at the University during the period of deferment.

APPLICANTS NOT ADMITTED

Applicants who are denied admission may have their applications reconsidered only if they furnish significant additional material that was not available at the time of the original decision, such as evidence of further academic achievement or more recent and significantly improved test scores.

Accelerated Master's Program

(University of New Hampshire Seniors)

gradschool.unh.edu/academics/accelerated-masters-program

Qualified senior students at the University of New Hampshire may apply early and be admitted to the Graduate School prior to completing their bachelor's degree provided they have followed normal application procedures and have been admitted for the semester in which they wish to enroll in courses for dual or graduate credit (the first semester of their senior year.) A 3.20 cumulative grade--point average is normally required to be considered for admission to the accelerated master's program, though some departments may have higher GPA requirements.

Seniors who have been admitted to an approved program under the accelerated master's program and have completed 90 undergraduate credits 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 or graduate certificate program.

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 (e.g., some programs will allow for a maximum of 8 credits, or 1 course, etc.). Applicants are strongly encouraged to meet with the graduate coordinator in the program's faculty to discuss the specifics of applying and enrollment. Not all graduate programs participate. For additional information and a list of current programs, visit: https://gradschool.unh.edu/academics/accelerated-masters-program

Students admitted to the accelerated master's program must attend an orientation/advising meeting to accept their offer of admission and maintain a grade--point average of 3.20 throughout their senior year, complete their undergraduate degree as planned, and pass graduate courses taken for credit with a grade of B-- or better (some programs have stricter requirements). If these conditions are not met, admission may be withdrawn.

Accelerated Master's 800-level credit forms must be completed and approved by the undergrad advisor and educational program coordinator of the Graduate School at the beginning of the semester for which dual credit is sought.

Non-Degree Students

www.unh.edu/continuingeducation/graduate-coursework

Individuals holding a bachelor's degree from an accredited college or university may register for graduate courses through Continuing Education, or through the UNH Graduate School's Manchester office. These individuals are designated as "non-degree students." Non-degree students are not required to file an application for admission to the Graduate School and are not candidates for a graduate degree. Non-degree students may register for a maximum of 8 credits per semester. Registering for 9 or more credits requires special permission. Please note special permission is not required to exceed the 8 credit limit during the summer.

https://www.gradschool.unh.edu

Campus Life

Campus Recreation

http://campusrec.unh.edu.

Campus Recreation provides outstanding experiences to enhance healthy lifestyles in the UNH community. Looking to work out, play club or intramural sports, or go on an adventure through nature? Campus Recreation has a variety of programming for everyone to enjoy.

Dining Services

www.unh.edu/dining.

Our national award-winning program utilizes the Guiding Stars© nutritional rating system to provide our guests with healthy food choices. Our chefs are certified through the American Culinary Federation. We have our own registered dietitian who can help with any special dietary needs. What's more, we work everyday to make sure our practices are sustainable.

Graduate Student Housing

https://www.unh.edu/housing/housing-options/graduate-housing

Babcock Hall is a unique and vibrant community of students 21 and older. You'll live with a mix of international, graduate, and non-traditional/undergraduate students. Babcock Hall offers single occupancy rooms, each of which includes a mini fridge for your personal use!

To discuss all graduate housing options, please contact UNH Housing at **Housing.Office@unh.edu (housing.office@unh.edu).**

Graduate Student Senate

https://www.unh.edu/gss

The Graduate Student Senate (GSS) is the official voice of UNH's graduate student body. We work hard to advocate for graduate students,

representing their interests across UNH and the university system. We also work to engage the state legislature and foster a sense of community and social engagement among graduate students on campus.

Memorial Union Building

www.unh.edu/mub

The Memorial Union and Student Activities fosters a sense of community and inclusion at the University of New Hampshire. We provide services and facilities that enhance the quality of campus life, support the academic mission of the University, and create opportunities for student development and engagement.

UNH Transportation Services

www.unh.edu/transportation

From campus parking to the transit services that connect UNH with the surrounding communities, Transportation Services is committed to operational excellence and providing reliable service that maintains a safe environment for travelers.

University Police

www.unh.edu/upd

The nationally accredited University Police Department's mission is to support the University community in creating a safe environment that is conducive to higher education by protecting life and property while supporting the rights and dignity of all persons. Specific educational programs, including drug and alcohol abuse prevention, are provided by professionally trained police officers. Rape Aggression Defense (RAD) is taught to female students, staff, faculty, or community members, and a walking patrol provides escort services for students, faculty, and staff.

Fees and Financial Support

Tuition

Tuition and fees are established by a vote of the Board of Trustees. Approval normally occurs between April and July. The current academic year tuition rates are published annually on the Student Accounts website.

Graduate tuition rates are based on full-time registration (9-16 credits). Graduate students who register for fewer than 9 credits will be charged per credit hour. Graduate tuition and fees apply to admitted graduate students enrolling for courses, graduate or undergraduate, at the University during the academic year. Tuition can vary based on the program enrolled, and/or major. Please see the Student Accounts Tuition and Fees page for more information.

Courses taken for audit are charged at the same rates as for-credit registrations.

Tuition Overload

Approved graduate students registered for more than 16 credits thirty days after the semester has begun will be billed a per-credit fee for each credit above 16 credits. No refund will be made if a student subsequently drops a course, reducing his or her course load to 16 or fewer credits after this time. Tuition waivers awarded with assistantships and scholarships do not cover tuition overload charges.

Tuition Differential

Tuition differential charges apply to some majors. Students in the College of Engineering and Physical Sciences (CEPS), including engineering and computer science may be charged a tuition differential. The differential is the same rate for both N.H. residents and nonresident students. Students in these programs who are registered for Doctoral Research (999) or Masters--Continuing Research (GRAD 900) are considered full-time and pay the full tuition differential. Music majors are charged an applied music fee each semester.

Account Adjustments

Students who withdraw or drop to part-time status may be eligible for a refund of tuition and fees. For most students refund is as follows; one hundred percent of tuition, mandatory fees and course fees will be refunded until the second Friday of the semester, one-half after the second Friday and until the fifth Friday; and none thereafter. Non-standard programs may have program specific refund deadlines, check the UNH Academic Calendar. The refund policy also applies to students reducing their credit load from full to part-time. This refund policy does not apply to students who withdraw from off-campus programs or programs which use nonstandard semester calendars.

All registration and add/drop deadlines can be found on the UNH Academic Calendar. Student accounts will be adjusted based on course registration. Students who withdraw or drop to part--time status after classes begin may be penalized based on the drop date of the course(s). Refund of tuition, fees, and other charges associated with the course(s) drop are dependent upon the drop date of the course(s). Students will not be refunded tuition, fees or associated charges for courses dropped after the refund period.

Financial Aid may also be adjusted due to adjustments in course registration. Students receiving federal financial aid will have their refund calculated in accordance with the U.S. Department of Education regulations in effect at the time of their withdrawal. Specific details regarding the regulations are available in the UNH Financial Aid Office.

Fees

Fees vary based on the program enrolled in and/or major concentration. Students enrolled in courses on the Manchester are subject to campus-based mandatory fees. For information see, UNH Manchester Graduate School tuition and fees.

Continuing education courses are charged per credit hour with fees associated. For information see Continuing Education Tuition.

Graduate certificate programs are charged per credit hour with fees associated. For more information see Graduate Certificate Programs Tuition and Fees.

Graduate online programs are charged per credit hour with fees associated. For more information see UNH Online Graduate Programs.

Application Fee

Applicants will be charged an application fee when applying. For more information, see Graduate Admissions.

Enrollment Deposit

A limited number of programs require an enrollment deposit for new students. To see if your program requires an enrollment deposit

visit the Programs of Study page and look under the "Application Requirements and Deadlines" section on the departments website.

Registration Fee

Graduate students registered for fewer than 9 credits will be charged a non-refundable registration fee. Continuing education courses, graduate certificate programs and graduate online programs also carry a registration fee. A registration fee is not charged for enrollment in GRAD 900 and GRAD 999 level courses.

Course Fees

A special fee is charged to students to recover the extra costs of materials and supplies not normally covered by the instructional budget and fundamental to the special instructional activities associated with a specific course. This fee may include the cost of labs/studios, special equipment, and/or field trips. These fees are noted in the course descriptions and are assessed to all students enrolled in the course.

Continuing Enrollment Fee

Students registered for Continuing Enrollment (GRAD 800) will pay a continuing enrollment fee. Unless a leave of absence is granted, graduate students are required to maintain continuous enrollment each semester of the academic year until their degree is formally awarded by registering for course credits, research, or continuing enrollment. Please contact the Graduate School regarding continuing enrollment requirements.

Master's Continuing Research Fee

Master's students registered for Master's Continuing Research (GRAD 900) will pay a continuing research fee plus full mandatory fees. Students who register for coursework in addition to Doctoral Research will pay the appropriate additional tuition charges up to the appropriate maximum tuition rate for full--time students.

Doctoral Research Fee

Doctoral students in residence and registered for Doctoral Research (999) will pay a doctoral research fee plus full mandatory fees. Students who register for coursework in addition to Doctoral Research will pay the appropriate additional tuition charges up to the appropriate maximum tuition rate for full--time students. Doctoral candidates not in residence who are conducting their research away from the Durham campus may petition for a waiver of the mandatory fees.

Student Health Benefit Requirement

https://www.unh.edu/health/student-health-insurance

As a condition of enrollment, all full-time students will be required to carry health insurance, excluding those enrolled in a fully online program. 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 enroll in the UNH-sponsored coverage. There are no exceptions to this policy. Any exceptions to this policy are at the discretion of the UNH SHBP Coordinator.

MANDATORY FEES

The University of New Hampshire assesses mandatory fees to support expenses associated with participation in an academic community. Mandatory fees are defined as fees that all students are assessed as a prerequisite for registration unless specifically exempt. Mandatory fees are not charged based on the extent of students' usage of the facilities or services supported by the fees. It is recognized that not all students will use the benefits and privileges made available by fee--supported activities to an equal extent. Mandatory fee charges are based on registration status: full-/part-time, depending on the number of credit hours registered. Fees can vary based on the program enrolled in and/or major concentration.

Technology Fee- for support of Informational Technology services

- Student computing clusters
- Walk-in Help Desk services
- Technology-enhanced classroom infrastructure
- Technology liaisons; Webcat, Student Email, Canvas
- Technology-enhanced learning

Memorial Union Fee- for the use and administration of the student union

For information, see Memorial Union.

Recreation Fee- support of programs and facilities to support an active lifestyle.

- Programs include:
  - Group Exercise
  - Intramural Sports
  - Aquatics
  - Outdoor Adventures
  - Instructional Programs and Sports Clubs
- Facilities Include:
  - Hamel Recreation Center
  - Swasey Indoor Pool and Outdoor Pool
  - Tennis Courts and other Outdoor Fields

For more information, see Campus Recreation

Whittemore Center Fee- for the use and administration of the Whittemore Center

For Information, see Whittemore Center.

Transportation Fee- for support of student transportation via Wildcat Transit and Campus Connector.

Health & Wellness Fee

For information, see Health and Wellness.

Psychological & Counseling Services Fee (PACS)

For information, see PACS.

Sexual Harassment and Rape Prevention Program (SHARPP)

For Information, see SHARPP.

Exceptions

Exceptions apply to only the fall and spring semesters. Exceptions do not apply to fees covering the following services: Technology Fee, Health and Wellness Fee, Psychological & Counseling Services (PACS)/Mental Health Fee, and SHARPP fee.

Students who are residing outside of the immediate geographic area for a semester and whose courses, fieldwork, internship(s), or other academic

work are fully outside the immediate geographic area for a semester may petition for exception. The immediate geographic area referenced is defined as a 25-mile radius around the Durham or Manchester Campus. The University will use course registration information to verify remote status.

Students who meet criteria for exception must submit a Mandatory Petition Form each semester. Forms are available from UNH Student Accounts.

Doctoral candidates not in residence who are conducting research away from the Durham campus may petition for a waiver of the mandatory fees, excluding the Technology Fee.

- The student must be advanced to candidacy and enrolled only in 999 prior to the beginning of classes.
- If on an assistantship or fellowship and petitioning the mandatory fee, the assistantship or fellowship will be adjusted accordingly.

Any conflicts resulting from this procedure will be adjudicated by the Provost and Vice President for Academic Affairs and the Chief Financial Officer or their designee.

Rebates

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

Billing & Payment

Electronic billing statements are sent monthly. Bills are available in Webcat. Students are notified through UNH assigned e-mail addresses when new statements are posted. Students are responsible for monitoring their UNH email address for billing notifications. Designated Parent Portal contacts are also emailed when new statements are generated and are available to view online through the Parent Portal.

Payment must be physically received (not postmarked) in full for tuition, fees, food, housing, and other semester charges by the due date. 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 thirty days after the payment due date may be assessed additional late fees, default charges, interest and/or collection costs, and the student may be disenrolled from classes.

UNH offers a monthly payment plan. Payment plans must be activated each semester; the payment plan does not extend to the following semester. An enrollment fee is required to participate in the payment plan. The first payment is due upon enrollment. Subsequent payments are due on the first of each month and are automatically deducted from the payment method designated. Adjustments to the payment plan are the responsibility of the plan holder, please check your monthly statement to determine if adjustments are required. Payment plans are accessible in Webcat and Parent Portal.

Students and Parent Portal users can view a history of electronic statements and payments and access a real-time view of their accounts online. Payment may be made online, or the bill may be printed and mailed with payment. Credit/Debit card transactions will be charged a nonrefundable service fee.

New Hampshire Residency

Each graduate student is classified as a resident or nonresident for tuition purposes at the time of admission to the University. The decision, made by the Graduate School, is based upon information furnished by the student's application and any other relevant information. Nonresident undergraduates continuing directly to the Graduate School will be classified as nonresidents.

All applicants claiming New Hampshire residency are required to have been legally domiciled in New Hampshire continuously for at least twelve months immediately prior to registering for the term for which in-state status is claimed.

Students admitted from states other than New Hampshire or from foreign countries are considered nonresident throughout their entire attendance at the University unless they shall have acquired bona fide domicile in New Hampshire. Changes in residency for enrolled students as well as appeals are reviewed by the Registrar's Office and will only occur if the student can clearly establish that his or her residence in New Hampshire is for some purpose other than the temporary one of obtaining an education at the University.

The burden of proof in all cases is upon the applicant. In all cases, the University reserves the right to make the final decision as to resident status for tuition purposes. The University rules governing tuition rates are fully set forth in the application for admission package; all students are bound by them.

New England Regional Student Program

The University of New Hampshire participates in the New England Regional Student Program administered by the New England Board of Higher Education (NEBHE). Under this program, admitted graduate students from New England may qualify for regional tuition rates (New Hampshire resident tuition, plus 50 percent).

To qualify, the program to which they are admitted must be one that is not available at any of their home state/public institutions. Inquiries about the NER program may be directed to the Graduate School or the New England Board of Higher Education: http://www.nebhe.org. This tuition rate does not apply to students who are eligible for New Hampshire resident tuition rates.

Zero-Credit Seminars

Seminars for 0 credit are billed as if they were for 1 credit.

Authority

Any conflicts resulting from this procedure will be adjudicated by the provost and vice president for academic affairs and the vice president for finance and administration or his/her designee.

Scholarships and Fellowships

Financial Assistance

Several forms of financial assistance are available to graduate students through the Graduate School and individual departments, most of which are awarded for an academic year commencing in the fall. To be eligible for any assistance, the student must first be admitted to the Graduate School. In most cases, the application for admission with supporting documents serves as the application for new graduate students for the scholarship and assistantship programs available to them. In other cases, individual departments have their own application forms. Students are advised to contact individual programs for more information about assistantships and scholarships, and any departmental application forms.

Graduate Scholarships for Merit

The Graduate School awards six scholarships annually to recognize the outstanding contributions of both master's and doctoral students for their teaching and scholarship. Availability and criteria for award of these scholarships are announced annually by the Graduate School.

Scholarships for Full-Time Students

Students who are full--time may be granted full-- or half-tuition scholarships for the academic year or semester. These awards provide for waiver of tuition and are subject to the maintenance of a high scholastic record in the Graduate School. Application is made to the student's department or program.

Graduate Fellowships

The Graduate School offers a number of fellowships to entering students to assist programs in recruiting a high-quality and diverse student body. Availability and criteria for these fellowships are announced annually by the Graduate School. Students are nominated by their respective program coordinators.

Dissertation Fellowships

Dissertation fellowships for a maximum tenure of one academic year are available on a competitive basis to doctoral students who have been advanced to candidacy. These awards include a stipend and a waiver of the doctoral research and mandatory fees for the period of the award. Application is made to the dean of the Graduate School.

Summer Fellowships for Teaching Assistants

A limited number of summer fellowships are awarded to students who have held graduate assistantships involving teaching during a previous academic year. Application is made to the dean of the Graduate School.

Graduate Appointments 2023-2024

The university offers a variety of forms of financial assistance to graduate students in support of their efforts to obtain a graduate degree. Graduate appointments are made to post-baccalaureate students who have been regularly or provisionally admitted to the Graduate School and who have been recommended by the appropriate department or program and approved for appointment by the Graduate School. Appointments are normally for one academic year and may be renewed provided that funds are available and that the student's academic performance, as well as performance in carrying out the responsibilities of the appointment, is satisfactory.

Note: Some departments will divide graduate awards in half so as to support a greater number of applicants. Please contact the appropriate departmental graduate coordinator for more questions on graduate award amounts.

Graduate Assistants: Graduate assistants are students who provide instructional or administrative support as specified by the appointing department and are normally supported by university funds.

Graduate Part-time Lecturers: Graduate part-time lecturers are students who because of their specific expertise are appointed to teach one or two courses per semester and are normally supported by university funds.

Graduate Interns/Trainees: Graduate interns/trainees are students who are assigned to a specific project or subject area to acquire additional learning experiences and are normally supported by external funds.

Graduate Fellows: Graduate fellows including dissertation fellowship recipients are students who have been awarded a fellowship normally through an external grant to the University of New Hampshire or directly to the student. Appointment will normally not exceed one fiscal year and may be renewed in accordance with the terms of the fellowship program.

Graduate Research Assistants: Graduate research assistants are students who are appointed to conduct research on grants supported by the Agricultural Experiment Station, or external grants and contracts.

Graduate Supplemental Appointments: U.S. and permanent resident graduate students on appointment in one of the above categories may petition[1] to supplement their regular appointment for up to an average of 10 hours per week when school is in session unless precluded from doing so by the terms of their appointment. **F-1 and J-1 students on full assistantships may not accept additional appointments while school is in session.** All students, including F-1 and J-1, may supplement their regular appointments for up to 20 hours per week when school is not in session (December-January Semester Break and March Spring Break). Such appointments may be processed as stipends or hourly. Assistants who serve as TA's during the J-term receive a supplemental appointment if the workload exceeds the 20 hours they are normally expected to work.

[1] **Petition process:** All petitions are reviewed by the Dean of the Graduate School. Petitions must provide an explanation of the work associated with the supplemental appointment and a rationale that explains how the additional work will have a positive impact on the student's graduate program and will not negatively impact time to degree. The petition requires input from the student's advisor and Graduate Program Coordinator.

Graduate Stipend Only Appointments: Graduate stipend only appointments may be made to students during the academic year under one of the above categories. Students on such appointments have responsibilities of less than those of students on regular graduate appointments; have a workload of less than those of students on regular graduate appointments, and receive a lower stipend than students on regular graduate appointments.

Graduate Hourly Appointments: Graduate hourly appointments are appointments made to students in support of the instructional, administrative or research activities of the university. Students on such appointments have responsibilities of less than those of students on regular graduate appointments.

Graduate Summer Appointments: Graduate summer appointments are appointments made to students during the summer in one of the above categories. Students on summer appointments may work for up to forty hours per week. Graduate students working full time on research or combined teaching and research for the entire summer earn 2/3 of their prior academic year stipend. Appointments for less than the maximum time are prorated.

International students (F-1 and J-1) must consult the Office of International Students & Scholars to confirm employment eligibility.

2023-2024 Academic Year Dates:

- **Summer Semester:** May 22, 2023 - August 18, 2023
- **Fall (Semester 1):** August 21, 2023 - January 3, 2024
- **Spring (Semester 2):** January 15, 2024 - May 17, 2024
- **Full Academic Year*:** August 21, 2023 - May 17, 2024

*Assistants who are appointed for the full academic year should check with their hiring unit to determine the expectations for working during the semester break.

Stipends:

- **Level 1 -** $22,140 (All masters' students and PhD students with a bachelor's degree who have less than 2 years of experience as a GA or RA at UNH)
- **Level 2 -** - $23,260 (PhD students with a master's degree or PhD students with a bachelor's degree who have 2 years of experience as a GA or RA @ UNH)
- **Level 3 -** - $24,560 (PhD students at candidacy)

Additional Stipend Information: Departments may pay a higher base stipend for assistants to meet the recruitment needs of the program. Graduate assistants on a semester appointment receive a pro-rated share of the above rates. Graduate part-time lecturers receive a stipend of no less than the adjunct rate appropriate to their program. Graduate fellows, trainees and interns receive a stipend in accordance with the terms of their award.

Workload: Students on full assistantships are involved in assistantship activities for **20 hours a week** during the academic year. The workload for students on stipend only and hourly appointments is specified at the time of appointment. The workload for students in both of these categories is less than 20 hours per week.

Registration: All graduate students holding appointments must be enrolled as students in order to hold an appointment during the academic year. Assistants, fellows or graduate part-time lecturers must register for a **minimum of 6 course/thesis credits, Master's Continuing Research (GRAD 900)or Doctoral Research (999)** during each semester in which they hold their appointments. Interns/trainees must register according to terms specified in their contracts. Students holding a stipend only or hourly appointment must register for course/thesis credits (no minimum), Master's Continuing Research, or Doctoral Research.

Students registered for GRAD 800 Continuing Enrollment are **not eligible** to hold an appointment. Students holding summer appointments have no required enrollment unless specified by their appointment.

Tuition Waivers: Students appointed as assistants, graduate fellows and graduate part-time lecturers receive tuition waivers in addition to their stipends during the period of their appointment. Waivers will be prorated for students who hold less than a full appointment. Students on stipend only and hourly appointments do not receive a waiver. Such students may be eligible for tuition scholarships. Assistants and fellows on academic year or spring only appointments receive tuition waivers for the January term. Graduate part-time lecturers receive tuition waivers for the January term only if they are teaching during that term. The Graduate School provides graduate assistants, research assistants and fellows tuition waivers for summer courses offered through the Graduate School (GRAD) related to academic programs in College Teaching, Research Ethics and Grant Writing. Summer waivers are prorated for students who had less than a full academic year appointment. Graduate assistants, research assistants and fellows may receive tuition waivers for summer courses offered outside of the Graduate School if approved by their funding source. Such waivers are provided by the hiring unit. Research assistants must have a summer appointment to be eligible for grant-funded tuition waivers for the summer sessions. **Waivers cover only course work that is directly related to a student's academic program.**

Student Health Benefits Plan (SHBP): Students appointed as assistants, fellows and graduate part-time lecturers for the full academic year receive a waiver for the university's Student Health Benefits Plan (SHBP) during the period of their appointment. Students on a fall only appointment and continuing in the graduate school for the spring semester full time receive a waiver for the SHBP for the fall and will be responsible for the spring portion of the plan costs. Students on a fall only appointment and continuing in the graduate school for the spring semester on a part time basis receive a waiver for the SHBP for the fall, have the option of continuing on the plan for the spring, and will be responsible for the spring portion of the plan costs. Students on a spring only appointment will receive a waiver for the SHBP for the spring.

Mandatory Fees: Students holding full-time assistantships are charged 50% of the full-time mandatory fees rate. Students appointed as assistants, fellows and lecturers receive a fee waiver for the technology fee during the period of their appointment. Course fees are also covered by the waiver. Mandatory fees are not covered by waivers, although scholarships may be awarded to individual students to cover these fees.

FICA taxes will generally be withheld from wages paid to any graduate student registered for less than 1/2 time (less than 5 credits per semester during the academic year; or less than 3 credits per session in the summer). Note: Students registered for Doctoral Research (999) or Master's Continuing Research (GRAD 900) are full-time and will not have FICA taxes withheld. In summer students enrolled for 3 or more credits of "899" or "independent study" will generally not have FICA withheld.

Federal income taxes will be withheld from wages paid to graduate students based on information supplied to USNH Payroll on IRS Form W-4. The value of the SHBP waiver is considered a scholarship and may be reportable to the IRS and subject to tax withholding for foreign students. Both wages and scholarships may be exempt from withholding if the student is from a foreign country with tax treaty provisions that exempt these payments. The appropriate IRS Form 8233 or W-8BEN must be on file in USNH Payroll in order for a foreign student to claim these exemptions.

Criminal background checks are conducted for all graduate students appointed as a teaching assistant (TA), research assistant (RA), graduate assistant (GA) or graduate part time lecturer, graduate fellow or graduate intern/trainee. Graduate students on stipend only or hourly appointments may also be required to undergo a background check depending on the nature of their appointment. These investigations are mandated by University policy requiring a pre-employment background review for all appointees who commence their duties after July 1, 2008. A standard background review consists of a criminal history review, sex and violent offender registry review, social security trace and verification; and, if required by the nature of the appointment, a Department of Motor Vehicle record search. International students whose visas and/or authorization to work in the United States were obtained after the Patriot Act was implemented on October 12, 2001, are exempt from a criminal history check.

Reappointment, Non-Reappointment and Termination

Reappointment: A graduate student who holds a working appointment directly connected with his/her graduate studies may be reappointed for an additional period, provided that funds are available and that the student's academic performance, as well as performance in carrying out the responsibilities of the appointment is satisfactory, and the student's status as a graduate student is maintained.

Non-reappointment: The University, for any reason, may elect not to renew a graduate student's working appointment at the end of the appointment period. No advance notice nor any reason need be given to the graduate student in the case of non-reappointment, and the appeal procedure is not available.

Termination: A hiring unit may recommend to the Graduate School that a graduate student be terminated from a working appointment prior to the end of the appointment. The Associate Dean of the Graduate School will act on this recommendation. A student who is terminated is entitled to a written statement of the reasons for the termination from the hiring unit. A student who is terminated may initiate an appeal except when the termination is due to the loss of funding for the position; or the termination is due to either a voluntary or involuntary loss of graduate student status. If the graduate student is eligible, and does initiate an appeal using the following procedure, s/he may be placed on leave of absence without pay during the period of time involved in processing the appeal. If the case is found in favor of the student, "back pay" will be awarded.

Step 1: The student should request that the hiring unit making the original recommendation reconsider the decision. The student's request should be written and should contain any information that the student feels warrants a reconsideration of the decision. A copy of the request should be sent to the Graduate Dean. As soon as possible after receiving this request, the hiring unit will reconsider the decision and notify the student and the Graduate Dean of the results of the deliberations in writing.

Step 2: If the student is not satisfied with the decision reached in Step 1, s/he may request that the Graduate Dean review the decision. The student's request should be in writing and must stipulate the reasons for his/her dissatisfaction with the decision reached in Step 1. The Step 2 appeal will be heard by the Student Affairs Committee of the Graduate Council, unless the student requests that the Dean or the Dean's designee hear the appeal. When the appeal is heard by the Dean's designee or the Student Affairs Committee, a recommendation is made to the Dean, who will render a decision. The Dean's decision will be communicated in writing to the student, the hiring unit and the hiring unit's College Dean, Director or Vice-President.

Federal Financial Aid

Graduate students who are enrolled in a degree program at least half time (five or more credits per semester) and are a U.S citizen or an eligible non-citizen may be considered for federal financial aid. Graduate students are reviewed for loans and work study. There are no federal or University grants or scholarships awarded to graduate students by the UNH Financial Aid Office.

To apply for federal financial aid you must complete the Free Application for Federal Student Aid (FAFSA). You can complete the application on--line at https://www.fafsa.gov. The UNH priority deadline for applying for financial aid is March 1. This is the date by which the FAFSA must be received by the federal processor. However, students applying after March 1 will still be considered for the Federal Direct Loan, which is not subject to the priority deadline.

Be aware that the Financial Aid Office will make their offer of aid based on your full--time enrollment. If you will be enrolled for less than 9 credits or pay reduced tuition in either semester, your aid package may be adjusted. If you are not planning to be full time, you should notify the Financial Aid Office as soon as you can. Any time you change your enrollment status, receive a scholarship, tuition waiver or other resource, or correct and/or change the information on the FAFSA, an aid adjustment may result.

Types of aid available:

Federal College Work Study utilizes federal funds to provide employment opportunities to graduate students who file on time and demonstrate financial need.

Federal Unsubsidized Direct Loan is available to graduate students regardless of financial need.

Federal Direct Graduate PLUS Loan is a loan in the student's name for graduate and professional studies. In order for a graduate or professional student to receive a Federal Direct PLUS Loan they must first file the Free Application for Federal Student Aid (FAFSA). Students apply for the Federal Direct PLUS Loan at https://www.studentloans.gov/. Approval for the Direct PLUS Loan is based on good credit and the student being enrolled at least half--time in a graduate or professional degree program.

Please feel free to visit the UNH Financial Aid website (http://www.unh.edu/financialaid/) for further information.

SATISFACTORY ACADEMIC PROGRESS

Satisfactory progress in a course of study must be maintained by all students who receive federal financial aid. The current standards for satisfactory academic progress are available upon request from the UNH Financial Aid Office.

Veterans Benefits

Military servicepersons, veterans, and their dependents should investigate their eligibility for veteran's benefit payments. Questions may be addressed to any local Veterans Administration office; the VA Education Benefits toll--free number, 888--442-4551 (888-GIBill1); the VA website at www.gibill.va.gov; or the **Military and Veteran Services office at UNH (603) 862--0643**, or via email UNH.Veterans@unh.edu. (UNH.Veterans@unh.edu)

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.

Registration

Registration information and the Time and Room Schedule are available at https://courses.unh.edu/

Continuous Registration Policy

Unless a leave of absence is granted, graduate students are required to maintain continuous enrollment each semester of the academic year until their degree is formally awarded by registering for course credits, research, or continuing enrollment. **Students who do not maintain continuous enrollment as required will have their degree status discontinued and will no longer be active in the degree. Students will need to petition for reinstatement or readmission in order to return to their program.**

- Master's and Ed.S. students must enroll, as appropriate, for course credits, thesis credits, Master's Continuing Research (GRAD 900 Master's Continuing Research) (**$500**), or Continuing Enrollment (GRAD 800 Continuing Enrollment) (**$200**).
- Pre--candidacy doctoral students must enroll, as appropriate, for course credits, Doctoral Research (999), or Continuing Enrollment (GRAD 800 Continuing Enrollment).
- All doctoral candidates must register for Doctoral Research (999) each semester after advancement to candidacy until their degree is conferred, even if the minimum requirement (two semesters) has been met.

Exceptions

- Students enrolled in summer--only programs (where registration is required in the summer only) are required to enroll, as appropriate, in course credit or Continuing Enrollment (GRAD 800 Continuing Enrollment) each summer until their degree is formally awarded. Registration in fall and/or spring is not required.
- Students enrolled only in an online program or a certificate program are exempt from the Graduate School's continuous enrollment policy.

Master's Continuing Research (Grad 900) (Full-time Status, 0 credits)

Master's Continuing Research (GRAD 900) is for Master's students who are in residence and need to be full time but have already completed all course requirements, have previously registered for the maximum number of thesis or project credits. The cost for this registration is **$500**. As this grants full-time status, students are also responsible for the full time mandatory fees. Effective Fall 2020, GRAD 900 may be taken only once. However, students who need to repeat this registration may do so with permission.

Continuing Enrollment (GRAD 800) (Part-Time Status, 0 Credits)

Continuing graduate students who are not enrolled for course credits, thesis credits, Doctoral Research (999), or GRAD 900 Master's Continuing Research, are not in residence, and are not exempt from the continous enrollment policy, are required to register for GRAD 800 Continuing Enrollment each semester of the academic year (or each summer for students in M.S.T programs).

The cost for this registration is **$200**. There are no additional fees. Students registered for GRAD 800 are considered part-time, 0 credits. New students are not eligible to enroll in GRAD 800.

Degree Status Discontinued

Students who do not formally withdraw and do not register and pay for course credits, research, or continuing enrollment by the appropriate registration deadline, or do not return from an approved leave of absence, will have their degree status discontinued. Students are notified by the Graduate School when this administrative action is taken and are required to apply for readmission or reinstatement if they subsequently desire to resume their academic program.

Reinstatement

Students who have their degree status discontinued for failing to maintain continuous enrollment may petition the Graduate School for reinstatement as long as the term that the degree status was discontinued has not ended. Such a petition requires a reinstatement fee, plus payment of current semester charges and any late fees that may have accrued. If the term in which the student's degree status was discontinued has ended, the student must then petition the Graduate School for readmission. Both forms can be found on the Graduate School's forms page.

Full/Part Time Status

Full--Time Students

Graduate students registered for 9 or more credits, GRAD 900 Master's Continuing Research, or Doctoral Research (999) are classified as full--time students. Students holding assistantship appointments are also considered full time and must register for a minimum of 6 credits, GRAD 900 Master's Continuing Research, or Doctoral Research (999) each semester.

Three-Quarter-Time Students

Graduate students not on an assistantship and registered for 7 or 8 credits are classified as three--quarter--time students.

Half--Time Students

Graduate students not on an assistantship and registered for 5 or 6 credits are classified as half--time students.

Maximum Load

The maximum graduate load allowed is 16 credits (12 credits for a student on a full assistantship). Only under unusual circumstances will a student be allowed to exceed these limits, and then only with the recommendation of the student's adviser and graduate program coordinator and the approval of the dean of the Graduate School.

Dropping and Adding Courses

Graduate students may add or drop courses in accordance with the procedures and deadlines published by the Registrar's Office.

Auditing Courses

A graduate student may, with the approval of his or her adviser and the faculty member concerned, audit courses. The deadline for requesting an audit is listed on the Registrar's calendar. Subsequent requests for change to audit require a petition form and must be approved by the course faculty member, the student's adviser, graduate program coordinator, and the dean of the Graduate School. Courses taken by graduate students for audit are charged at the same rate as for-credit courses.

Summer Session

Although many graduate level courses are offered during the summer session, the University does not guarantee that any particular course will be offered. The availability of individual faculty members to supervise research or to participate in qualifying examinations and final examinations or defenses during the summer session varies from year to year.

Course information and registration materials may be obtained at unh.edu/summersession.

Maximum Load

The maximum graduate load allowed is 12 credits for the entire summer session. A student will be allowed to exceed this limit only by petition with the recommendation of the student's adviser, graduate program coordinator, and the approval of the dean of the Graduate School.

Student Load for Veterans Benefits

Graduate students eligible for VA benefits during the summer receive benefits according to the following schedule of average credit registrations:

- 1/2 credit/week or more = full time
- 3/8 credit/week or more = 3/4 time
- 1/4 credit/week or more = 1/2 time
- less than 1/4 credit/week = tuition and fees only

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/.

Non-registration

Leave of Absence

https://gradschool.unh.edu/student-resources/leave-absence

Students who, because of extenuating circumstances, are unable to pursue their graduate program may request a leave of absence for a maximum of one calendar year. Such circumstances may include medical reasons, military obligation, family emergencies, or hardship. The procedure for an approved leave of absence requires that students submit a request, available at the Graduate School's website, along with appropriate documentation, **prior** to the term for which the leave is requested. The dean of the Graduate School, upon recommendation of the student's adviser and graduate program coordinator, will review the request. If the request for a leave is granted, the time limit for completion of the student's program will be extended appropriately. Students on an approved leave of absence are exempt from paying the continuing enrollment fee. Graduate students who do not return from a leave of absence in the allotted time frame will have their degree status discontinued.

Withdrawal

A student may request to fully withdraw from their graduate degree program during any semester by obtaining a withdrawal form from the Graduate School website. Students who formally withdraw are required to apply for readmission if they subsequently desire to resume their academic program. Students who are applying for readmission are required to pay an application fee plus, if readmitted, any accumulated continuing enrollment fees for the period during which they have been inactive. Students are not guaranteed readmission and may be evaluated in competition with current applicants to the program.

Readmission

Students who withdraw, who have their degree status discontinued, or whose time limit has expired and subsequently desire to resume their academic program, are required to apply for readmission. Readmission forms are available at the Graduate School's website. Students who are applying for readmission are required to pay an application fee plus, if readmitted, any accumulated continuing enrollment fees for the period during which they have been inactive. Students are not guaranteed readmission and may be evaluated in competition with current applicants to the program.

Change of Degree

Students who wish to pursue a degree program other than the one for which admission was originally granted must complete the appropriate application for a change of degree. This includes students enrolled in UNH master's programs who intend to pursue the Ph.D. in the same department in which they were admitted for the master's degree. These forms are available at the Graduate School's website. The dean of the Graduate School will notify the student of the decision after consulting with the appropriate departments.

CHANGE OF NAME OR ADDRESS

It is the responsibility of the student to complete a change of name or address form whenever a change is made. Change of name/address forms can be found on the Registrar's Office website. Students are also advised that their UNH email address is the official means of electronic communication with UNH. Billing, registration notices, reminders, as well as the majority of correspondence from the Graduate School will be communicated through the UNH email account.

Research and Scholarship

The University of New Hampshire is designated as a R1 university by the Carnegie Classification of Institutions of Higher Education. The University is a land--, sea--, and space--grant institution and is ranked among the top 130 research universities. In recent years, graduate students at the University have been awarded a number of highly competitive fellowships from EPA, Ford, Fulbright, Merck, NASA, NIH, NOAA, and NSF.

The University's research and scholarly activities range from highly specialized investigations in the physical and biological sciences to broad interdisciplinary studies.

Graduate students are intimately involved in these activities and are expected to be familiar with the policies and procedures that govern their research activities at the University. For more information, visit the Compliance and Safety pages of the Research Office website.

Research, Economic Engagement and Outreach

www.unh.edu/research

Research, economic engagement and outreach at the University of New Hampshire, a Carnegie doctoral research university with very high

research activity, seek to understand and improve the world around us, with high-impact results that transform lives, solve global challenges and drive economic growth. Our research excellence reaches from the depths of our oceans to the edge of our solar system and the Earth and environment in which we all thrive. With research expenditures of more than $140 million, UNH's research portfolio includes partnerships with NOAA, NASA, NSF and NIH. UNH is one of the top institutions in the country for licensing its intellectual property, and its outreach programs reach thousands of communities, companies, families and students each year.

UNHInnovation

https://innovation.unh.edu/

UNHInnovation (UNHI) advocates for and manages the transfer of UNH-derived ideas to the public to maximize their social and economic impact. UNHI protects, promotes, and manages UNH's innovations, supports start-up companies based on UNH's intellectual property, and develops new opportunities for university and industry collaboration.

https://www.gradschool.unh.edu/

Trustees and Administrative Officers

University System of New Hampshire Trustees

https://www.usnh.edu/trustees

The University System of New Hampshire is governed by a Board of Trustees comprising the Governor of the State, the President of the Senate, the Speaker of the House, members appointed by the Governor and Executive Council, alumni-elected members, student-elected members, the Commissioner of Education, the Commissioner of Agriculture, the presidents of the University System's colleges and universities, and the Chancellor. The Chancellor is the chief executive officer of the University System. The Board composition is stipulated by State law and is detailed in the USNH Charter, section 187- A: 13.

UNH Affirmative Action and Equity Statement

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 Nadine Petty, Associate Vice President and Chief Diversity Officer, Division of Diversity, Equity and Inclusion, Room 305, Thompson Hall, 105 Main Street, Durham, N.H. 03824, Nadine.Petty@unh.edu (nadine.petty@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.

See the UNH Discrimination and Discriminatory Harassment Policy and Student Code of Conduct & Student Rights, Rules, and Responsibilities for information about the resolution of complaints under UNH policy. Further information may be obtained at the Civil Rights and Equity Office or via e-mail unh.civilrights@unh.edu.

Programs of Study

Accounting and Finance (ACFI)

Degree Offered: Master of Science (M.S.)

Programs are offered in Durham.

The Department of Accounting and Finance within the Peter T. Paul College of Business and Economics offers two master's programs: the Master of Science in Accounting and the Master of Science in Finance. Both master's programs emphasize strong analytical and communication skills while fostering an awareness of ethical issues. The Paul College is accredited by the Association to Advance Collegiate Schools of Business (AACSB).

The Master of Science in Accounting provides students with range and depth in accounting while developing their ability to become innovative problem solvers in public accounting firms, large corporations, non-profits, and small businesses. Students with undergraduate accounting degrees can complete the program in one year of full-time study or three years of part-time study. Students without an undergraduate degree in accounting can apply but will need to take additional undergraduate foundation courses prior to beginning the graduate program. The program satisfies the 150-credit hour requirement of most Certified Public Accounting state licensing boards, including the state of New Hampshire.

The Master of Science in Finance provides students with the analytical, programming, and problem-solving skills necessary to succeed in a complex financial environment. Upon graduation, these skills can be utilized in a variety of institutions, including investment banks, commercial banks, corporations, and asset management firms. Applicants must have an undergraduate degree but can come from any background. The program can be completed full-time in 10 months.

https://paulcollege.unh.edu/accounting-finance-department

Programs

- Accounting (M.S.) (p. 31)
- Finance (M.S.) (p. 32)

Faculty

See https://paulcollege.unh.edu/directory/all for faculty.

Accounting (M.S.)

https://paulcollege.unh.edu/business-administration/program/ms/accounting

Description

The Master of Science in Accounting, offered by the Peter T. Paul College of Business and Economics, develops students' advanced accounting knowledge, strong analytical and communication skills, as well as awareness of ethical issues for careers in public accounting firms, small businesses, non--profit organizations, and major corporations.

The AACSB-accredited MSA program satisfies the 150-hour course load required by most U.S. state licensing boards, including the state of New Hampshire. Students learn additional accounting knowledge in specialized courses focusing on the CPA exam.

Designed for students with undergraduate degrees in accounting, the graduate program can be completed in one year of full-time study or three years of part-time study.

Applicants without an undergraduate degree in accounting or business will be required to complete additional foundation undergraduate courses prior to beginning the graduate program. If an applicant has not completed all of the foundation courses, the admissions committee may offer provisional admission and require that the applicant take certain foundation courses prior to beginning the standard course of study.

Students with Non-Accounting Business Degrees

Foundation courses that must be completed at the undergraduate level are:

Code	Title	Credits
ACC 621	Intermediate Financial Accounting I	4
ACC 622	Intermediate Financial Accounting II	4
ACC 623	Advanced Managerial Accounting	4
ACC 626	Introduction to Federal Taxation	4
ACC 724	Auditing	4
ACC 747	Business Law	4
Total Credits		**24**

Students with Non-Business Degrees

In addition to the accounting foundation courses listed above, students with non-business degrees are typically required to complete these courses at the undergraduate level:

Code	Title	Credits
ADMN 502	Financial Accounting	4
ADMN 503	Managerial Accounting	4
ECON 401	Principles of Economics (Macro)	4
ADMN 510	Business Statistics	4
ADMN 570	Introduction to Financial Management	4
In addition, students must choose two of the following:		8
ADMN 575	Behavior in Organizations	
ADMN 585	Marketing	
ADMN 580	Quantitative Decision Making	
Total Credits		**28**

Requirements

Degree Requirements

Students complete seven required courses and three elective track courses.

Code	Title	Credits
Required Core Courses		
ACFI 820	Corporate Taxation	3
ACFI 825	Ethics and Non-Profit Accounting	3
ACFI 835	Governmental Accounting	3
ACFI 844	Topics in Advanced Accounting	3
ACFI 860	Advanced Business Law	3
ACFI 890	Accounting Information Systems	3
ACFI 850	Accounting Theory and Research (Capstone)	3
Select a track:		9
Auditing and Assurance Track		
ACFI 830	Advanced Auditing	
ACFI 896	Topics (International Accounting)	

ACFI 840	Forensic Acctg & Fraud Exam
Tax Track	
ACFI 896	Topics (Applied Tax Research and Planning)
ACFI 896	Topics (Advanced Topics in Tax)
ACFI 896	Topics (Advanced Business Taxation)
Integrated Audit and Tax Track	
ACFI 896	Topics (Applied Tax Research and Planning)
ACFI 896	Topics (Advanced Topics in Tax)
ACFI 896	Topics (Advanced Business Taxation)
Total Credits	**30**

Accelerated Master's

Our Accelerated Master of Science in Accounting (MSA) option provides an opportunity for UNH undergraduate students to begin graduate study while completing a bachelor's degree—making you stand out among other job applicants with advanced skills and increasing your earning potential. Qualified students can begin earning graduate credit during their undergraduate programs, allowing them to maximize their time on campus and return on their educational investment.

Eligibility:

- Current UNH undergraduate student with a GPA of 3.2 or higher.
- Apply **before** completing 90 undergraduate credits.
- Acceptance into the Accelerated Master's Program ***before*** taking 800-level courses.

Accelerated MSA Requirements:

- Qualified students may complete up to 12 credits at the 800-level during their undergraduate studies, earning dual credit toward their B.S. and M.S. degrees.
- Once a qualified student matriculates into the MSA program (after completing undergraduate degree), the student will take a minimum of 18 additional credits to complete the 30 credit MSA program requirement.
- Students are required to earn a B- or better in graduate courses to earn credits toward their degree.

To earn graduate credits, students need to enroll in the 800-level sections of approved dual credit courses. The 800-level sections require additional work beyond the requirements for the undergraduate course. The following is the list of approved dual credit courses for the accelerated path in the MSA program:

Code	Title	Credits
Approved Dual Credit Courses		
ACFI 820	Corporate Taxation	3
ACFI 825	Ethics and Non-Profit Accounting	3
ACFI 835	Governmental Accounting	3
ACFI 844	Topics in Advanced Accounting	3
ACFI 860	Advanced Business Law	3
ACFI 890	Accounting Information Systems	3
ACFI 830	Advanced Auditing	3
ACFI 840	Forensic Acctg & Fraud Exam	3
ACFI 896	Topics (Approved Elective Topics)	3

Within the accelerated option, high achieving students also have an opportunity to participate in the MSA financial leadership in accounting pathway. This provides an opportunity to complete an UG accounting degree + winter internship + MSA in 4.5 years. This expands on the benefits of the accelerated MSA option with a "busy season" winter internship and access to unique leadership events. Please seek more details from the MSA Director and/or Accounting Department Chair and apply for Accelerated Master's admission before completing 90 undergraduate credits.

Student Learning Outcomes

- Students will demonstrate core accounting knowledge.
- Students will demonstrate the ability to solve complex problems in accounting.
- Students will engage in effective teamwork behaviors.
- Students will communicate effectively in an accounting context.
- Students will demonstrate an understanding of the key differences between US and international accounting standards.
- Students will demonstrate an understanding of the ethical and professional dimensions of accounting practices.

Finance (M.S.)

https://paulcollege.unh.edu/academics/ms-finance

Description

The Master of Science in Finance, offered by the Peter T. Paul College of Business and Economics, develops students' abilities to provide solutions to the increasingly diverse and complex financial challenges of modern organizations. The program can be completed in one year of full-time study by students with undergraduate preparation in business, economics, and/or STEM fields and is open to others after appropriate foundation coursework. Designed to develop the highest levels of skill in financial modeling, investment analysis, evaluation, problem-solving, and communication of complex financial information, the program offers specialized training in one of three non-mandatory options: investments, financial analytics & fintech, or a student-designed track. Students will also develop strong understanding of ethical considerations and professional standards necessary in the field of finance and will be well-prepared for a variety of roles including corporate finance, investment banking, and start-up enterprises.

All admitted candidates must have completed certain foundation courses. These courses can be completed prior to entry or as part of the Master of Science in Finance program. These courses include:

Code	Title	Credits
ADMN 570	Introduction to Financial Management	4
ECON 401	Principles of Economics (Macro)	4
or ECON 402	Principles of Economics (Micro)	
ADMN 510	Business Statistics	4
or MATH 425	Calculus I	

Requirements

The Master's of Science in Finance (MSF) curriculum requires students to take a minimum of 10 classes (a total of **30 credits**), from which 8 are required core classes and 2 are electives. Students may choose to specialize their MSF degree in the *Financial Analytics & Fintech* option or the *Investments* option by completing an additional elective in that specialized area for a total of 11 classes (33 credits).

Code	Title	Credits
Core Coursework		
ACFI 801	Corporate Finance	3

ACFI 802	Investments	3
ACFI 806	Financial Modeling and Analytics	3
ACFI 870	Programming in Finance with Quantitative Applications	3
ACFI 871	Financial Theory	3
ACFI 872	Corporate Financial Reporting	3
ACFI 873	Cases in Finance	3
ACFI 874	Finance Experience	3
Electives		**6-9**
Total Credits		**30-33**

Code	Title	Credits
Elective Options/Specialization Areas		
Financial Analytics & Fintech Option		
ACFI 810	Big Data in Finance	3
ACFI 811	Investment Banking	3
ACFI 896	Topics	3
Investments Option		
ACFI 804	Derivative Securities and Markets	3
ACFI 805	Financial Institutions	3
ACFI 807	Equity Analysis and Firm Valuation	3
ACFI 811	Investment Banking	3
ACFI 812	Alternative Investments	3
(or other approved electives in finance, decision sciences, economics, or statistics)		

Student-designed option electives
Students can design their own option and choose their electives after obtaining the consent and approval of the MSF Director or director's designee.

Non-option student electives
Students who prefer not to declare an option can choose any elective offered by the M.S. Finance program. However, without a study plan pre-approved by the MSF Director or director's designee, a student may only take one non-finance elective.

Accelerated Master's

Our Accelerated Master of Science in Finance (MSF) option provides an opportunity for UNH undergraduate students to begin graduate study while completing a bachelor's degree—making you stand out among other job applicants with advanced skills and increasing your earning potential. Qualified students can begin earning graduate credit during their undergraduate programs, allowing them to maximize their time on campus and return on their educational investment.

Eligibility:

- Current UNH undergraduate student with a GPA of 3.2 or higher.
- Apply **before** completing 90 undergraduate credits.
- Acceptance into the Accelerated Master's Program ***before*** taking 800-level courses.

Accelerated MSF Requirements:

- Qualified students may complete up to 12 credits at the 800-level during their undergraduate studies, earning dual credit toward their B.S. and M.S. degrees.
- Once a qualified student matriculates into the MSF program (after completing undergraduate degree), the student will take a minimum of 18 additional credits to complete the 30 credit MSF program requirement.
- Students will be required to earn a B- or better in graduate courses to earn credits toward their degree.

Approved Dual Credit Electives

To earn graduate credits, students need to enroll in the 800-level sections of approved dual credit courses. The 800-level sections require additional work beyond the requirements for the undergraduate versions. The following is the list of approved dual credit courses for the accelerated path in the MSF program:

Code	Title	Credits
ACFI 801	Corporate Finance (unless FIN 701 already taken)	3
ACFI 802	Investments (unless FIN 702 already taken)	3
ACFI 804	Derivative Securities and Markets	3
ACFI 806	Financial Modeling and Analytics	3
ACFI 870	Programming in Finance with Quantitative Applications	3
ACFI 872	Corporate Financial Reporting	3
Other approved 800-level electives		

Within the accelerated option, Finance option students can complete both the BSBA and MSF in 4.5 years. Please seek more details from the MSF Director and/or Finance Department Chair and apply for accelerated master's admission **before** reaching 90 undergraduate credits.

Student Learning Outcomes

- Students will demonstrate knowledge of core content areas of finance.
- Students will demonstrate the ability to articulate advanced issues in finance and apply them in a business context.
- Students will demonstrate an understanding of the preparation and usage of financial statements.
- Students will demonstrate the ability to solve complex financial problems.
- Students will demonstrate an understanding of the ethical dimensions of decision making in a global business environment.
- Students will demonstrate effective oral and written communication skills in business decisions and environments.
- Students will demonstrate the ability to extract, cleanse and analyze financial data using statistical software or programming tools.

Agricultural Sciences (ANFS)

https://colsa.unh.edu/agriculture-nutrition-food-systems

Overview

Degrees offered: Master of Science (M.S.) and Doctor of Philosophy (Ph.D.)

These programs are offered in Durham.

The Department of Agriculture, Nutrition, and Food Systems offers advanced degrees in Agricultural Sciences at the Masters and Doctoral levels.

Emphasis is placed on acquiring basic and practical knowledge and research experience in one or more of the diverse components of plant and animal agriculture and food systems including: breeding and genetics, physiology, environmental interactions, organismal health, field and greenhouse production, aquaculture, and the social and economic dimensions of food production and distribution systems. The agricultural sciences graduate programs prepare students to become highly

knowledgeable and competent in professional fields related to agriculture and food systems, and leaders in collaborative and interdisciplinary efforts to address local, regional, national and/or global agricultural issues.

With a M.S. or Ph.D. in Agricultural Sciences, students may pursue careers in plant and animal agriculture, aquaculture, food production and distribution systems, teaching, public service, positions in federal, state, nonprofit, private organizations, and/or related fields.

Programs

- Agricultural Sciences (M.S.) (p. 34)
- Agricultural Sciences (Ph.D.) (p. 35)

Faculty

Please see https://colsa.unh.edu/agriculture-nutrition-food-systems/faculty-staff-directory for faculty.

Agricultural Sciences (M.S.)

https://colsa.unh.edu/agriculture-nutrition-food-systems/program/ms/agricultural-sciences

Description

The Master of Science (M.S.) in Agricultural Sciences graduate program offered by the Department of Agriculture, Nutrition, and Food Systems (ANFS) offers a flexible course of study that provides education and research experience in plant and animal agriculture, aquaculture, food systems, and related fields.

Emphasis is placed on acquiring basic and practical knowledge and research experience in one of the following core emphasis areas:

1. Diverse components of plant and animal agricultural systems including: breeding and genetics, physiology, environmental interactions, organismal health, agroecology, and pathology. Student are exposed to production systems, including field based, hydroponics, and aquaculture, as well as post-harvest practices.
2. Food systems analysis to address the social, economic, and environmental relationships that shape outcomes in plant and animal agricultural systems. Students work on food and agriculture related questions and challenges ranging from food production, processing, aggregation and distribution, access, consumption, and management of food waste.

The agricultural sciences graduate program prepares students to become highly knowledgeable and competent in professional fields related to agriculture and food, and leaders in collaborative and interdisciplinary efforts to address local, regional, national and/or global issues at the intersection of agriculture, food and the environment.

The M.S. program is thesis-based, with the expectation of providing substantial research experience and the opportunity to publish new knowledge in the field of interest.

Requirements

Master of Science (M.S.) in Agriculture Sciences students plan a program of study in conjunction with their advisor and Master's Thesis Committee, including required courses and competencies. A minimum of **30 graduate credits**, including 6-10 research credits (ANFS 899 Master's Thesis), are required. A thesis proposal is developed within the first year for approval by the thesis committee. All M.S. students must write a thesis which must be accepted by the advisor(s), committee members, and the Graduate School. The degree is completed when the student has completed the required coursework, presented and passed a thesis defense, and the thesis is approved by the Master's Thesis Committee and accepted by the Graduate School.

Up to 8 credits of graduate credit from another institution may be transferred, provided the credits were not counted toward another degree, and the course grade was a B or higher. Petitions requesting transfer credit must be supported by the advisor and graduate committee and approved by the UNH Graduate School

1. Core Course Requirements:

Code	Title	Credits
ANFS 899	Master's Thesis	6-10
ANFS 901	Introduction to Agriculture, Nutrition, and Food Systems Graduate Studies [1]	1
ANFS 997	Agriculture, Nutrition, and Food Systems Seminar	3

[1] To be taken at the earliest opportunity, typically in the initial fall semester of the graduate program.

2. Competency Requirements: In addition to the core required courses, students will be expected to demonstrate competency in areas of experimental design and analysis, and in scientific writing and communication. Students must take at least one course from each competency. The competencies may be fulfilled by courses chosen in consultation with the advisor and committee. Depending on the student, one or both of these competency requirements may have been fulfilled through other course work or professional experience as approved by the committee and ANFS graduate coordinator.

Code	Title	Credits
Communication Competency		
Select at least one course:		
BIOL 902	Writing and Publishing Science	2
NR 905	Grant Writing	2
BIOL 950	Scientific Communication	2
Experimental Design and Analysis Competency		
Select at least one course:		
ANFS 933	Design, Analysis, and Interpretation of Experiments	4
SOC 902	Sociological Methods II: Research Design	4

3. Electives: Each student, in consultation with their graduate committee, will define one or more areas of informal specialization, and will take additional courses appropriate for their area(s) of specialization.

4. Additional Requirements:

- All students in the Agricultural Sciences Graduate Programs are expected to present their research in ANFS departmental seminar at least twice (including the thesis defense seminar). Students are also encouraged to present at professional conferences and acquire teaching and/or mentoring experience.

- Written and oral defense of research proposal. Approval form must be on file with department.
- Thesis

Additional Information:

Additional information can be found in the program graduate handbook, which includes expectations, guidelines, and detailed policies.

Annual Evaluation: The annual evaluation of graduate students ensures that students receive the mentorship they deserve and are making progress toward completion of their degrees. The annual evaluation of graduate students consists of a collaborative effort between faculty adviser and student to:

- Complete a self-assessment;
- Present a professional quality CV suitable for awards, job applications, and internships;
- Produce a narrative of service or other activities not captured on a CV;
- Develop annual goals.

Student Learning Outcomes

Students graduating with an M.S. in Agricultural sciences will meet objectives in the following areas:

Discipline specific knowledge

- Identify and explain discipline specific research methods
- Build knowledge and understanding in key areas of agricultural sciences including food systems, and animal and plant-based agricultural production systems

Research design and analysis

- Apply appropriate study design to answer a research question
- Use appropriate statistical methods to analyze and interpret research results

Scientific method

- Develop, defend, and execute a research idea to advance knowledge in the student's specific field of study

Critical thinking

- Ability to collect and critically evaluate information from the primary research literature to expand knowledge of agricultural and food systems
- Develop skills to critically evaluate and analyze their research data

Communication

- Communicate effectively in writing through the development of an argument supported by evidence
- Communicate effectively in oral formats when addressing project-specific research and agriculture and food related issues
- Convey research results in written and oral format to both professionals and the public

Professionalism

- Conduct research in an ethical manner
- Deliver professional oral and written communications
- Demonstrate collaboration and leadership skills

Agricultural Sciences (Ph.D.)

https://colsa.unh.edu/agriculture-nutrition-food-systems/program/phd/agricultural-sciences

Description

The Doctor of Philosophy (Ph.D.) in Agricultural Sciences graduate program offered by the Department of Agriculture, Nutrition, and Food Systems (ANFS) offers a flexible course of study that provides education and research experience plant and animal agriculture, aquaculture, food systems, and related fields. As a graduate student in ANFS, you will be engaged in an interdisciplinary department focusing on the farm to fork wellness continuum and a holistic approach to solving problems. You will also develop independent and team research experience.

As an Agricultural Sciences student, you will have the opportunity to optimize your graduate course work to suit your interests and career goals. Our faculty offer education and research opportunities in the diverse components of food systems and plant and animal agricultural systems including breeding and genetics, physiology, environmental interactions, organismal health, agroecology, and pathology. Student are exposed to diverse production systems, including field based, hydroponics, and aquaculture, as well as post-harvest practices. Beyond the classroom and the lab, you will hone communication skills that essential for professional scientists through teaching, extension, and outreach opportunities with stakeholders and constituents.

With a Ph.D. in Agricultural Sciences, students are prepared to pursue careers in college teaching and research positions in industry and government. Students may work in plant and animal agriculture, aquaculture, food production and distribution systems, teaching, public service, research in federal, state, nonprofit, private organizations, or related fields.

The Ph.D. program is thesis-based, with the expectation of generating and publishing substantial new knowledge in the field of interest.

Requirements

Doctor of Philosophy (Ph.D.) graduate students work with their advisor and Doctoral Guidance Committee to plan a program of study including the required core courses, competencies, and develop a research proposal. To complete the degree, students must complete a research proposal, pass a qualifying exam, conduct dissertation research, and complete and defend a dissertation.

Guidance and Dissertation Committees: During the first semester, the student and advisor jointly select members of a guidance committee. A nomination form must be sent to the graduate school to officially appoint the committee membership. The Guidance Committee consists of 5 members and is responsible for approving the proposal and oversees the qualifying examination. Once the student has advanced to candidacy, the Doctoral Dissertation Committee is formed. The Dissertation Committee is responsible for administering the dissertation exam.

Dissertation Proposal and Defense: All Ph.D. students are required to develop a formally approved research proposal typically by the end of the third semester and no later than the fourth semester. Proposals are approved by the dissertation committee and the major advisor. In addition to the written proposal, students are expected to present a proposal defense presentation. This proposal should consist of the following:

1. comprehensive review of the literature related to the student's research topic.
2. statement of need/justification.
3. research goal with a list of research objectives with stated hypotheses that address the major research questions.
4. plan of work describing the experimental approaches or methods to be used in answering the thesis questions.
5. Expected outcomes and potential pitfalls for each objective.
6. Timeline for completion of the work.
7. preliminary research where appropriate.

Candidacy: Following approval of the research proposal and completion of coursework, doctoral students should advance to candidacy. Candidacy is reached after passing a formal qualifying examination that assesses both broad basic knowledge of the student's field, and topics central to the research project. The purpose of the exam is to measure of the student's likelihood of successfully completing a doctoral program. The qualifying exam comprises written and oral components.

1. Written exam: Student choose three areas of specialization in consultation with their Doctoral Guidance Committee. The advisor solicits questions from Committee members and administers the exam. Once completed, Committee members evaluate the responses. The student is expected to demonstrate competence in each of the chosen areas, reflected in clear, concise, well-organized synthetic essays. The exam may be "closed book" or "open book" at the discretion of the advisor.
2. Oral exam: An oral exam is conducted by the Doctoral Guidance Committee and chaired by the advisor. The student should demonstrate mastery of fundamental concepts in the designated areas of specialization, draw upon a broad spectrum of information to answer theoretical and practical questions. There may be focus on any area that was deemed weak in the written exam.

When the student has passed both parts of the qualifying exam, the advisor will inform the Graduate School and recommend that the student be advanced to candidacy in the Ph.D. degree program.

Dissertation and Oral Defense: All students must complete a dissertation reporting original research. After completion of the research, the candidate must provide a copy of the dissertation to the Doctoral Dissertation committee at least two weeks prior to the final oral examination. The final thesis defense consists of two parts: an oral presentation of the research in a public seminar, and an oral defense of the dissertation conducted by the Doctoral Dissertation Committee. Final approval of the dissertation will be determined by a majority vote of the committee.

Number of Credits Required: There is no specific credit requirement for the Ph.D., though students must take the required core courses and fulfill the competences outlined below. Up to 8 credits of graduate credit from another institution may be transferred, provided the credits were not counted toward another degree, and the course grade was a B or higher. Petitions requesting transfer credit must be supported by the advisor and graduate committee and approved by the UNH Graduate School.

1. Core Course Requirements:

Code	Title	Credits
ANFS 901	Introduction to Agriculture, Nutrition, and Food Systems Graduate Studies [1]	1
ANFS 997	Agriculture, Nutrition, and Food Systems Seminar [2]	1
ANFS 999	Doctoral Dissertation Research [3]	0

1 To be taken at the earliest opportunity, typically in the initial fall semester of the program.
2 All students are required to register and participate for a minimum of 3 credits.
3 All students are required to register and participate at least twice, and must be taken after candidacy.

2. Competency Requirements: In addition to the core required courses, students will be expected to demonstrate competency in areas of experimental design and analysis, and in scientific writing and communication. Students must take at least one course from each competency. The competencies may be fulfilled by courses chosen in consultation with the advisor and committee. Depending on the student, one or both of these competency requirements may have been fulfilled through other course work or professional experience as approved by the committee and ANFS graduate coordinator.

Code	Title	Credits
Communication Competency		
Select at least one course from the following:		
BIOL 902	Writing and Publishing Science	
NR 905	Grant Writing	
BIOL 950	Scientific Communication	
Experimental Design and Analysis Competency		
Select at least one course from the following:		
ANFS 933	Design, Analysis, and Interpretation of Experiments	
SOC 902	Sociological Methods II: Research Design	

3. Electives: Each student, in consultation with their graduate committee, will define one or more areas of informal specialization, and will take additional courses appropriate for their area(s) of specialization.

4. Additional Information:

- All students in the Agricultural Sciences Ph.D. Program are expected to present their research in ANFS departmental seminar at least three times (including the defense seminar). Students are also encouraged to present at professional conferences and acquire teaching and/or mentoring experience.

Annual Evaluation: The annual evaluation of graduate students ensures that students receive the mentorship they deserve and are making progress toward completion of their degrees. The annual evaluation of graduate students consists of a collaborative effort between faculty adviser and student to:

- Complete a self-assessment;
- Present a professional quality CV suitable for awards, job applications, and internships;
- Produce a narrative of service or other activities not captured on a CV;
- Develop annual goals.

Student Learning Outcomes

Students graduating with a Ph.D. in Agricultural Sciences will meet objectives in the following areas:

Discipline specific knowledge

- Identify and explain discipline specific research methods
- Build knowledge and understanding in key areas of agricultural sciences including food systems, and animal and plant-based agricultural production systems

Research design and analysis

- Identify the strengths and weaknesses of study designs utilized in agriculture or food systems research
- Apply appropriate research design to answer a question
- Identify and apply appropriate statistical methods to analyze and interpret research results

Scientific method

- Independently develop, defend, and execute a research idea to advance knowledge in the student's specific field of study

Critical thinking

- Ability to collect and critically evaluate information from the primary research literature to expand knowledge of agricultural and food systems
- Draw conclusions from the literature and make recommendations based on an understanding of the system, scientific evidence, related factors, and desired outcomes
- Develop skills to critically evaluate and analyze their research data

Communication

- Communicate effectively in writing through the development of an argument supported by evidence
- Communicate effectively in oral formats when addressing project-specific research and complex agriculture and food related issues
- Contribute written works to the scientific community in the form of peer-reviewed publications and presentation at scientific conferences

Professionalism

- Conduct research in an ethical manner
- Deliver professional oral and written communications
- Demonstrate collaboration and leadership skills

Analytics (DATA)

Degrees Offered: Graduate Certificate

The Introduction to Data Science Certificate is an online 16 week graduate program that exposes students to current, cutting edge data programming, statistical modeling and visualization tools through guided, online instruction and applied case studies. This certificate program offers a flexible, short-turnaround time to completion allowing busy employees to participate. Enjoy applied learning in a self--paced but facilitated environment with course instructors and a student success coach.

https://www.unh.edu/analytics/

Programs

- Data Science (Graduate Certificate) (p. 37)

Faculty

See https://gradschool.unh.edu/analytics/faculty-program-team for faculty.

Data Science (Graduate Certificate)

https://online.unh.edu/program/graduate-certificate/data-science

Description

Graduate Certificate in Data Science (Online)

The Introduction to Data Science Certificate is an online 16 week graduate program that exposes students to current, cutting edge data programming, statistical modeling and visualization tools through guided, online instruction and applied case studies. This certificate program offers a flexible, short-turnaround time to completion allowing busy employees to participate. Enjoy applied learning in a self--paced but facilitated environment with course instructors and a student success coach.

- Introduction to Data Science to provide basic level of quantitative training
- In as little as 16 weeks to Certificate completion
- Exposure to the tools and methods used in today's ever changing data science environment
- Interdisciplinary and applied nature

Who Should Enroll?

Professionals who want to increase their earning potential, advance their careers, and make a greater impact within their business or organization with advanced data analytic and coding skills. This certificate is beneficial to those in the fields of business analyst, data analyst, financial analyst, computer scientist, programmers, database administrators, researchers, statisticians, and marketing.

Admissions Information

Please see the Graduate School website for admissions requirements.

Requirements

The graduate certificate in Data Science requires the completion of 4 core courses.

Code	Title	Credits
DATA 800	Introduction to Applied Analytic Statistics	3
DATA 820	Programming for Data Science	3
DATA 821	Data Architecture	3

DATA 822	Data Mining and Predictive Modeling	3
Total Credits		**12**

Biochemistry (BCHM)

Degrees Offered: Ph.D., M.S.

This program is offered in Durham.

The Department of Molecular, Cellular, and Biomedical Sciences offers a Doctor of Philosophy (Ph.D.) degree, a Master of Science (M.S.), and an accelerated master's program (B.S./M.S.) in Biochemistry. Graduate students (Ph.D. and M.S.) in biochemistry are typically supported by teaching or research assistantships, as well as by competitive internal and external fellowship programs. For more information about the program, including admission and degree requirements, please contact the Department of Molecular, Cellular, and Biomedical Sciences at mcbs.dept@unh.edu.

Distinctive Features of the Program

The Graduate Program in Biochemistry combines a rigorous curriculum in biochemistry with diverse research opportunities at the frontier of chemical, molecular, and cellular biology, as well as biophysics. The program aims to train interdisciplinary researchers, savvy in modern technologies and data science, interested in a mechanistic understanding of biology. Incoming students are given the opportunity for laboratory rotations to explore the various areas of biochemistry in those cases where a thesis advisor has not been identified or where exposure to a variety of experimental approaches is advantageous.

The Graduate Program in Biochemistry offers:

- Outstanding research training in many cutting-edge research areas such as cellular structure and function, genome stability, protein structure and function, signal transduction, and structural biology.
- Weekly seminar series that includes both distinguished invited speakers and graduate student research presentations.
- Opportunities to gain teaching and mentoring experiences with undergraduate students in the biological sciences.
- Excellent track record for graduates attaining careers in academia, biomedical research institutes, biotechnology and pharmaceutical companies, health professions, and state and federal governmental agencies.

Admission Requirements

An applicant is expected to have completed basic courses in chemistry, biological sciences, mathematics, and physics. Otherwise well--qualified applicants will be permitted to correct deficiencies in undergraduate education by enrollment in the appropriate courses or by independent study during the first year. Applicants must submit a personal statement and three letters of recommendation. The personal statement should specify the applicant's research interests and potential faculty mentors. Applicants from non--English--speaking countries must also provide TOEFL (Test of English as a Foreign Language) scores.

Accelerated Master's Degree Requirements

This accelerated program, leading to a combined bachelor's and master's degree in biochemistry, is designed for highly motivated and qualified students seeking additional training to further their career goals as a researcher in the life sciences.

Admission to the combined degree program is highly competitive. Students wishing to pursue this option must have a grade point average greater than 3.2 at the time of application. A thesis advisor must be identified during the junior year and the approval of the advisor must be obtained. Prior to the first semester of the senior year, the student must formally apply to the Graduate School and receive early admission to the Biochemistry Graduate Program. The requirement for the Graduate Record Examination is waived for combined degree applicants.

https://colsa.unh.edu/molecular-cellular-biomedical-sciences

Programs

- Biochemistry (Ph.D.) (p. 38)
- Biochemistry (M.S.) (p. 40)

Faculty

See https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/phd/biochemistry#collapse_1693

Biochemistry (Ph.D.)

https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/phd/biochemistry

Description

The Ph.D. in Biochemistry combines a rigorous curriculum in biochemistry and related disciplines with interdisciplinary research opportunities at the frontiers of biochemistry, molecular biology, and cell biology. Graduates of the program are equipped for leadership positions in biotechnology and pharmaceutical companies, academic and government research laboratories, and successful careers in teaching and research at the college and university level.

Distinctive Features of the Program

- Advanced course offerings include signal transduction pathways, pharmacology, physical biochemistry, proteomics, endocrinology, structural biology, bioinformatics, and cancer biology
- Emphasis on interdisciplinary research training
- Well-equipped research laboratories and core facilities on the UNH campus
- Laboratory rotations upon entry to the program to become familiar with different research laboratories
- Weekly graduate student seminar presentations, as well as a departmental seminar series of invited speakers
- Opportunities to gain teaching experiences as a Graduate Teaching Assistant

Research Opportunities

- Cancer biology
- Protein structure, function, and regulation
- Signal transduction pathways
- Molecular and cellular neuroscience
- Genomics and bioinformatics
- Regenerative biology

- Molecular immunology
- Chemical biology

Financial Support

- Students admitted to the Ph.D. Program are typically supported by Research Assistantships or Teaching Assistantships
- Internal summer and academic year fellowships are available to students on a competitive basis.

Career Prospects

- Research directors in biotechnology and pharmaceutical industries
- Principle investigators of academic research labs and research institutes, state and federal government agencies
- Academic preparation for future teaching roles in a college or university environment

Admission Requirements

- Completion of foundational courses in biology, chemistry (including organic chemistry), physics, and mathematics
  - Otherwise well-qualified applicants can correct academic deficiencies with enrollment in appropriate courses or independent study during the first year of graduate studies
- Applicants from non-English speaking countries must provide Test of English as a Foreign Language (TOEFL) scores
- Three letters of recommendation
- Personal statement, including research interests and identification of two or three potential Biochemistry faculty thesis advisors.

Requirements

Ph.D. Requirements

The Ph.D. in Biochemistry requires the completion of significant, original independent research and preparation of a dissertation for submission to the Graduate School. A minimum of two semesters of Doctoral Research (MCBS 999) is required. Graduate credits are earned for courses numbered 800-999. In most cases, it is expected that the Ph.D. degree will be completed within four to six years of admission to the graduate program. Demonstration of proficiency in biochemistry will be assessed in the first year by examination or coursework.

Guidance Committee: Initially, the Graduate Program Coordinator will assist the student in choosing courses. Following selection of the thesis advisor, the student and the advisor jointly agree on the members of the Guidance Committee, and communicate this recommendation to the Biochemistry Graduate Program Coordinator. The Doctoral Guidance Committee Nomination Form must be completed and submitted to the Graduate School by the end of the first year. The Guidance Committee consists of five faculty members: the advisor (as chairperson), two other members of the biochemistry graduate faculty, and up to two faculty members from other graduate programs. However, only three members of the Guidance Committee are required for the second-year exam. The Committee meets soon after selection of a thesis advisor to determine the student's curriculum. Courses required by the Guidance Committee must be taken for credit and completed with a passing grade (at least a B-minus-). Courses recommended by the committee may be audited or taken for credit, but in either case, the student is expected to be familiar with the subject matter of these courses. It is recommended that the Guidance Committee meet each semester thereafter to assess the student's academic and research progress.

Doctoral Dissertation Committee: The Doctoral Committee is composed of the faculty advisor (as chairperson), two other faculty members in the graduate program in biochemistry, and up to two faculty members from other graduate programs. In most cases, the Guidance Committee constitutes the Doctoral Committee. The Doctoral Committee evaluates the dissertation and administers the final examination. The Doctoral Committee meets annually to assess the progress toward completion of the Ph.D. requirements.

Candidacy: After all coursework is completed, a doctoral student should advance to candidacy. Candidacy is reached after passing:

1. *Qualifying Exam – Part 1*
   The student will prepare and defend a written research proposal on a topic that is outside the thesis topic and approved by the Guidance Committee. To pass *Part 1* of *Qualifying Exam*, the student is expected to demonstrate both the ability to write a coherent proposal and broad knowledge of biochemistry and molecular biology that extends beyond the research project.
2. *Qualifying Exam – Part 2*
   The student will submit to the Guidance Committee a written description of the thesis problem, summary of research progress to date, and outline of research goals yet to be attained. To pass Part 2 of the Qualifying Exam, the student is expected to demonstrate ability to plan and conduct research, to think critically and creatively about questions in the student's area of interest, and to be aware of current and recent research literature in these areas. The approval of the qualifying exams will be determined by a majority vote of the committee.

Further details can be found at https://colsa.unh.edu/molecular-cellular-biomedical-sciences/diagnostic-exams-phd-qualifying-exams.

Dissertation: The student is required to prepare a written doctoral dissertation for submission to the Doctoral Committee. The dissertation must represent significant and original research written in a clear, comprehensible style. A copy of the complete thesis must be made available to the committee at least two weeks before the date of the final examination. Publication of the dissertation by ProQuest is required.

Final Defense: An oral examination of the doctoral dissertation consists of two parts: an oral presentation of the research that is open to the public, and an oral defense of the dissertation conducted by the doctoral committee. Final approval of the doctoral dissertation will be determined by a majority vote of the doctoral committee.

Teaching Requirement: Teaching assignments in the laboratory, in lectures, or in an individual instruction format are an essential part of the graduate academic programs of the department and are designed to give graduate students practical teaching experience. Normally, one year of part-time teaching will be required of each doctoral student.

Student Learning Outcomes

All MCBS graduates will be able to:

- Critically apply theories, methodologies, and knowledge to address fundamental questions in their primary area of study.
- Pursue research of significance in the discipline (or an interdisciplinary or creative project). Students plan and conduct

this research (or implement their project) under the guidance of an advisor, while developing intellectual independence that typifies true scholarship.
- Demonstrate skills in oral and written communication sufficient to present and publish work in their field, and to prepare grant proposals.
- Follow the principles of ethics in their field, and in academia, as well as adhere to established principles of scientific rigor and reproducibility.
- Demonstrate, through service, the value of their discipline to the academy and community at large.
- Demonstrate a mastery of skills and knowledge at a level required for college and university undergraduate teaching in their discipline and assessment of student learning.
- Interact productively with individuals from diverse backgrounds in the roles of team members, leaders and mentors with integrity and professionalism.

Graduates of the Biochemistry Ph.D. degree program will be able to:

- Demonstrate extensive knowledge and understanding of fundamental biochemistry principles and their area of specialization in the field.
- Critically apply theories and methodologies to address fundamental questions in biochemistry through research activities.
- Design and conduct biochemical experiments in their area of specialization, analyze and interpret research data, and draw critical conclusions.
- Communicate biochemical concepts and experimental results effectively in writing and orally both in scientific technical language as well as at an appropriate level tailored for the general audience.

Biochemistry (M.S.)

https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/ms/biochemistry

Description

The M.S. in Biochemistry combines a rigorous curriculum in biochemistry and related disciplines with interdisciplinary research opportunities at the frontiers of biochemistry, molecular biology, and cell biology. Graduates of the program are equipped for successful careers in biotechnology and pharmaceutical companies, or in academic and government research laboratories. Graduates are also prepared for doctoral programs, medical school, or other health-related professional programs.

Distinctive Features of the Program

- Advanced course offerings include signal transduction pathways, pharmacology, physical biochemistry, proteomics, endocrinology, structural biology, bioinformatics, and cancer biology
- Emphasis on interdisciplinary research training
- Well-equipped research laboratories and core facilities on the UNH campus
- Laboratory rotations upon entry to the program to become familiar with different research laboratories
- Weekly graduate student seminar presentations, as well as a departmental seminar series of invited speakers
- Opportunities to gain teaching experiences as a Graduate Teaching Assistant
- Accelerated M.S. program available to UNH students enrolled in the B.S. program in Biochemistry, Molecular, and Cellular Biology or related disciplines.

Research Opportunities

- Tumor cell biology
- Protein structure, function, and regulation
- Signal transduction pathways
- Molecular and cellular neuroscience
- Genomics, proteomics, and bioinformatics
- Regenerative biology
- Molecular immunology
- Chemical biology

Financial Support

- Students admitted to the M.S. Program are typically supported by Research Assistantships or Teaching Assistantships
- Teaching Assistantships are not available for students enrolled in the Accelerated M.S. program
- Internal summer and academic year fellowships are available to students on a competitive basis.

Career Prospects

- Research scientists in biotechnology and pharmaceutical industries
- Lab managers in academic research labs and research institutes, state and federal government agencies
- Continuing education in doctoral programs and professional health programs (e.g., medical school)

Admission Requirements

- Completion of foundational courses in biology, chemistry (including organic chemistry), physics, and mathematics
  - Otherwise well-qualified applicants can correct academic deficiencies with enrollment in appropriate courses or independent study during the first year of graduate studies
- Applicants from non-English speaking countries must provide Test of English as a Foreign Language (TOEFL) scores
- Three letters of recommendation
- Personal statement, including research interests and identification of two or three potential Biochemistry faculty thesis advisors.

Requirements

M.S. Degree Requirements

Student must meet the Graduate School's requirements for the master's degree and are expected to develop a culminating thesis based on the completion of a research project. Demonstration of proficiency in biochemistry will be assessed in the first year by examination or coursework. All candidates for the M.S. degree must pass an oral examination based on the thesis or project report and on the graduate courses completed in the degree program.

Credits: A minimum of **30 graduate credits** is required including 6-10 master's thesis credits (MCBS 899 Master's Thesis). Graduate credits are earned for courses numbered 800-999. Up to 12 credits earned at UNH in co-listed 7XX/8XX courses may be taken for graduate credits

upon approval of the Graduate School. Typically, master's students enroll in BCHM 851 Principles of Biochemistry I & BCHM 852 Principles of Biochemistry II during their first year of study, unless diagnostic examinations indicate that undergraduate preparation in general biochemistry is sufficient.

Thesis Committee: During the first semester, the Graduate Program Coordinator will assist the student in choosing courses. Following selection of the thesis advisor, the student and the advisor jointly agree on the members of the Thesis Committee no later than during the second semester and communicate this recommendation to the Biochemistry Graduate Program Coordinator. The Master's Supervisory Committee Nomination Form must be completed and submitted to the Graduate School. The Thesis Committee consists of the advisor as chair and two other members. The committee meets soon after selection of a thesis project to approve the student's proposed curriculum.

Courses required by the Thesis Committee must be taken for credit and completed with a passing grade (B-minus or better). Courses recommended by the committee may be audited or taken for credit, but in either case the student is expected to be familiar with the subject matter of these courses. It is recommended that the student meet with their Thesis Committee every semester to review progress of the thesis project and academics.

Written Thesis and Oral Presentation: Students must prepare a written master's thesis for submission to their Thesis Committee. A copy of the complete thesis must be made available to the committee at least 14 days before the date of the final examination. Consult the *Thesis and Dissertation Manual* provided by the Graduate School for details on preparing the manuscript.

The oral examination of the master's thesis consists of two parts: an oral presentation of the research that is open to the public and an oral defense of the master's thesis conducted by the Thesis Committee.

Final approval of the master's thesis will be determined by an affirmative majority vote of the Thesis Committee. The final thesis must be submitted to the Graduate School via the procedures outlined in the *Thesis and Dissertation Manual*. As their program nears completion, students must submit the Intent-to-Graduate prior to the deadline posted on the Graduate School's calendar.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Accelerated Master's Admission Requirements

- Current junior standing in the B.S. in Biochemistry, Molecular, and Cellular Biology program (or related programs) at the time of application
- GPA of 3.2 or greater
- Thesis advisor identified who supports entry into the program
- Two letters of recommendation (one of which is from the thesis advisor)
- Personal statement of research interests and career aspirations
- GRE is waived

Student Learning Outcomes

All MCBS graduates will be able to:

- Critically apply theories, methodologies, and knowledge to address fundamental questions in their primary area of study.
- Pursue research of significance in the discipline (or an interdisciplinary or creative project). Students plan and conduct this research (or implement their project) under the guidance of an advisor, while developing intellectual independence that typifies true scholarship.
- Demonstrate skills in oral and written communication sufficient to present and publish work in their field, and to prepare grant proposals.
- Follow the principles of ethics in their field, and in academia, as well as adhere to scientific standards for rigor and reproducibility.
- Demonstrate, through service, the value of their discipline to the academy and community at large.
- Demonstrate a mastery of skills and knowledge at a level required for college and university undergraduate teaching in their discipline and assessment of student learning.
- Interact productively with individuals from diverse backgrounds in the roles of team members, leaders and mentors with integrity and professionalism.

Graduates of the Biochemistry M.S. degree program will be able to:

- Demonstrate extensive knowledge and understanding of fundamental biochemistry principles and their area of specialization in the field.
- Critically apply theories and methodologies to address fundamental questions in biochemistry through research activities.
- Design and conduct biochemical experiments in their area of specialization, analyze and interpret research data, and draw critical conclusions.
- Communicate biochemical concepts and experimental results effectively in writing and orally both in scientific technical language as well as at an appropriate level tailored for the general audience.

Biological Sciences (BIOL)

Degrees Offered: Ph.D., M.S.

This program is offered in Durham.

The Biological Sciences Graduate Program offers M.S. and Ph.D. degrees in Biological Sciences, with options in Integrative and Organismal Biology and Marine Biology.

Integrative and Organismal Biology (IOB)

This option offers a home to students interested in basic organismal biology in all of its diverse aspects (physiology, neurobiology, behavior, cell biology, genetics, evolution, ecology, systematics, etc.), in both terrestrial and aquatic environments. Modern biology employs approaches and tools ranging from molecular to ecological levels to gain a deep understanding of organismal functions and adaptations. Students in IOB approach their studies with a focus on organisms, and

apply whatever tools are necessary to answer thematic and specific questions. Students interested in combining hands-on biological projects with research on teaching and learning biology at the post-secondary level should choose this option.

Marine Biology (MB)

This option is intended for students interested in marine, coastal, and estuarine ecosystems, and the organisms that inhabit them, at all levels of inquiry. Some faculty at UNH use marine organisms, ranging from microbes to fish, invertebrates, and macroalgae to study physiology, molecular phylogeny, and species interactions; others focus on the structure and function of marine ecosystems. Faculty interests range from basic research on marine organisms and systems to applied areas such as aquaculture and fisheries# many combine the two.

Related programs

Students interested in fields such as agriculture and animal science should review programs available through the Department of Agriculture, Nutrition, and Food Systems; those interested in molecular biology and genomics should review programs in the Department of Molecular, Cellular and Biomedical Sciences, including Genetics and Molecular & Evolutionary Systems Biology; those interested in ecosystems, wildlife and forestry should review programs in the Department of Natural Resources and the Environment, including Natural Resources and Earth Systems Science (NRESS).

Admission Requirements

Applicants ordinarily will have completed an undergraduate major in biology or a related field. A basic array of courses including general biology, development, ecology, genetics, morphology, and physiology is recommended# applicants should have completed organic chemistry and a semester each of calculus and physics. Applicants whose preparation does not meet these criteria can be admitted to the program, but may need to remedy any deficiencies via courses that do not give graduate credit.

All applicants are strongly encouraged to communicate with potential advisors as part of the application process. Identifying an advisor is normally a prerequisite for admission. To contact a potential advisor in the Marine Biology or Integrative Organismal Biology option, please see the lists of faculty.

Research and Facilities

The Biological Sciences graduate program is enhanced by research in other departments and institutes across the University.

These include the School for Marine Sciences and Ocean Engineering and its associated programs and facilities:

- N.H. Sea Grant Program;
- the Institute for the Study of Earth, Oceans, and Space (EOS);
- the UNH Center for Coastal and Ocean Mapping/Joint Hydrographic Center; and (CCOM);
- the Ocean Processes Analysis Laboratory (OPAL).

There are four aquatic laboratories:

- Jackson Estuarine Lab,
- Judd Gregg Marine Research Complex,
- the Aquaculture Research Center (ARC), and
- the Shoals Marine Laboratory (SML).

The Center for Freshwater Biology (CFB) jointly administers (with the UNH Cooperative Extension) the Lakes Lay Monitoring Program, which is dedicated to the preservation and sound management of lakes through citizen-based monitoring and research.

The University of New Hampshire Collection of insects and other arthropods is the largest arthropod depository and research collection in Northern New England (700,000 specimens and growing). Over 12,000 species are represented from different regions of New England, featuring many specimens collected from the White Mountains.

In addition, research in plant biology and agriculture is carried out in the Macfarlane Research Greenhouses, the Hodgdon Herbarium, and UNH's agricultural facilities.

The Hubbard Center for Genomic Studies provides training and research in comparative and environmental genomics, with a special emphasis on novel model species. It provides expertise in constructing DNA libraries, DNA sequencing, fragment analysis, and the analysis of gene expression.

https://colsa.unh.edu/biological-sciences

Programs

- Integrative Biology (M.S.) (p. 42)
- Integrative Biology (Ph.D.) (p. 43)
- Marine Biology (M.S.) (p. 44)
- Marine Biology (Ph.D.) (p. 46)

Faculty

https://colsa.unh.edu/biological-sciences/people

Integrative Biology (M.S.)

https://colsa.unh.edu/biological-sciences/program/ms/biological-sciences-integrative-and-organismal-biology

Description

The Integrative and Organismal Biology (IOB) option offers a home to students interested in basic organismal biology in all of its diverse aspects (physiology, neurobiology, behavior, cell biology, genetics, evolution, ecology, systematics, etc.), in both terrestrial and aquatic environments. Modern biology employs approaches and tools ranging from molecular to ecological levels to gain a deep understanding of organismal functions and adaptations. Students in IOB approach their studies with a focus on organisms, and apply whatever tools are necessary to answer thematic and specific questions. Students interested in combining hands-on biological projects with research on teaching and learning biology at the post-secondary level should choose this option. Students completing degrees in IOB will be prepared for a wide range of professional careers in animal and/or plant biology, whether in academia, government, research, or nonprofit organizations.

Requirements

M.S. Degree Requirements

Students plan a program of study in conjunction with their advisor and Master's Thesis Committee, including the required core courses and competencies. Completion of at least **30 credits**, including research credits, is required. A thesis proposal is developed within the first year. Students complete thesis research for 6 to 10 credits# the degree is completed when results are acceptable, a formal thesis presentation and defense has occurred, and the thesis is approved by the Master's Thesis Committee and accepted by the Graduate School.

A common set of policies and guidelines applies to both Biological Sciences degree options (IOB and MB). Additional option specific course recommendations or requirements may be established by the faculty within each option.

Number of Credits Required

The M.S. degree requires completion of a minimum of **30 credits**, 6-10 of which may be earned for thesis research (BIOL 899 Master's Thesis). The Biological Sciences Program specifies 2 credits' worth of required coursework (BIOL 901 Introductory Graduate Seminar); most students use 6 more credits to satisfy the competency requirement in experimental design/analysis (BIOL 811 Experimental Design & Analysis or ANFS 933 Design, Analysis, and Interpretation of Experiments, 4 credits) and recommended coursework in writing/communication (BIOL 902 Writing and Publishing Science or BIOL 950 Scientific Communication, 2 credits). Other graduate coursework approved by the student's committee can substitute for any of these courses except BIOL 901 Introductory Graduate Seminar.

Up to 8 credits of graduate credit from another institution may be transferred, provided the credits were not counted toward another degree, and the course grade was a B or higher. Petitions requesting transfer credit must be supported by the advisor and graduate committee, and approved by the UNH Graduate School.

Students admitted via the Accelerated Master's (AM) process may apply up to 12 credits of prior upper-level UNH coursework in accordance with AM policies.

Required Courses, Competencies, and Electives

All students in the Biological Sciences Graduate Program are required to take Introductory Graduate Seminar (BIOL 901 Introductory Graduate Seminar) and fulfill all applicable competency requirements (these may vary by option). Those with teaching assistantships (TAs) must enroll in College Teaching (LSA 900 College Teaching) before or concurrent with their first teaching assignment.

1. Core Course: Introductory Graduate Seminar (BIOL 901). This first-semester course focuses on key information and skills for a successful transition into the graduate program, familiarizing students with program requirements and faculty and providing an opportunity to meet others in their cohort.
2. Competency in experimental design and analysis. This may be fulfilled by previous graduate coursework (as determined by the student's advisor and committee), or by taking one graduate-level course. Two advanced courses in experimental design and analysis are offered, normally in alternate years. The first is Experimental Design & Analysis (BIOL 811), and the second is Design, Analysis, and Interpretation of Experiments (ANFS 933). Either course, or an equivalent approved by the student's advisor and committee e.g. Analysis of Ecological Communities and Complex Data (NR 909), can be used to fulfill this competency requirement.
3. Electives: Students will work with their advisor and committee to identify additional courses appropriate for their area of specialization and their career objectives. Recommendations often include coursework in professional writing and communication: Scientific Writing - Writing and Publishing Science (BIOL 902) is taught fall semester, and open to students at any stage of the program. Scientific Communication (BIOL 950) is usually taught in spring. A course in Grant Writing (NR 905) is offered by the Department of Natural Resources.

Additional Information/Requirements

All students in the Biological Sciences Program are expected to present their research in public seminars (including the UNH Graduate Research Conference), and acquire teaching and/or mentoring experience.

A summary of M.S. and Ph.D. degree requirements is available at https://colsa.unh.edu/biological-sciences/program/ms/biological-sciences-integrative-and-organismal-biology, along with the program's graduate handbook, which includes expectations, guidelines, and detailed policies.

Student Learning Outcomes

- Students will demonstrate expertise in quantitative skills including (a) basic math and statistics; (b) spreadsheet software; (c) graphical presentation of quantitative data.
- Students will demonstrate writing skills that enable them to prepare a scientific research paper in standard format for their field.
- Students will demonstrate competency in experimental design, including the ability to articulate a testable hypothesis and design an appropriate experiment to test it.
- Students will demonstrate communication skills including the ability to clearly explain scientific information to both professional and general audiences.
- Students will demonstrate broad understanding of fundamental areas of biology, especially areas relevant to their research project.

Integrative Biology (Ph.D.)

https://colsa.unh.edu/biological-sciences/program/phd/biological-sciences-integrative-and-organismal-biology

Description

The Integrative and Organismal Biology (IOB) option offers a home to students interested in basic organismal biology in all of its diverse aspects (physiology, neurobiology, behavior, cell biology, genetics, evolution, ecology, systematics, etc.), in both terrestrial and aquatic environments. Modern biology employs approaches and tools ranging from molecular to ecological levels to gain a deep understanding of organismal functions and adaptations. Students in IOB approach their studies with a focus on organisms, and apply whatever tools are necessary to answer thematic and specific questions. Students interested in combining hands-on biological projects with research on

teaching and learning biology at the post-secondary level should choose this option. Students completing degrees in IOB will be prepared for a wide range of professional careers in animal and/or plant biology, whether in academia, government, research, or nonprofit organizations.

Requirements

Ph.D. Degree Requirements

Students work with their advisor and their Doctoral Guidance Committee to plan a program of study including the required core courses and competencies, and develop a viable research proposal. The Guidance Committee is normally established by the end of the first semester, and should meet by the end of the second semester. The student presents to the Guidance Committee a preliminary research proposal in which the soundness, originality, and feasibility of the planned research are clearly described. The Guidance Committee is responsible for approving the proposal, and also oversees the qualifying examination through which the student is admitted to doctoral candidacy. The Doctoral Dissertation Committee is established at this point. To earn the Ph.D. degree, students must complete an original dissertation project, present the results at a public seminar, pass an oral dissertation defense consisting of questions from members of the Dissertation Committee, and have the dissertation approved by the Dissertation Committee and accepted by the Graduate School.

Number of Credits Required

There is no specific credit requirement for the Ph.D., though students must take required core courses and meet competency requirements. The Biological Sciences Program specifies 2 credits' worth of required coursework (BIOL 901 Introductory Graduate Seminar); most students use 6 more credits to satisfy the competency requirement in experimental design/analysis (BIOL 811 Experimental Design & Analysis or ANFS 933 Design, Analysis, and Interpretation of Experiments, 4 credits) and recommended coursework in writing/communication (BIOL 902 Writing and Publishing Science or BIOL 950 Scientific Communication, 2 credits). Other graduate coursework approved by the student's committee can substitute for any of these courses except BIOL 901 Introductory Graduate Seminar.

Up to 8 credits of graduate credit from another institution may be transferred, provided the credits were not counted toward another degree, and the course grade was a B or higher. Petitions requesting transfer credit must be supported by the advisor and graduate committee, and approved by the UNH Graduate School.

Required Courses, Competencies, and Electives

All students in the Biological Sciences Graduate Program are required to take Introductory Graduate Seminar (BIOL 901) and fulfill all applicable competency requirements (these may vary by option). Those with teaching assistantships (TAs) must enroll in College Teaching (LSA 900) before or concurrent with their first teaching assignment.

1. Core Course. Introductory Graduate Seminar (BIOL 901). This first-semester course focuses on key information and skills for a successful transition into the graduate program, familiarizing students with program requirements and faculty and providing an opportunity to meet others in their cohort.
2. Competency in experimental design and analysis. This may be fulfilled by previous graduate coursework (as determined by the student's advisor and committee), or by taking one graduate-level course. Two advanced courses in experimental design and analysis are offered, normally in alternate years. The first is Applied Biostatistics II (BIOL 811) and the second is Design, Analysis and Interpretation of Experiments (ANFS 933). Either course, or an equivalent approved by the student's advisor and committee (e.g. NR 909 Analysis of Ecological Communities and Complex Data), can be used to fulfill this competency requirement.
3. Electives. Students will work with their advisor and committee to identify additional courses appropriate for their area of specialization and their career objectives. Recommendations often include coursework in professional writing and communication: Scientific Writing (BIOL 902) is taught fall semester, and open to students at any stage of the program. Scientific Communication (BIOL 950) is usually taught in spring. A course in Grant Writing (NR 905) is offered by the Department of Natural Resources.

Additional Information/Requirements

All students in the Biological Sciences Program are expected to present their research in public seminars (including the UNH Graduate Research Conference), and acquire teaching and/or mentoring experience.

A summary of degree requirements is available at https://colsa.unh.edu/biological-sciences/program/phd/biological-sciences-integrative-and-organismal-biology, along with the program's graduate handbook, which includes expectations, guidelines, and detailed policies.

Student Learning Outcomes

- Students will demonstrate expertise in quantitative skills including (a) basic math and statistics; (b) spreadsheet software; (c) graphical presentation of quantitative data.
- Students will demonstrate writing skills that enable them to prepare a scientific research paper in standard format for their field.
- Students will demonstrate competency in experimental design, including the ability to articulate a testable hypothesis and design an appropriate experiment to test it.
- Students will demonstrate communication skills including the ability to clearly explain scientific information to both professional and general audiences.
- Students will demonstrate broad understanding of fundamental areas of biology, especially areas relevant to their research project.

Marine Biology (M.S.)

https://colsa.unh.edu/biological-sciences/program/ms/biological-sciences-marine-biology

Description

The Marine Biology (MB) option is intended for students interested in marine, coastal, and estuarine ecosystems, and the organisms that inhabit them, at all levels of inquiry. Some UNH faculty use marine organisms as model systems for molecular phylogeny, cellular metabolism, and neurobiology, while others study the structure and function of marine ecosystems. Some faculty members focus primarily on basic research# others work in applied areas such as aquaculture and

fisheries# many combine the two. Students who have earned advanced degrees at UNH lead agencies involved in managing valuable marine resources, teach marine biology in academic and public settings, own aquaculture companies, or earn a living as researchers. In addition to on--campus facilities, UNH owns the Coastal Marine Laboratory and the Jackson Estuarine Laboratory, and a range of research vessels. UNH has an excellent SCUBA diving program for students interested in becoming certified to dive as part of their research. The Marine Biology option is also affiliated with UNH's School of Marine Sciences and Ocean Engineering.

Requirements

M.S. Degree Requirements

Students plan a program of study in conjunction with their advisor and Master's Thesis Committee, including the required core courses and competencies. Completion of at least **30 credits**, including research credits, is required. A thesis proposal is developed within the first year. Students complete thesis research for 6 to 10 credits# the degree is completed when results are acceptable, a formal thesis presentation and defense has occurred, and the thesis is approved by the Master's Thesis Committee and accepted by the Graduate School.

A common set of policies and guidelines applies to both Biological Sciences degree options (IOB and MB). Additional option specific course recommendations or requirements may be established by the faculty within each option.

Number of Credits Required

The M.S. degree requires completion of a minimum of **30 credits**, 6-10 of which may be earned for thesis research (BIOL 899 Master's Thesis). The Biological Sciences Program specifies 2 credits' worth of required coursework (BIOL 901 Introductory Graduate Seminar); most students use 6 more credits to satisfy the competency requirement in experimental design/analysis (BIOL 811 Experimental Design & Analysis or ANFS 933 Design, Analysis, and Interpretation of Experiments, 4 credits) and recommended coursework in writing/communication (BIOL 902 Writing and Publishing Science or BIOL 950 Scientific Communication, 2 credits). Other graduate coursework approved by the student's committee can substitute for any of these courses except BIOL 901 Introductory Graduate Seminar.

Up to 8 credits of graduate credit from another institution may be transferred, provided the credits were not counted toward another degree, and the course grade was a B or higher. Petitions requesting transfer credit must be supported by the advisor and graduate committee, and approved by the UNH Graduate School.

Students admitted via the Accelerated Master's (AM) process may apply up to 12 credits of prior upper-level UNH coursework in accordance with AM policies.

Required Courses, Competencies, and Electives

All students in the Biological Sciences Graduate Program are required to take Introductory Graduate Seminar (Introductory Graduate Seminar (BIOL 901) and fulfill all applicable competency requirements (these may vary by option). Those with teaching assistantships (TAs) must enroll in College Teaching (College Teaching (LSA 900) before or concurrent with their first teaching assignment.

1. Core Course: Introductory Graduate Seminar (BIOL 901), this first-semester course focuses on key information and skills for a successful transition into the graduate program, familiarizing students with program requirements and faculty and providing an opportunity to meet others in their cohort.
2. Competency in experimental design and analysis. This may be fulfilled by previous graduate coursework (as determined by the student's advisor and committee), or by taking one graduate-level course. Two advanced courses in experimental design and analysis are offered, normally in alternate years. The first is Experimental Design & Analysis (BIOL 811), and the second is Design, Analysis, and Interpretation of Experiments (ANFS 933). Either course, or an equivalent approved by the student's advisor and committee e.g. Analysis of Ecological Communities and Complex Data (NR 909), can be used to fulfill this competency requirement.
3. Electives: Students will work with their advisor and committee to identify additional courses appropriate for their area of specialization and their career objectives. Recommendations often include coursework in professional writing and communication: Scientific Writing - Writing and Publishing Science (BIOL 902) is taught fall semester, and open to students at any stage of the program. Scientific Communication (BIOL 950) is usually taught in spring. Grant Writing (NR 905) is offered by the Department of Natural Resources.

Additional Information/Requirements

All students in the Biological Sciences Program are expected to present their research in public seminars (including the UNH Graduate Research Conference), and acquire teaching and/or mentoring experience.

A summary of M.S. and Ph.D. degree requirements is available at https://colsa.unh.edu/biological-sciences/program/ms/biological-sciences-marine-biology, along with the program's graduate handbook, which includes expectations, guidelines, and detailed policies.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Students will demonstrate expertise in quantitative skills including (a) basic math and statistics; (b) spreadsheet software; (c) graphical presentation of quantitative data.
- Students will demonstrate writing skills that enable them to prepare a scientific research paper in standard format for their field.
- Students will demonstrate competency in experimental design, including the ability to articulate a testable hypothesis and design an appropriate experiment to test it.

- Students will demonstrate communication skills including the ability to clearly explain scientific information to both professional and general audiences.
- Students will demonstrate broad understanding of fundamental areas of biology, especially areas relevant to their research project.

Marine Biology (Ph.D.)

https://colsa.unh.edu/biological-sciences/program/phd/biological-sciences-marine-biology

Description

The Marine Biology (MB) option is intended for students interested in marine, coastal, and estuarine ecosystems, and the organisms that inhabit them, at all levels of inquiry. Some UNH faculty use marine organisms as model systems for molecular phylogeny, cellular metabolism, and neurobiology, while others study the structure and function of marine ecosystems. Some faculty members focus primarily on basic research# others work in more applied areas such as aquaculture and fisheries# many combine the two. Students who have earned advanced degrees at UNH lead agencies involved in managing valuable marine resources, teach marine biology in academic and public settings, own aquaculture companies, or earn a living as researchers. In addition to on--campus facilities, UNH owns the Coastal Marine Laboratory and the Jackson Estuarine Laboratory, and a range of research vessels. UNH has an excellent SCUBA diving program for students interested in becoming certified to dive as part of their research. The Marine Biology option is also affiliated with UNH's School of Marine Sciences and Ocean Engineering.

Requirements

Ph.D. Degree Requirements

Students work with their advisor and their Doctoral Guidance Committee to plan a program of study including the required core courses and competencies, and develop a viable research proposal. The Guidance Committee is normally established by the end of the first semester, and should meet by the end of the second semester. The student presents to the Guidance Committee a preliminary research proposal in which the soundness, originality, and feasibility of the planned research are clearly described. The Guidance Committee is responsible for approving the proposal, and also oversees the qualifying examination through which the student is admitted to doctoral candidacy. The Doctoral Dissertation Committee is established at this point. To earn the Ph.D. degree, students must complete an original dissertation project, present the results at a public seminar, pass an oral dissertation defense consisting of questions from members of the Dissertation Committee, and have the dissertation approved by the Dissertation Committee and accepted by the Graduate School.

Number of Credits Required

There is no specific credit requirement for the Ph.D., though students must take required core courses and meet competency requirements. The Biological Sciences Program specifies 2 credits' worth of required coursework (BIOL 901 Introductory Graduate Seminar); most students use 6 more credits to satisfy the competency requirement in experimental design/analysis (BIOL 811 Experimental Design & Analysis or ANFS 933 Design, Analysis, and Interpretation of Experiments, 4 credits) and recommended coursework in writing/communication (BIOL 902 Writing and Publishing Science or BIOL 950 Scientific Communication, 2 credits). Other graduate coursework approved by the student's committee can substitute for any of these courses except BIOL 901 Introductory Graduate Seminar.

Up to 8 credits of graduate credit from another institution may be transferred, provided the credits were not counted toward another degree, and the course grade was a B or higher. Petitions requesting transfer credit must be supported by the advisor and graduate committee, and approved by the UNH Graduate School.

Required Courses, Competencies, and Electives

All students in the Biological Sciences Graduate Program are required to take Introductory Graduate Seminar (BIOL 901) and fulfill all applicable competency requirements (these may vary by option). Those with teaching assistantships (TAs) must enroll in College Teaching (LSA 900) before or concurrent with their first teaching assignment.

1. Core Course. Introductory Graduate Seminar (BIOL 901). This first-semester course focuses on key information and skills for a successful transition into the graduate program, familiarizing students with program requirements and faculty and providing an opportunity to meet others in their cohort.
2. Competency in experimental design and analysis. This may be fulfilled by previous graduate coursework (as determined by the student's advisor and committee), or by taking one graduate-level course. Two advanced courses in experimental design and analysis are offered, normally in alternate years. The first is Applied Biostatistics II (BIOL 811), and the second is Design, Analysis and Interpretation of Experiments (ANFS 933). Either course, or an equivalent approved by the student's advisor and committee (e.g. NR 909 Analysis of Ecological Communities and Complex Data), can be used to fulfill this competency requirement.
3. Electives. Students will work with their advisor and committee to identify additional courses appropriate for their area of specialization and their career objectives. Recommendations often include coursework in professional writing and communication: Scientific Writing (BIOL 902) is taught fall semester, and open to students at any stage of the program. Scientific Communication (BIOL 950) is usually taught in spring. A course in Grant Writing (NR 905) is offered by the Department of Natural Resources.

Additional Information/Requirements

All students in the Biological Sciences Program are expected to present their research in public seminars (including the UNH Graduate Research Conference), and acquire teaching and/or mentoring experience.

A summary degree requirements is available at https://colsa.unh.edu/biological-sciences/program/phd/biological-sciences-marine-biology, along with the program's graduate handbook, which includes expectations, guidelines, and detailed policies.

Student Learning Outcomes

- Students will demonstrate expertise in quantitative skills including (a) basic math and statistics; (b) spreadsheet software; (c) graphical presentation of quantitative data.

- Students will demonstrate writing skills that enable them to prepare a scientific research paper in standard format for their field.
- Students will demonstrate competency in experimental design, including the ability to articulate a testable hypothesis and design an appropriate experiment to test it.
- Students will demonstrate communication skills including the ability to clearly explain scientific information to both professional and general audiences.
- Students will demonstrate broad understanding of fundamental areas of biology, especially areas relevant to their research project.

Biotechnology (BIOT)

- Biotechnology: Industrial and Biomedical Sciences (M.S.) (p. 47)

Biotechnology: Industrial and Biomedical Sciences (M.S.)

https://manchester.unh.edu/program/ms/biotechnology-industrial-biomedical-sciences

Description

Biotechnology focuses on the application of the biological and biochemical sciences, and particularly genetics, to the preparation of new and enhanced biomedical, industrial, agricultural, and environmental products. Graduate instruction in this area would include molecular biology, cell and tissue culturing, protein biologic development, bioinformatics, functional and comparative genomics, applied immunology, DNA sequencing, tissue biology and engineering, industrial microbiology, drug development, intellectual property, clinical trials, biotechnology management and marketing, applicable regulations, and biotechnology ethics.

The M.S. in Biotechnology: Industrial and Biomedical Sciences (MS Biotech:IBMS) program at the University of New Hampshire is a STEM-designated graduate degree program that offers its students innovative experiential learning opportunities and delivers a content-rich, skills-based, and highly versatile curriculum for individuals seeking to advance their careers in the biotechnology, pharmaceutical, and biomanufacturing sectors. Students will complete a project, internship, or co-op experience as part of their degree program. The MS Biotech:IBMS program has a core foundation in the theory and wet-laboratory skills of cell and tissue biology and culturing; protein and immunologic methods and therapeutics; and the molecular biotechnology of nucleic acids. Students are also required to develop a substantial background understanding of biotech product lifecycle and the regulatory and legal implications therein. After demonstrating proficiency in the core biotechnology knowledge areas, MS Biotech:IBMS students will work with a faculty advisor to create a customized program of study that may include content from diverse graduate programs across the UNH campuses.

Full-time students can complete the program in 18 months. Students admitted from a UNH Bachelor's degree program can complete the Accelerated Master's program in 12 months depending on the courses completed during their undergraduate program. Students choosing the project or internship track would undertake an internship or internships in industry, applied research in an industrial job where the student is already employed, or research in a faculty member's laboratory at UNH. Students choosing the co-op work experience route would spend 6 months in a full-time industrial placement as part of their degree program.

The MS Biotech:IBMS program welcomes students from varied scientific and other backgrounds who have the required basic skills to succeed in the degree program. Normally, this background includes completion of a Bachelor's degree (GPA > 3.0) with an introductory biology two-course sequence with lab, a genetics course (lab not required), and at least one semester of organic chemistry. Students with non-biomedical Bachelor's degrees with these skills are encouraged to apply for admission. UNH Bachelor's degree students in a variety of curricular areas would similarly be able to apply for admission as an Accelerated student if they meet the pre-requisite requirements above. For all applicants, the MS Biotech:IBMS program recommends this additional level of preparation: one semester of microbiology with laboratory, one semester of bioethics, one semester of cell biology, one semester of statistics, one semester of mathematics to the pre-calculus or calculus level, and one semester of biochemistry. GREs are not required. International students must submit a TOEFL score or equivalent evidence of English proficiency as required by the UNH Graduate School.

The Biotechnology industry in New England is currently expanding at a substantial rate (2018 Job Trends Forecast, MassBioEd Foundation) and graduates of the M.S. in Biotechnology: Industrial and Biomedical Sciences program will be well-prepared for anticipated growth in jobs projected for the biotech R&D, medical testing laboratory, pharmaceutical and biotech manufacturing laboratory instrumentation, academic, and other sectors in New England in the coming years.

Requirements

Curriculum
The M.S. in Biotech:IBMS is offered in traditional and accelerated formats each of which require students to complete **30 credits** comprised of 4 Core Curriculum courses and a Graduate Biotech Seminar course (13 total credits), a series of Elective Courses (8-14 credits), and a Capstone experience (3-9 credits). Traditional full-time enrolled students will be able complete the degree in 18 months. UNH Bachelor's degree students entering into the Accelerated Master's program as full time students will be able to complete their degree in as little as 12 months.

Core Curriculum
The MS Biotech:IBMS core curriculum is centered around research project team-based lab courses. This provides you with important industry-relevant transferrable job skills, such as clear communication, cooperation and relationship building, teamwork and conflict resolution, and creative problem-solving and strategic thinking. These transferrable skills are developed hand-in-hand with the wet-lab skills. In addition to the core lab and lecture coursework covering the major industry areas of cell, molecular, and protein biochemistry, the program incorporates a core course entitled "Biotechnology Products and Regulation." This course takes a critical look at industry from the initial stages of research and development in the biomedical sciences through the legal and regulatory stages of biotechnology product development and manufacturing. This content is key to understanding how the biotech industry functions and thus is a centerpiece in your training in our degree program. Finally, you are required to enroll in a minimum of one graduate biotech seminar course. While the specific content of the seminar courses will vary to reflect the dynamics of the ever-changing biotech field, the two typical focus areas of the semester-long seminars will be *"Instrumentation in the Biotech Industry"* and *"Cutting edge topics in the Biotech Industry today".*

Code	Title	Credits
Course Requirements		
BIOT 877	Molecular Biology and Biotechnology (& Lab)	3
BIOT 853	Cell Culture (& Lab)	3
BIOT 825	Biotech Products and Regulation	3
BIOT 866	Protein and Immunological Techniques (& Lab)	3
BIOT 896	Graduate Seminar in Biotechnology	1
Elective Coursework [1]		**8-14**
Capstone Experience Options [2]		**3-9**
BIOT 889	Biotech Career Planning	1
Capstone A		
BIOT 893	Directed Graduate Research	3-6
Capstone B		
BIOT 891	Applied Research	3-6
or BIOT 892	Graduate Internship	
Capstone C		
BIOT 895	Graduate Co-op Experience	9

1 **Elective Courses**
In addition to the Core requirements, you will develop a curriculum plan with your Faculty Advisor that includes elective courses. This curriculum plan will be customized to meet your career goals. While most students will likely choose elective courses offered in the Department of Life Sciences at UNH Manchester, the program welcomes you to enroll in courses in other UNH colleges in order to complete your elective requirements. In some cases (and with the recommendation of the Faculty Advisor and approval of the Graduate Program Coordinator), courses not on the approved electives list may be incorporated into the curriculum plan.

2 **Capstone**
After completion of 9 credits in the MS Biotechnology program, students are required to enroll in at least one credit under Capstone Experience: BIOT 891, BIOT 892, BIOT 895, or BIOT 889. The capstone (up to 9 credits) will be designed and approved by your faculty advisor or the internship and co-op coordinator and will be consistent with your career development plans.
The capstone will consist of one of the following: **Capstone A**, a research project in a UNH Manchester faculty member's research laboratory (typically your Faculty Advisor); **Capstone B**, an internship or applied research experience in an industry setting (including the student's current workplace if applicable); or, **Capstone C**, an industry co-op experience. Capstone A or B may earn up to 6 credits, depending upon hours spent in experience as dictated by requirements for credit hours . Capstone C will be a 6 month industry placement at 40 hours per week and earn 9 credits. During your Capstone experience, you will be enrolled in a course in which you will report on your progress in your experience and interact with others participating in capstone experiences as dictated by capstone syllabi.

Accelerated Master's

Accelerated Master's Program for UNH Undergraduate Students

An exciting Accelerated Master's program leading to a combined Bachelor's degree (usually in a biological or biomedical field) at UNH and a Master's degree in Biotechnology: Industrial and Biomedical Sciences is designed for highly motivated and qualified students seeking additional training to further their career goals as a researcher and practitioner in the biotechnology field.

Students accepted into the program complete up to 12 graduate credits in combined 700/800-level courses during the student's senior year in their B.A. or B.S. program. The student must complete 30 total graduate level (800-999) credits of course work (including the dual credit courses). All other requirements for the M.S. degree are required. While five-year total time to completion of the Accelerated Master's dual degree is possible, actual time to completion will vary depending on the number of graduate credits taken during the completion of the undergraduate degree.

Student Learning Outcomes

A student successfully completing the Biotechnology:Industrial and Biomedical Sciences program will be able to:

- Demonstrate mastery of core knowledge in fundamental biochemical, cellular, and molecular biological principles, concepts, and theories.
- Demonstrate high-level practical laboratory skill in the areas of mammalian cell culture, molecular biology and microbiology, and protein techniques.
- Successfully employ knowledge of the regulatory and legal framework that underpins the field of industrial biotechnology, including knowledge of pre-clinical and clinical product development, relevant US government regulations and laws, and intellectual property concerns.
- Demonstrate the ability to communicate high-level technical information related to biotechnology in scientific writing and oral presentations to a variety of audiences.
- Understand, analyze, evaluate, and summarize primary research literature involving biotechnology related topics.
- Write at a level and in a style of English consistent with that found in leading academic journals, including understanding and properly using styles of citing, referencing, and formatting appropriate for the field.
- 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 expertise in quantitative skills including basic math and statistics, use of spreadsheet or statistical software, and graphical presentation of quantitative data.
- Deploy important biotechnology industry-relevant transferrable job skills, such as clear communication, cooperation and relationship building, teamwork and conflict resolution, and creative problem-solving and strategic thinking.
- Demonstrate the ability to function as a member and leader of a team.
- Form a core expertise in an area (or areas) of biotechnology (and allied fields) selected by the student, sufficient to conduct supervised research or other further work (such as industrial development) in that area.
- Successfully undertake a substantial Capstone experience (in industry or in an academic laboratory) in which the student demonstrates sufficient knowledge of the professional, experimental, ethical, communication, and laboratory standards relevant to the selected placement.

- Compete effectively for Masters-level employment and for admission to Ph.D. or other graduate programs in their chosen area and be successful in these endeavors.

Business Administration (ADMN)

University of New Hampshire Peter T. Paul College of Business and Economics

Degree Offered: MBA

Programs available in Durham, Manchester, and Online.

A nationally ranked MBA program that YOU design.

Earn your MBA from Paul College at the University of New Hampshire, the state's flagship university. What sets us apart is our distinct combination of rigor, relevance and world-class faculty. Our students come from various industries and functional areas like finance and marketing to engineering, law, healthcare and the military. Some are seeking growth within their current organizations, while others are looking to gain the skills and knowledge to change professions. You will fit right in.

We stand out from the competition:

- We are one of only 5 percent of business schools worldwide to hold AACSB (Association to Advance Collegiate Schools of Business) accreditation - the gold standard in business education.
- Our research-active faculty brings the analytical tools and cutting-edge insights to teaching, and our former executives and managers bring real-world perspective.
- Immersive learning experiences are built into the Full-Time MBA curriculum. These experiential opportunities allow you to encounter firsthand the business practices learned in the classroom, whether virtually or in-person.
- MBA programs are offered in Durham, on New Hampshire's seacoast, as well as core part-time classes in Manchester, the state's urban center -- both campuses situated an hour north of Boston. A 100% online option is also available.
- Beginning with a core curriculum focused on today's business needs, you can then customize your education by choosing one of seven industry-focused specializations: finance, information systems & business analytics, marketing, global business, growth & innovation, healthcare industry (exclusive to those enrolled in a part-time or online program), or hospitality management.
- We have a dedicated Career and Professional Success office to help you chart your post-graduation course.

Our Programs

Full-Time MBA

Whether you are a professional planning a career pivot or a graduating senior looking to broaden your understanding of business, the UNH Paul College Full-Time MBA program is for you. You will join a small cohort of driven individuals working together in a fast-paced learning environment. Completing your MBA in less than one year is a great return on your investment of both time and money. The curriculum includes 11 core courses that grow your skills in multiple areas of management, four electives, an internship, and a choice of six specialized options. The college integrates strong partnerships with the business community, and a corporate consulting project will culminate your MBA experience.

Part-Time MBA

If you are a working professional who is seeking a hybrid program to take some classes face-to-face, but with online classes also available, then our nationally ranked Part-Time MBA is for you. This innovative program offers 9 core classes to be taught in the evenings at our Durham and Manchester campuses and the wide range of elective classes delivered online. Taught by the same great faculty as our full-time program, the Part-Time MBA program allows you to take classes at a pace that works for your life, earning your degree in as little as 18 months. The curriculum includes nine core courses and seven electives. Part-Time MBA students have the flexibility to begin their program during any of the five term starts throughout the calendar year.

Online MBA

Our nationally ranked Online MBA program has everything the part-time program offers with the bonus of taking classes from anywhere around the world. It has rapidly become our most popular MBA model. The curriculum is identical to the part-time program, allowing students to mix and match online and/or face-to-face course offerings. The same great faculty who teach in our other programs teach classes asynchronously, adding to the flexibility of the online option. The quality of our student and faculty engagement and the services and technology support available make our online program stand out. Online MBA students have the flexibility to begin their program during any of the five term starts throughout the calendar year.

Admission Requirements

A portfolio approach to admissions is utilized. An applicant's work and/or military experience along with other indicators of maturity, motivation, and self-discipline are considered in addition to an applicant's academic record.

- Two years minimum professional experience (current seniors with high academic qualifications may also apply)
- 3.0 and above undergraduate GPA is typical of accepted applicants

https://paulcollege.unh.edu/mba

Programs

- Business Administration and Juris Doctor Dual Degree (M.B.A./J.D.) (p. 49)
- Business Administration: Full-Time (M.B.A.) (p. 51)
- Business Administration: Online (M.B.A.) (p. 53)
- Business Administration: Part-time (M.B.A.) (p. 55)
- Hospitality Management (Graduate Certificate) (p. 57)

Faculty

https://paulcollege.unh.edu/directory/all

Business Administration and Juris Doctor Dual Degree (M.B.A./J.D.)

https://paulcollege.unh.edu/program/mbajd/business-administration-juris-doctor-dual-degree

Description

JD/MBA- Juris Doctor and Master of Business Administration

Position yourself for career flexibility and versatility in law, business, and their intersections with dual JD/MBA degrees.

Highlights

- Paul College is an AACSB-accredited business school, placing our programs among the top 5% of MBA programs worldwide.
- You will develop leadership and management skills that enable you to lead law firms, public or governmental institutions, or large corporate enterprises.
- You will save time and money, as both degrees can be completed in just 3.5 years.
- You take the same courses, taught by the same world-class faculty, and have access to the same resources as other MBA students.
- You can take the core courses on the UNH Durham campus in the evenings or online, and all electives are hybrid or online.
- You will collaborate with working professionals with experience in a globally diverse range of industries.
- You will have your own personal MBA program advisor and access to career development tools and services.

Requirements

JD/MBA Degree Requirements

JD/MBA students start at the Law school for one year, then join our Part-Time Hybrid MBA for the remainder of their law program for a total of 3.5 years. JD/MBA students can apply 9 credits towards their MBA from their LAW courses; thus, only four (4) MBA electives are needed.

- **Core Classes**: Core coursework can be completed either at the UNH Durham campus or online.
- **Electives:** Electives will be completed online.
- **Student Availability**: Due to the nature of the dual degree program, JD and MBA classes are scheduled in both day and evening time slots. Therefore, the program is incompatible with full-time employment.
- **GPA**: Students must have a minimum **3.0 GPA** at graduation, and earn a **B- or better in all classes.**
- **Residency Opportunity Available**: A three-day financial residency in NYC and an international residency are available for interested JD/MBA students if the required elective is taken and additional fees are paid.

Core Courses

Code	Title	Credits
ADMN 912	Managing Yourself & Leading Others	3
ADMN 919	Accounting/Financial Reporting, Budgeting, and Analysis	3
ADMN 926	Leveraging Technology for Competitive Advantage	3
ADMN 930	Financial Management/Raising and Investing Money	3
ADMN 940	Managing Operations	3
ADMN 950	Data Driven Decisions	3
ADMN 960	Marketing/Building Customer Value	3
ADMN 970	Economics of Competition	3
ADMN 982	Creating Winning Strategies	3
ADMN 901	PAUL Assessment of MBA Core Knowledge	0
Additional Coursework:		**21**
Complete a Specialized Degree Option and Four Elective Courses		
or		
Complete Seven Elective Courses		
Total Credits		**48**

Note: JD/MBA students can apply 9 credits (LGP 920 Contracts, LGP 960 Torts, LGP 952 Property) toward their MBA from LAW courses, thus only 4 MBA electives are needed. Students also have the option to take all MBA electives.

Approved Elective Courses

Code	Title	Credits
ADMN 801	The U.S. Healthcare System	3
ADMN 827	Hospitality Operations & Financial Metrics	3
ADMN #828	Hospitality Asset and Financial Management	3
ADMN 829	Corporate Financial Strategy	3
ADMN 830	Investments	3
ADMN 834	Private Equity/Venture Capital	3
ADMN 835	Financial Institutions	3
ADMN 838	Equity Analysis and Firm Valuation	3
ADMN 840	International Business	3
ADMN 841	International Management	3
ADMN 842	Project Management	3
ADMN 845	Supply Chain Management	3
ADMN 846	International Financial Management	3
ADMN 847	Human Resource Management	3
ADMN 852	Marketing Research	3
ADMN 858	Revenue Management and Pricing Strategies	3
ADMN 860	International Marketing	3
ADMN 863	Marketing Analytics	3
ADMN 864	New Product Development	3
ADMN 865	Digital Marketing	3
ADMN 872	Predictive Analytics	3
ADMN 873	Data Management and Visualization	3
ADMN 875	Prescriptive Analytics	3
ADMN 882	Managing Growth and Innovation	3
ADMN 898	Topics (Leading Organizational Change)	3
ADMN 898	Topics (Applied Financial Modeling & Analytics)	3
ADMN 898	Topics (Financial Technology & Big Data)	3
ADMN 898	Topics (Financial Innovation and Derivatives)	3
ADMN 898	Topics (Consumer Behavior)	3
ADMN 898	Topics (Integrated Marketing Communications)	3
ADMN 992	Special Projects and Independent Study	1-6

***Not all approved electives are offered on a regular basis**

Student Learning Outcomes

MBA

- Students will demonstrate knowledge of content areas of business.
- Students will demonstrate ability to solve complex problems.
- Students will engage in effective team behaviors.
- Students will demonstrate effective communication behaviors.
- Students will demonstrate awareness of major challenges and opportunities of operating in a global environment.
- Students will demonstrate understanding of the ethical issues associated with managerial situations.
- Students will be able to identify complete spectrum of stakeholders affected by a business decision.

J.D.

- Legal analysis and reasoning: Graduates will be able to identify, comprehend, and apply the relevant substantive and procedural laws to solve a legal issue, informed by an understanding of the diversity of viewpoints on and contexts for any issue.
- Written and oral communication: Graduates will be able to present material effectively in these formats for both objective analytical and advocacy purposes across a range of settings, including in the courtroom.
- Professionalism: Graduates will be able to act in an ethical, respectful, and self-aware manner with all other stakeholders, including clients, employers, and the court.
- Legal research: Graduates will be able to navigate and assess relevant legal authorities using appropriate tools.
- Public service: Graduates will be able to contribute productively to strengthening the justice system, with a sensitivity toward the needs of people facing societal barriers.
- Problem solving: Graduates will be able to engage in focused and pragmatic collaboration toward goals.
- Client counseling and management: Graduates will be able to provide trustworthy and responsive action upon clients' matters.
- Factual investigation and analysis: Graduates will be able to implement a strategic plan for information-gathering, which includes the ability to iterate on the plan as needed, and evaluate the results of the information obtained.

Business Administration: Full-Time (M.B.A.)

https://paulcollege.unh.edu/business-administration/program/mba/business-administration-full-time

Description

Full-Time MBA

The Full-Time MBA program is a one-year, cohort-based MBA program that includes a corporate consulting project and internship opportunities.

Highlights

- Paul College is an AACSB-accredited business school, placing our programs among the top 6% of MBA programs worldwide.
- Students acquire the knowledge and skills associated with a two-year MBA program in one year, returning to the workforce faster.
- Students take all core courses as part of a cohort, benefiting from extensive team-based learning.
- Students take electives with Part-Time (in Durham or Manchester) and Online MBA students, gaining exposure to working professionals in a variety of industries.
- As part of their core curriculum, students participate in a residency focused on global business. Details of this residency may vary depending on travel and contact restrictions (for example, they may be virtual experiences).
- Merit scholarships are available.
- Six MBA options are available, but are not required.
  - Finance
  - Information Systems & Business Analytics
  - Marketing
  - Global Business
  - Growth and Innovation
  - Hospitality Management

Requirements

Full-Time MBA Degree Requirements

The curriculum for the one-year accelerated Full-Time MBA program begins in August on the Durham campus. Some students may be eligible to finish the program in 9 months.

- **Credits**: Students will complete **16 courses, or 48 credits.**
- **Student Availability**: Due to the nature of the program, classes are scheduled in both day and evening time slots; therefore, the program is incompatible with full-time employment.
- **GPA**: Students must have a minimum **3.0 GPA** at graduation, and earn a **B- or better in all classes.**
- **Required Residency**: Students participate in a residency as part of their core curriculum. Details of this residency may vary depending on travel and contact restrictions.
- **Corporate Consulting Project (CCP):** The CCP provides an immediate opportunity to apply MBA program knowledge to a real business challenge. Small student-teams are matched with local organizations from various industries. Each team works closely with a client organization and faculty advisers to provide business consulting expertise. At the end of the CCP, each team presents their recommendations to their client organization.
- **Internship:** Students should expect to complete an internship during terms 4 and 5 unless they receive a waiver based on significant prior professional experience. Students with more than two years of professional work experience are also encouraged to engage in an internship in order to explore new fields or functions.

Core Courses

Code	Title	Credits
Full-Time MBA Curriculum		
ADMN 912	Managing Yourself & Leading Others	3
ADMN 919	Accounting/Financial Reporting, Budgeting, and Analysis	3
ADMN 926	Leveraging Technology for Competitive Advantage	3
ADMN 970	Economics of Competition	3
ADMN 930	Financial Management/Raising and Investing Money	3
ADMN 950	Data Driven Decisions	3
ADMN 960	Marketing/Building Customer Value	3
ADMN 840	International Business	3
ADMN 940	Managing Operations	3
ADMN 982	Creating Winning Strategies	3
ADMN 905	Corporate Consulting Project	3
ADMN 901	PAUL Assessment of MBA Core Knowledge	0
ADMN 902	MBA Internship [1]	3
4 Elective Courses [2]		12
Total Credits		**48**

1 This is normally completed in the summer term, but if an earlier start is needed, students can register for this for 1 credit in term 4, and for the remaining 2 credits in the summer term.

2 The Full-Time MBA curriculum is complete at the end of Term 5 with a total of 48 credits. Students have the option of taking electives in Term 5 to complete their degree.

Specialized Degree Options

Business Administration: Finance

This option provides students with the tools necessary to make informed financial decisions for themselves and their organizations. Finance students and professionals utilize an exciting mix of quantitative analysis, strategic thinking, and creativity. Opportunities exist in a variety of fields, including commercial and investment banking, corporate finance, asset management, risk management, real estate, and private equity.

Code	Title	Credits
Finance Option Requirements		
ADMN 829	Corporate Financial Strategy	3
ADMN 830	Investments	3
Select one of the following:		3
ADMN 835	Financial Institutions	
ADMN 838	Equity Analysis and Firm Valuation	
ADMN 846	International Financial Management	
ADMN 898	Topics (Applied Financial Modeling and Analytics)	
ADMN 898	Topics (Financial Innovation and Derivatives)	
ADMN 898	Topics (Financial Technology and Big Data)	
Total Credits		**9**

Business Administration: Global Business

This option helps students develop their global awareness, understanding, and competence so to that they can compete and lead effectively in a transnational environment. Job outlook includes graduate careers abroad or in organizations that are engaged in business or initiatives with a global scope.

Code	Title	Credits
Global Business Option Requirements		
ADMN 840	International Business	3
Select two of the following:		6
ADMN 841	International Management	
ADMN 846	International Financial Management	
ADMN 860	International Marketing	
Total Credits		**9**

Business Administration: Growth and Innovation

This option provides students with knowledge, skills, and an entrepreneurial mindset to apply in smaller, newer firms as well as in larger, established companies in order to drive organizational growth, innovation and change. These can be applied in a range of contexts, including new ventures, corporate entrepreneurship, and social enterprises.

Code	Title	Credits
Growth and Innovation Option Requirements		
ADMN 882	Managing Growth and Innovation	3
Select two of the following:		6
ADMN 834	Private Equity/Venture Capital	
ADMN 841	International Management	
ADMN 864	New Product Development	
ADMN 898	Topics (Leading Organizational Change)	
Total Credits		**9**

BUSINESS ADMINISTRATION: HEALTHCARE INDUSTRY

This option is designed to provide students already in the healthcare field or those interested in entering it with foundational knowledge of the U.S. Healthcare system and health policy, as well as analytic approaches for improving it.

Code	Title	Credits
Healthcare Industry Option Requirements		
Select one of the following:		3
ADMN 801	The U.S. Healthcare System	
NURS 901	Health Policy	
NURS 969	Health Systems Policy, Economics & Financial Planning	
Select two of the following:		6
NURS 973	Quality & Safety	
NURS 960	Healthcare Finance Management	
NURS 963	Biostats and Epidemiology	
NURS 933	Applied Analytics for QI in Health Care	
NURS 964	Information Systems and Technology Improvement	
Total Credits		**9**

Business Administration: Hospitality Management

This option is directed toward working professionals, positioning them for additional career growth and advancement in the industry. For students who wants to take a coherent set of advanced hospitality management courses offered within the general framework of the MBA, these course offerings provide opportunities in a wide variety of areas, including human resources, operations, and asset management and finance.

Code	Title	Credits
Hospitality Management Option Requirements		
ADMN 847	Human Resource Management	3
ADMN 827	Hospitality Operations & Financial Metrics	3
ADMN #828	Hospitality Asset and Financial Management	3
ADMN 858	Revenue Management and Pricing Strategies	3
Total Credits		**12**

Business Administration: Information Systems and Business Analytics

This option provides students with knowledge and skills in the areas of business analytics: descriptive, predictive, and prescriptive. These tangible abilities will enable graduates to bring added value to any organization through data analysis and visualization; predicting/forecasting future probabilities and trends; and helping decision makers evaluate and determine the best ways to achieve business objectives in resource-constrained environments, while also quantifying the risk present in business situations due to uncertainty.

Code	Title	Credits
Information Systems and Business Analytics Option Requirements		
ADMN 873	Data Management and Visualization	3
ADMN 872	Predictive Analytics	3
Select one of the following:		3
ADMN 845	Supply Chain Management	
ADMN 863	Marketing Analytics	
ADMN 875	Prescriptive Analytics	
ADMN 898	Topics (Applied Financial Modeling and Analytics)	
ADMN 898	Topics (Financial Technology and Big Data)	
Total Credits		**9**

Business Administration: Marketing

This option is designed around the three strategic initiatives of the marketing department: Marketing Analytics, Digital Marketing, and New Product Development. Flexibility within specialization provides tracks for less seasoned students (Marketing Analytics and tools), and for more seasoned students (Product and Service innovation focus). Designed to help students recognize, prioritize, and execute opportunities for growth through new and existing customers.

Code	Title	Credits
Marketing Option Requirements		**9**
Minimum of three courses are required to complete the option.		

Select two or three courses from the following:		
ADMN 852	Marketing Research	
ADMN 863	Marketing Analytics	
ADMN 864	New Product Development	
ADMN 865	Digital Marketing	
Select one additional course from the following if needed:		
ADMN #888	Strategic Pricing	
ADMN 860	International Marketing	
ADMN 898	Topics (Consumer Behavior)	
Total Credits		**9**

Approved Elective Courses

Code	Title	Credits
ADMN 801	The U.S. Healthcare System	3
ADMN 827	Hospitality Operations & Financial Metrics	3
ADMN #828	Hospitality Asset and Financial Management	3
ADMN 829	Corporate Financial Strategy	3
ADMN 830	Investments	3
ADMN 834	Private Equity/Venture Capital	3
ADMN 835	Financial Institutions	3
ADMN 838	Equity Analysis and Firm Valuation	3
ADMN 840	International Business	3
ADMN 841	International Management	3
ADMN 842	Project Management	3
ADMN 845	Supply Chain Management	3
ADMN 846	International Financial Management	3
ADMN 847	Human Resource Management	3
ADMN 852	Marketing Research	3
ADMN 858	Revenue Management and Pricing Strategies	3
ADMN 860	International Marketing	3
ADMN 863	Marketing Analytics	3
ADMN 864	New Product Development	3
ADMN 865	Digital Marketing	3
ADMN 872	Predictive Analytics	3
ADMN 873	Data Management and Visualization	3
ADMN 875	Prescriptive Analytics	3
ADMN 882	Managing Growth and Innovation	3
ADMN 898	Topics (Leading Organizational Change)	3
ADMN 898	Topics (Applied Financial Modeling & Analytics)	3
ADMN 898	Topics (Financial Technology & Big Data)	3
ADMN 898	Topics (Financial Innovation and Derivatives)	3
ADMN 898	Topics (Consumer Behavior)	3
ADMN 898	Topics (Integrated Marketing Communications)	3
ADMN 992	Special Projects and Independent Study	1-6

***Not all approved electives are offered on a regular basis**

Degree Plan

Code	Title	Credits
Full-Time Curriculum Schedule (8 week Terms)		
Term 1 (Aug-Oct):		
ADMN 912	Managing Yourself & Leading Others	3
ADMN 919	Accounting/Financial Reporting, Budgeting, and Analysis	3
ADMN 926	Leveraging Technology for Competitive Advantage	3
ADMN 970	Economics of Competition	3
Term 2 (Oct-Dec):		
ADMN 930	Financial Management/Raising and Investing Money	3
ADMN 950	Data Driven Decisions	3
ADMN 960	Marketing/Building Customer Value	3
Elective		3
Term 3 (Jan-March):		
ADMN 840	International Business	3
ADMN 940	Managing Operations	3
Elective		3
Elective		3
Term 4 (March-May):		
ADMN 982	Creating Winning Strategies	3
ADMN 905	Corporate Consulting Project	3
ADMN 901	PAUL Assessment of MBA Core Knowledge	0
Elective		3
Term 5 (May-July)		
ADMN 902 Internship or Elective		3
Total Credits		**48**

Student Learning Outcomes

MBA graduates will be able to:

- Synthesize and apply knowledge across business disciplines.
- Apply analytical tools to solve complex organizational problems.
- Apply theories and frameworks to effectively lead teams and organizations.
- Communicate quantitative and qualitative assessments of business information.
- Identify and evaluate opportunities and challenges in the global business environment.
- Identify opportunities to strengthen and extend ethical and sustainable business practices; consider and address the relevant range of stakeholders affected by business decisions.
- Identify opportunities to strengthen and extend diversity, equity, inclusion, and belongingness in the work environment.

Business Administration: Online (M.B.A.)

https://paulcollege.unh.edu/program/mba/business-administration-online

Description

ONLINE MBA

The Online MBA program is nationally ranked by U.S. News & World Report and gives you the opportunity to enhance your career with the flexibility to learn on your own schedule.

Highlights

- We are the only Online MBA program in the state of New Hampshire in an AACSB-accredited college or university. This places our program among the top 6% of MBA programs worldwide.
- You take the same courses, taught by the same world-class faculty, and have access to the same resources as Full-Time or Part-Time MBA students.
- Earn your MBA in 18 to 42 months from anywhere in the world.
- You can access course materials 24 hours a day, seven days a week.
- You will collaborate with working professionals with experience in a globally diverse range of industries.
- You will have your own personal program advisor and access to career development tools and services.
- Seven MBA specializations are available, but are not required:
    - Finance
    - Global Business
    - Growth & Innovation
    - Healthcare Industry

- Hospitality Management
- Information Systems & Business Analytics
- Marketing

Requirements

Online MBA Requirements

Online MBA students have the flexibility to begin their program at multiple, designated term starts throughout the calendar year.

- **Credits**: Students will complete **16 courses**, or **48 credits** (9 core, 7 electives).
- **GPA**: Students must have a **minimum 3.0 GPA** at graduation, and earn a **B- or better** in all classes.
- **Program length**: Students can complete the program requirements in **18 to 42 months**.

Core Courses

Code	Title	Credits
ADMN 912	Managing Yourself & Leading Others	3
ADMN 919	Accounting/Financial Reporting, Budgeting, and Analysis	3
ADMN 926	Leveraging Technology for Competitive Advantage	3
ADMN 930	Financial Management/Raising and Investing Money	3
ADMN 940	Managing Operations	3
ADMN 950	Data Driven Decisions	3
ADMN 960	Marketing/Building Customer Value	3
ADMN 970	Economics of Competition	3
ADMN 982	Creating Winning Strategies	3
ADMN 901	PAUL Assessment of MBA Core Knowledge	0
Additional Coursework:		**21**
Complete a Specialized Degree Option and Four Elective Courses		
or		
Complete Seven Elective Courses		
Total Credits		**48**

Specialized Degree Options

Business Administration: Finance

This option provides students with the tools necessary to make informed financial decisions for themselves and their organizations. Finance students and professionals utilize an exciting mix of quantitative analysis, strategic thinking, and creativity. Opportunities exist in a variety of fields, including commercial and investment banking, corporate finance, asset management, risk management, real estate, and private equity.

Code	Title	Credits
Finance Option Requirements		
ADMN 829	Corporate Financial Strategy	3
ADMN 830	Investments	3
Select one of the following:		3
ADMN 835	Financial Institutions	
ADMN 838	Equity Analysis and Firm Valuation	
ADMN 846	International Financial Management	
ADMN 898	Topics (Applied Financial Modeling and Analytics)	
ADMN 898	Topics (Financial Innovation and Derivatives)	
ADMN 898	Topics (Financial Technology and Big Data)	
Total Credits		**9**

Business Administration: Global Business

This option helps students develop their global awareness, understanding, and competence so to that they can compete and lead effectively in a transnational environment. Job outlook includes graduate careers abroad or in organizations that are engaged in business or initiatives with a global scope.

Code	Title	Credits
Global Business Option Requirements		
ADMN 840	International Business	3
Select two of the following:		6
ADMN 841	International Management	
ADMN 846	International Financial Management	
ADMN 860	International Marketing	
Total Credits		**9**

Business Administration: Growth and Innovation

This option provides students with knowledge, skills, and an entrepreneurial mindset to apply in smaller, newer firms as well as in larger, established companies in order to drive organizational growth, innovation and change. These can be applied in a range of contexts, including new ventures, corporate entrepreneurship, and social enterprises.

Code	Title	Credits
Growth and Innovation Option Requirements		
ADMN 882	Managing Growth and Innovation	3
Select two of the following:		6
ADMN 834	Private Equity/Venture Capital	
ADMN 841	International Management	
ADMN 864	New Product Development	
ADMN 898	Topics (Leading Organizational Change)	
Total Credits		**9**

BUSINESS ADMINISTRATION: HEALTHCARE INDUSTRY

This option is designed to provide students already in the healthcare field or those interested in entering it with foundational knowledge of the U.S. Healthcare system and health policy, as well as analytic approaches for improving it.

Code	Title	Credits
Healthcare Industry Option Requirements		
Select one of the following:		3
ADMN 801	The U.S. Healthcare System	
NURS 901	Health Policy	
NURS 969	Health Systems Policy, Economics & Financial Planning	
Select two of the following:		6
NURS 973	Quality & Safety	
NURS 960	Healthcare Finance Management	
NURS 963	Biostats and Epidemiology	
NURS 933	Applied Analytics for QI in Health Care	
NURS 964	Information Systems and Technology Improvement	
Total Credits		**9**

Business Administration: Hospitality Management

This option is directed toward working professionals, positioning them for additional career growth and advancement in the industry. For students who wants to take a coherent set of advanced hospitality management courses offered within the general framework of the MBA, these course offerings provide opportunities in a wide variety of areas, including human resources, operations, and asset management and finance.

Code	Title	Credits
Hospitality Management Option Requirements		
ADMN 847	Human Resource Management	3
ADMN 827	Hospitality Operations & Financial Metrics	3
ADMN #828	Hospitality Asset and Financial Management	3

ADMN 858	Revenue Management and Pricing Strategies	3
Total Credits		**12**

Business Administration: Information Systems and Business Analytics

This option provides students with knowledge and skills in the areas of business analytics: descriptive, predictive, and prescriptive. These tangible abilities will enable graduates to bring added value to any organization through data analysis and visualization; predicting/forecasting future probabilities and trends; and helping decision makers evaluate and determine the best ways to achieve business objectives in resource-constrained environments, while also quantifying the risk present in business situations due to uncertainty.

Code	Title	Credits
Information Systems and Business Analytics Option Requirements		
ADMN 873	Data Management and Visualization	3
ADMN 872	Predictive Analytics	3
Select one of the following:		3
ADMN 845	Supply Chain Management	
ADMN 863	Marketing Analytics	
ADMN 875	Prescriptive Analytics	
ADMN 898	Topics (Applied Financial Modeling and Analytics)	
ADMN 898	Topics (Financial Technology and Big Data)	
Total Credits		**9**

Business Administration: Marketing

This option is designed around the three strategic initiatives of the marketing department: Marketing Analytics, Digital Marketing, and New Product Development. Flexibility within specialization provides tracks for less seasoned students (Marketing Analytics and tools), and for more seasoned students (Product and Service innovation focus). Designed to help students recognize, prioritize, and execute opportunities for growth through new and existing customers.

Code	Title	Credits
Marketing Option Requirements		**9**
Minimum of three courses are required to complete the option.		
Select two or three courses from the following:		
ADMN 852	Marketing Research	
ADMN 863	Marketing Analytics	
ADMN 864	New Product Development	
ADMN 865	Digital Marketing	
Select one additional course from the following if needed:		
ADMN #888	Strategic Pricing	
ADMN 860	International Marketing	
ADMN 898	Topics (Consumer Behavior)	
Total Credits		**9**

Approved Elective Courses

Code	Title	Credits
ADMN 801	The U.S. Healthcare System	3
ADMN 827	Hospitality Operations & Financial Metrics	3
ADMN #828	Hospitality Asset and Financial Management	3
ADMN 829	Corporate Financial Strategy	3
ADMN 830	Investments	3
ADMN 834	Private Equity/Venture Capital	3
ADMN 835	Financial Institutions	3
ADMN 838	Equity Analysis and Firm Valuation	3
ADMN 840	International Business	3
ADMN 841	International Management	3
ADMN 842	Project Management	3
ADMN 845	Supply Chain Management	3
ADMN 846	International Financial Management	3
ADMN 847	Human Resource Management	3
ADMN 852	Marketing Research	3
ADMN 858	Revenue Management and Pricing Strategies	3
ADMN 860	International Marketing	3
ADMN 863	Marketing Analytics	3
ADMN 864	New Product Development	3
ADMN 865	Digital Marketing	3
ADMN 872	Predictive Analytics	3
ADMN 873	Data Management and Visualization	3
ADMN 875	Prescriptive Analytics	3
ADMN 882	Managing Growth and Innovation	3
ADMN 898	Topics (Leading Organizational Change)	3
ADMN 898	Topics (Applied Financial Modeling & Analytics)	3
ADMN 898	Topics (Financial Technology & Big Data)	3
ADMN 898	Topics (Financial Innovation and Derivatives)	3
ADMN 898	Topics (Consumer Behavior)	3
ADMN 898	Topics (Integrated Marketing Communications)	3
ADMN 992	Special Projects and Independent Study	1-6

***Not all approved electives are offered on a regular basis**

Student Learning Outcomes

MBA graduates will be able to:

- Synthesize and apply knowledge across business disciplines.
- Apply analytical tools to solve complex organizational problems.
- Apply theories and frameworks to effectively lead teams and organizations.
- Communicate quantitative and qualitative assessments of business information.
- Identify and evaluate opportunities and challenges in the global business environment.
- Identify opportunities to strengthen and extend ethical and sustainable business practices; consider and address the relevant range of stakeholders affected by business decisions.
- Identify opportunities to strengthen and extend diversity, equity, inclusion, and belongingness in the work environment.

Business Administration: Part-time (M.B.A.)

https://paulcollege.unh.edu/business-administration/program/mba/business-administration-part-time-or-online

Description

Part--Time Hybrid MBA

The Part-Time Hybrid MBA is an excellent choice designed for professionals in the workforce who are seeking to advance their careers. Core classes meet from 5:40 - 9:15 p.m. once a week during each eight-week term. Elective classes meet in hybrid or online formats.

Highlights

- Paul College is an AACSB-accredited business school, placing our programs among the top 6% of MBA programs worldwide.
- You take the same courses, taught by the same world-class faculty, and have access to the same resources as Full-Time MBA students.
- You can begin your program at multiple, designated term starts throughout the calendar year and can earn your MBA in 18-42 months.

- You will collaborate with working professionals with experience in a globally diverse range of industries.
- You will have your own personal program advisor and access to career development tools and services.
- Seven MBA specializations are available, but are not required:
  - Finance
  - Global Business
  - Growth & Innovation
  - Healthcare Industry
  - Hospitality Management
  - Information Systems & Business Analytics
  - Marketing
- You have the opportunity to participate in an international residency after completing the International Business course.

Requirements

Part-Time MBA Requirements

- **Credits**: Students will complete **16 courses, or 48 credits** (9 core, 7 electives).
- **GPA**: Students must have a minimum **3.0 GPA** at graduation, and earn a **B- or better in all classes.**
- **Program length:** Students can earn their MBA in **18 to 42 months**.

Core Courses

Code	Title	Credits
ADMN 912	Managing Yourself & Leading Others	3
ADMN 919	Accounting/Financial Reporting, Budgeting, and Analysis	3
ADMN 926	Leveraging Technology for Competitive Advantage	3
ADMN 930	Financial Management/Raising and Investing Money	3
ADMN 940	Managing Operations	3
ADMN 950	Data Driven Decisions	3
ADMN 960	Marketing/Building Customer Value	3
ADMN 970	Economics of Competition	3
ADMN 982	Creating Winning Strategies	3
ADMN 901	PAUL Assessment of MBA Core Knowledge	0
Additional Coursework:		**21**
Complete a Specialized Degree Option and Four Elective Courses		
or		
Complete Seven Elective Courses		
Total Credits		**48**

Specialized Degree Options

Business Administration: Finance

This option provides students with the tools necessary to make informed financial decisions for themselves and their organizations. Finance students and professionals utilize an exciting mix of quantitative analysis, strategic thinking, and creativity. Opportunities exist in a variety of fields, including commercial and investment banking, corporate finance, asset management, risk management, real estate, and private equity.

Code	Title	Credits
Finance Option Requirements		
ADMN 829	Corporate Financial Strategy	3
ADMN 830	Investments	3
Select one of the following:		3
ADMN 835	Financial Institutions	
ADMN 838	Equity Analysis and Firm Valuation	
ADMN 846	International Financial Management	
ADMN 898	Topics (Applied Financial Modeling and Analytics)	
ADMN 898	Topics (Financial Innovation and Derivatives)	
ADMN 898	Topics (Financial Technology and Big Data)	
Total Credits		**9**

Business Administration: Global Business

This option helps students develop their global awareness, understanding, and competence so to that they can compete and lead effectively in a transnational environment. Job outlook includes graduate careers abroad or in organizations that are engaged in business or initiatives with a global scope.

Code	Title	Credits
Global Business Option Requirements		
ADMN 840	International Business	3
Select two of the following:		6
ADMN 841	International Management	
ADMN 846	International Financial Management	
ADMN 860	International Marketing	
Total Credits		**9**

Business Administration: Growth and Innovation

This option provides students with knowledge, skills, and an entrepreneurial mindset to apply in smaller, newer firms as well as in larger, established companies in order to drive organizational growth, innovation and change. These can be applied in a range of contexts, including new ventures, corporate entrepreneurship, and social enterprises.

Code	Title	Credits
Growth and Innovation Option Requirements		
ADMN 882	Managing Growth and Innovation	3
Select two of the following:		6
ADMN 834	Private Equity/Venture Capital	
ADMN 841	International Management	
ADMN 864	New Product Development	
ADMN 898	Topics (Leading Organizational Change)	
Total Credits		**9**

BUSINESS ADMINISTRATION: HEALTHCARE INDUSTRY

This option is designed to provide students already in the healthcare field or those interested in entering it with foundational knowledge of the U.S. Healthcare system and health policy, as well as analytic approaches for improving it.

Code	Title	Credits
Healthcare Industry Option Requirements		
Select one of the following:		3
ADMN 801	The U.S. Healthcare System	
NURS 901	Health Policy	
NURS 969	Health Systems Policy, Economics & Financial Planning	
Select two of the following:		6
NURS 973	Quality & Safety	
NURS 960	Healthcare Finance Management	
NURS 963	Biostats and Epidemiology	
NURS 933	Applied Analytics for QI in Health Care	
NURS 964	Information Systems and Technology Improvement	
Total Credits		**9**

Business Administration: Hospitality Management

This option is directed toward working professionals, positioning them for additional career growth and advancement in the industry. For students who wants to take a coherent set of advanced hospitality management courses offered within the general framework of the MBA, these course

offerings provide opportunities in a wide variety of areas, including human resources, operations, and asset management and finance.

Code	Title	Credits
Hospitality Management Option Requirements		
ADMN 847	Human Resource Management	3
ADMN 827	Hospitality Operations & Financial Metrics	3
ADMN #828	Hospitality Asset and Financial Management	3
ADMN 858	Revenue Management and Pricing Strategies	3
Total Credits		**12**

Business Administration: Information Systems and Business Analytics

This option provides students with knowledge and skills in the areas of business analytics: descriptive, predictive, and prescriptive. These tangible abilities will enable graduates to bring added value to any organization through data analysis and visualization; predicting/forecasting future probabilities and trends; and helping decision makers evaluate and determine the best ways to achieve business objectives in resource-constrained environments, while also quantifying the risk present in business situations due to uncertainty.

Code	Title	Credits
Information Systems and Business Analytics Option Requirements		
ADMN 873	Data Management and Visualization	3
ADMN 872	Predictive Analytics	3
Select one of the following:		3
ADMN 845	Supply Chain Management	
ADMN 863	Marketing Analytics	
ADMN 875	Prescriptive Analytics	
ADMN 898	Topics (Applied Financial Modeling and Analytics)	
ADMN 898	Topics (Financial Technology and Big Data)	
Total Credits		**9**

Business Administration: Marketing

This option is designed around the three strategic initiatives of the marketing department: Marketing Analytics, Digital Marketing, and New Product Development. Flexibility within specialization provides tracks for less seasoned students (Marketing Analytics and tools), and for more seasoned students (Product and Service innovation focus). Designed to help students recognize, prioritize, and execute opportunities for growth through new and existing customers.

Code	Title	Credits
Marketing Option Requirements		**9**
Minimum of three courses are required to complete the option.		
Select two or three courses from the following:		
ADMN 852	Marketing Research	
ADMN 863	Marketing Analytics	
ADMN 864	New Product Development	
ADMN 865	Digital Marketing	
Select one additional course from the following if needed:		
ADMN #888	Strategic Pricing	
ADMN 860	International Marketing	
ADMN 898	Topics (Consumer Behavior)	
Total Credits		**9**

Approved Elective Courses

Code	Title	Credits
ADMN 801	The U.S. Healthcare System	3
ADMN 827	Hospitality Operations & Financial Metrics	3
ADMN #828	Hospitality Asset and Financial Management	3
ADMN 829	Corporate Financial Strategy	3
ADMN 830	Investments	3
ADMN 834	Private Equity/Venture Capital	3
ADMN 835	Financial Institutions	3
ADMN 838	Equity Analysis and Firm Valuation	3
ADMN 840	International Business	3
ADMN 841	International Management	3
ADMN 842	Project Management	3
ADMN 845	Supply Chain Management	3
ADMN 846	International Financial Management	3
ADMN 847	Human Resource Management	3
ADMN 852	Marketing Research	3
ADMN 858	Revenue Management and Pricing Strategies	3
ADMN 860	International Marketing	3
ADMN 863	Marketing Analytics	3
ADMN 864	New Product Development	3
ADMN 865	Digital Marketing	3
ADMN 872	Predictive Analytics	3
ADMN 873	Data Management and Visualization	3
ADMN 875	Prescriptive Analytics	3
ADMN 882	Managing Growth and Innovation	3
ADMN 898	Topics (Leading Organizational Change)	3
ADMN 898	Topics (Applied Financial Modeling & Analytics)	3
ADMN 898	Topics (Financial Technology & Big Data)	3
ADMN 898	Topics (Financial Innovation and Derivatives)	3
ADMN 898	Topics (Consumer Behavior)	3
ADMN 898	Topics (Integrated Marketing Communications)	3
ADMN 992	Special Projects and Independent Study	1-6

***Not all approved electives are offered on a regular basis**

Student Learning Outcomes

MBA graduates will be able to:

- Synthesize and apply knowledge across business disciplines.
- Apply analytical tools to solve complex organizational problems.
- Apply theories and frameworks to effectively lead teams and organizations.
- Communicate quantitative and qualitative assessments of business information.
- Identify and evaluate opportunities and challenges in the global business environment.
- Identify opportunities to strengthen and extend ethical and sustainable business practices; consider and address the relevant range of stakeholders affected by business decisions.
- Identify opportunities to strengthen and extend diversity, equity, inclusion, and belongingness in the work environment.

Hospitality Management (Graduate Certificate)

https://paulcollege.unh.edu/hospitality-management/program/certificate/hospitality-management

Description

Beginning in the 2023-2024 academic year, the Hospitality Management Graduate Certificate is pausing admissions to the program. Current students will continue to have access to the same high-quality education and resources until they graduate.

Hospitality Management (Graduate Certificate)

The Hospitality Management Graduate Certificate, offered fully online, will help you develop sought-after competencies in asset and revenue management, human resources management, and advanced financial management. These competencies will help you excel in your career and advance your company's performance. Students can pursue the certificate alone or in conjunction with a graduate degree.

Highlights

- You will take courses alongside MBA students and be taught by the same world-class faculty.
- You will collaborate with working professionals in diverse sectors of the hospitality industry.
- You will have access to a program advisor and career development tools.

Requirements

Credits: Students will complete 4 courses for a total of **12 credits.**

GPA: Students must have a **minimum 3.0 GPA** at graduation, and **earn a B- or better in all classes**.

Code	Title	Credits
Required Courses		
ADMN 858	Revenue Management and Pricing Strategies	3
ADMN 827	Hospitality Operations & Financial Metrics	3
ADMN 847	Human Resource Management	3
ADMN #828	Hospitality Asset and Financial Management	3
Total Credits		**12**

Chemical Engineering & Bioengineering (CHBE)

Degrees Offered: Ph.D., M.Eng., M.S.

This program is offered in Durham.

The Department of Chemical Engineering and Bioengineering offers the M.Eng. degree, M.S. degree, and Ph.D. degree in Chemical Engineering. All levels include research opportunities in biomaterials, biomedical engineering, biophysics, catalysis, chemical and biosensors, energy storage, electrochemical engineering, modeling and simulation, synthetic biology, and tissue engineering.

https://ceps.unh.edu/chemical-bioengineering

Programs

- Chemical Engineering (Ph.D.) (p. 58)
- Chemical Engineering (M.Eng.) (p. 59)
- Chemical Engineering (M.S.) (p. 60)

Faculty

Chemical Engineering and Bioengineering Faculty

Chemical Engineering (Ph.D.)

https://ceps.unh.edu/chemical-bioengineering/program/phd/chemical-engineering

Description

Our chemical engineering Ph.D. will give you intensive research experience alongside a solid foundation in the fundamental principles of chemical engineering, preparing you forhighly selective careers in academia, research and related fields. You'll learn to apply knowledge of mathematics, science and engineering to identify, formulate and solve chemical engineering problems.

Admission Requirements

Students admitted to the Ph.D. program normally have a master's degree in chemical engineering. Exceptional students with a baccalaureate degree in chemical engineering are eligible for admission to the program. To be admitted, students must present evidence that they have a strong foundation in chemical engineering. Applicants must submit current scores (within five years) from the general test of the Graduate Record Examination. International students are required to submit TOEFL test scores. IELTS scores are accepted on a case-by--case basis, and students must have a minimum score of 6.5.

Requirements

Ph.D. Degree Requirements

PhD students will complete the following core chemical engineering courses:

Code	Title	Credits
CHBE 900	Seminar [1]	0 or 1
CHBE 923	Advanced Chemical Engineering Thermodynamics	3
CHBE 932	Advanced Chemical Engineering Kinetics	3
CHBE 940	Advanced Transport Phenomena	3

[1] Students should register for CHBE 900 for 1 credit each in their first two semesters and 0 credits each additional semester until their degree is granted.

Those students admitted with a master's degree in chemical engineering are required to take an additional 3 elective courses at the 800-- or 900--level to complete the course work requirements. Those students admitted with a baccalaureate degree in chemical engineering are required to complete an additional 5 elective courses at the 800-- or 900-- level to complete the course work requirements. Courses taken within the UNH School of Law, College of Life Sciences and Agriculture, and the Paul College of Business and Economics can apply with approval. Electives must be assessed with a letter grade and cannot be pass/fail. Students take electives after consulting with their advisers. The courses the students have taken to fulfill their B.S. degree requirement cannot be counted toward their PhD. degree requirement.

Students in the PhD program are expected to complete the 3 required core courses within the first year of graduate study. After completion of the core courses, the graduate coordinator will administer a qualifying exam. The graduate coordinator also conducts an annual review of each student's progress in the program. All course work, including electives,

should be completed by the end of the second year of study and must be completed before the student can be advanced to candidacy.

To advance to candidacy, the student must prepare a research proposal, and defend the proposal in an oral examination before a doctoral guidance committee. After successful completion of the oral qualifying examination, the student is advanced to candidacy and upon recommendation of the graduate coordinator, a doctoral dissertation committee is appointed by the dean of the graduate school. The doctoral dissertation committee supervises and approves the dissertation and administers the final dissertation defense.

There is no language requirement.

Student Learning Outcomes

Upon completion of the doctoral degree, the student will be able to:

- Use appropriate chemical engineering techniques, tools and methods to solve broadly defined engineering problems.
- Critically analyze the literature and determine the state-of-the-art in a given research topic.
- Write and defend an original research proposal.
- Use computational and/or experimental skills to solve an original research problem in the field of chemical engineering and critically evaluate the results.
- Demonstrate independence in conducting research and take ownership for its direction.
- Demonstrate oral and written communication skills through publications and presentations to a variety of audiences.

Chemical Engineering (M.Eng.)

https://ceps.unh.edu/chemical-bioengineering/program/meng/chemical-engineering

Description

Earning a master's degree can be the key to unlocking your career potential or entering the world of entrepreneurship. In fact, earning an advanced degree in chemical engineering can translate into more than $15,000 annually in salary compared to those with an undergraduate degree alone. UNH's M.Eng in chemical engineering will provide you with advanced training and experience in one of the many areas, including bioengineering, electrochemical engineering, advanced materials, reaction and energy engineering, as well as environmental engineering. The master's degree program concludes with an engineering project, often with an industrial sponsor.

M.Eng. Admission Requirements

An applicant to the master of engineering program will have completed a baccalaureate degree in chemical engineering. Students with good undergraduate records but with deficiencies in certain areas may be admitted on condition that they complete specified courses without credit to make up for their deficiencies. Applicants must submit current scores (within five years) from the general test of the Graduate Record Examination. International students are required to submit TOEFL test scores. IELTS scores are accepted on a case--by-case basis, and students must have a minimum score of 6.5.

Requirements

Master of Engineering Degree Requirements

A master of engineering degree is a professional degree for chemical engineers. A minimum of **30 credits**, which must include:

Code	Title	Credits
Required Courses		
CHBE 900	Seminar [1]	0 or 1
CHBE 923	Advanced Chemical Engineering Thermodynamics	3
CHBE 932	Advanced Chemical Engineering Kinetics	3
CHBE 940	Advanced Transport Phenomena	3
In addition to the above 11#credit required courses, the Master of Engineering student is expected to take the following courses:		
Electives		
Select 19 credits of course work [2, 3]		19
CHBE 898	Chemical Engineering Project	3-6

The Master of Engineering elective course credits may include CHBE 898, Chemical Engineering Project, of up to 6 credits.

1 Students should register for CHBE 900 for 1 credit each in their first two semesters and CHBE 900 for 0 credits each additional semester until their degree is granted.

2 Can be made up of electives offered by the department or college. In addition, courses taken within the UNH School of Law, College of Life Sciences and Agriculture, and the Paul College of Business and Economics can apply with approval. Electives must be assessed with a letter grade and cannot be pass/fail. Students take electives after consulting with their advisers. Students who do not register for CHBE 898 Chemical Engineering Project must take at least one elective course, which requires the student to take additional work and the completion of a scholarly report, paper, or essay to fulfill the capstone experience requirement for a Master's degree. This scholarly report, paper, or essay must be submitted to the course instructor, Chair of the department, and graduate coordinator for their approval.

3 For Accelerated MEng students who have been enrolled in the UNH Chemical Engineering and Bioengineering Department undergraduate programs, no more than three 800- or 900-level courses taken during their senior year can be counted towards their MEng degree requirement.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Upon completion of the master's of engineering degree, the student will be able to

- use appropriate chemical engineering techniques, tools and methods to solve broadly defined engineering problems.
- demonstrate oral and written communication skills.

Chemical Engineering (M.S.)

https://ceps.unh.edu/chemical-bioengineering/program/ms/chemical-engineering

Description

An M.S. in chemical engineering can help you unlock your career potential or enter the world of entrepreneurship. In fact, this advanced degree can translate into more than $15,000 annually in salary compared to those with an undergraduate degree alone. Our program will introduce you to the exciting world of chemical engineering research, teaching you how to plan and execute research activities and interpret results. You'll complete a research thesis in an area such as bioengineering, electrochemical engineering, advanced materials, reaction and energy engineering, or environmental engineering. You'll be prepared to enter the workforce with a deeper understanding of the fundamentals of chemical engineering.

M.S. Admission Requirements

An applicant is expected to have completed a baccalaureate degree in chemical engineering. Students with good undergraduate records but with deficiencies in certain areas may be admitted on condition that they complete specified courses without credit to make up for their deficiencies. Applicants must submit current scores (within five years) from the general test of the Graduate Record Examination. International students are required to submit TOEFL test scores. IELTS scores are accepted on a case-by-case basis, and students must have a minimum score of 6.5.

Requirements

M.S. Degree Requirements

A minimum of **30 credits**, which must include:

Code	Title	Credits
Required Courses		
CHBE 900	Seminar [1]	0 or 1
CHBE 923	Advanced Chemical Engineering Thermodynamics	3
CHBE 932	Advanced Chemical Engineering Kinetics	3
CHBE 940	Advanced Transport Phenomena	3
In addition to the above 11#credit required courses, the M.S. student is expected to take the following courses:		
Electives [2]		
Select 19 elective course credits [2]		19
CHBE 899	Master's Thesis	6-9

The M.S. elective course credits must include CHBE 899 Master's Thesis of up to 9 credits.

1 Students should register for CHBE 900 for 1 credit each in their first two semesters and 0 credits each additional semester until their degree is granted.

2 Can be made up of electives offered by the department or by the college. Courses taken within the UNH School of Law, College of Life Sciences and Agriculture, and the Paul College of Business and Economics can apply with approval. Electives must be assessed with a letter grade and cannot be pass/fail. Students take electives after consulting with their advisers. The courses the students have taken to fulfill their B.S. degree requirement cannot be counted toward their M.S. degree requirement.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Upon completion of the master's of science degree, the student will be able to:

- use appropriate chemical engineering techniques, tools and methods to solve broadly defined engineering problems.
- critically analyze the literature and determine the state-of-the-art in a given research topic.
- use computational and/or experimental skills to solve an original research problem in the field of chemical engineering and critically analyze the results.
- demonstrate oral and written communication skills.

Chemistry (CHEM)

Degrees Offered: Ph.D., M.S.

This program is offered in Durham.

The Chemistry Department combines the personal contact that you would find at a small college with a research profile that you would find at a research-intensive institution. We are the only department that has existed for the entire history of UNH and we have a long-standing tradition of achievement in the molecular sciences. We aspire to be a place of educational, professional, and personal transformation, where young scientists work along side faculty members, participating in the process of discovering new knowledge about the molecular world. Students of chemistry receive a high quality, broad-based education in an atmosphere of close cooperation between faculty and students, between research and teaching, and between chemistry and other disciplines. Our graduate program is open to talented, qualified students who are eager to deepen their knowledge of Chemistry and who wish to contribute to its growth.

Graduate Degree Programs and Paths:

- Paths to both the M.S. and Ph.D. degrees have firm coursework foundations in Chemistry's traditional sub-disciplines, but are rooted in the interdisciplinary research projects of our Faculty.
- The M.S. program provides students with the opportunity to develop a high degree of proficiency in a specialized research area. The program builds a solid foundation for careers in industry or teaching, for further graduate or professional school, or for those who would like to strengthen their Chemistry knowledge.
- The Ph.D. program prepares students for careers in science as researchers and educators by expanding their knowledge of the discipline while developing their ability for critical analysis, creativity, and independent study. Graduates are well placed for careers as professional chemists in industry, academia, government, and related areas.
- The Ph.D. (Option in Chemistry Education) program is designed for students who plan a career at the interface of Science and Education (e.g. discipline-based education research, educational program assessment, STEM curriculum design, chemistry teaching, etc.).

Admission Requirements
Admission to the master of science and the doctor of philosophy degrees is based upon a strong undergraduate record and requires satisfactory work in the usual undergraduate courses in inorganic chemistry, analytical chemistry, organic chemistry, and physical chemistry, as well as the normal supporting courses in mathematics and physics. Entering graduate students are expected to take proficiency examinations in chemistry to ensure they begin their graduate work at the appropriate level. These examinations will be offered the week prior to the opening of the Fall semester during the Department of Chemistry's graduate student orientation week.

Interdisciplinary Programs in Chemistry

Graduate students in chemistry may elect to enter one of the interdisciplinary programs offered jointly with the chemistry department and other departments. In these programs, the graduate student, with the advice of the guidance committee, elects courses in chemistry and in the related disciplines, and writes the dissertation on a research problem appropriate to the interdisciplinary research. Students interested in these programs should contact the Graduate Coordinator for further information.

Preparing Future Faculty (PFF)

Students who desire a career in college-level teaching will follow their regular degree program in addition to meeting the university's PFF requirements. Please see the PFF website for more information: https://gradschool.unh.edu/graduate-student-resources/events-professional-development.

Teaching Experience

All chemistry Doctoral and Master of Science degree candidates will obtain some teaching experience during their program.

https://ceps.unh.edu/chemistry/chemistry-graduate-programs

Programs

Faculty

See https://ceps.unh.edu/directory/all for faculty.

Chemistry (Ph.D.)

https://ceps.unh.edu/chemistry/program/phd/chemistry-chemistry-education

Description

The Ph.D. program prepares students for careers in science as researchers and educators by expanding their knowledge of chemistry while developing their ability for critical analysis, creativity, independent study and complex problem solving. Graduates are well positioned for careers as professional chemists in industry, academia, government, and related areas. All students take coursework, carry out original research with a faculty mentor, and submit a dissertation. The program has a focus on developing strong writing and oral communication skills. Financial support is available through either a teaching assistantship or research assistantship.

Requirements

Ph.D. Degree Requirements

- Demonstration of a broad understanding of undergraduate chemistry by completing placement exams upon entry into the program. These are usually held during the Department Orientation Week.
- Coursework: To be determined with the consent of the research advisor beyond the 1st. semester, a minimum of 6 courses is required including a minimum of 3 at the 900 level.
- Professional development courses required - 4 courses.
- Attendance at Department Seminars.
- Attendance at Graduate Research Update (GRU) sessions and presentation once annually from year two onward.
- Satisfactory presentation of a Thesis Research Proposal (TRP)
- Preparation and oral defense of an Original Research Proposal (ORP) in the third year of residence. Successful completion of the ORP enables the student to advance to candidacy.
- One oral presentation at a regional or technical conference, and one oral or poster presentation at the UNH Graduate Research Symposium.
- Preparation, public presentation, and oral defense of a written dissertation.
- Required 3.0 GPA or above to graduate.

Faculty Research Advisor and Dissertation Committee

Students select a research advisor during the first semester in the program after interviewing at least three faculty members. During each semester thereafter, students conduct independent research under the supervision of the Faculty Research Advisor. In the second year of residence and before the Thesis Research Proposal, a dissertation committee is selected. This committee evaluates the student's Thesis Research Proposal and the Original Research Proposal. Once the Original Research Proposal has been passed and the student advances to

candidacy, a fifth committee member is selected and added to the Dissertation Committee to evaluate the Dissertation Defense.

Code	Title	Credits
Professional Development Courses		
CHEM 800	Introduction to Chemistry Teaching and Research Practices	1
CHEM 801	Modern Tools for Researchers in the Chemical Sciences	1
CHEM 802	Critical Thinking for Chemists	1
CHEM 803	Creative Thinking for Chemists	1
CHEM 992	Graduate Writing Portfolio	1
Program Courses		
CHEM 808	Spectroscopic Investigations of Organic Molecules	3
CHEM 862	Advanced Chemical Analysis Instrumentation	3
CHEM 840	Chemical Biology	3
CHEM 855	Advanced Organic Chemistry	3
CHEM 903	Advanced Inorganic Chemistry I	3
CHEM 902	Theoretical Organic Chemistry II	3
CHEM 904	Advanced Inorganic Chemistry II	3
CHEM #905	Advanced Physical Chemistry I	3
CHEM 911	Synthetic Organic Chemistry I	4
CHEM #917	Advanced Special Topics	2-4
CHEM 918	Advanced Special Topics	2-4
CHEM 925	Surface Chemistry	3
CHEM 927	Chemical Kinetics and Reaction Dynamics	3
CHEM 930	Advanced Optical Methods	3
CHEM #933	Chemical Separations	3
CHEM 934	Chemical Equilibria	3
CHEM 935	Advanced Analytical Chemistry	3
CHEM 995	Colloquium (Courses options: A) Inorganic Chemistry; B) Organic Chemistry; C) Theoretical Organic Chemistry; D) Physical Chemistry; E) Analytical Chemistry; F) Chemical Education.)	1-4
MATH 835	Statistical Methods for Research	3
Research		
CHEM 999	Doctoral Research	0

Student Learning Outcomes

All Chemistry graduate students will be able to:

Display a comprehensive knowledge of chemistry, with greater depth demonstrated in at least one subdiscipline.

- Chemistry students in the Ph.D. and the M.S. program should have a basic knowledge of the field, with that knowledge being at least the level of the material taught in first-year chemistry and the initial courses in undergraduate sub-disciplinary classes (analytical, inorganic, organic, physical chemistry, and biochemistry).

Ph.D. students should demonstrate focused and deep expertise in their area of scholarly exploration, including an understanding of the current status of the topic. M.S. students should also demonstrate clear focus in scholarly pursuits.

- In the area of specialization, a Ph.D. student's knowledge of the field should, at a minimum, be comparable to special topics classes at the graduate level.
- Students should demonstrate capabilities of searching the literature to become familiar with the current state of the field.

Apply critical thinking skills in the evaluation of scientific work, by analyzing, organizing, and evaluating scientific data and knowledge.

- Careful attention to and critical evaluation of material encountered in the literature, in seminars, and research activity is evidence of scientific maturation.

Generate hypotheses, design strategies, perform studies, and interpret results that lead to new knowledge in the field, including the…

- Application of central methods and techniques, including laboratory skills, statistical and computational methods, data gathering, and record-keeping to deliver detailed information and reproducible results.
- Demonstration of an understanding of the scientific method through the Original Research Proposal and through laboratory research (dissertation).
- Conduct of consequential scientific inquiry that advances a scientific field as required for a dissertation and peer-reviewed publications.

Communicate scientific information with effectiveness to both experts and novices in oral and written form, including methods, results, and conclusions.

- Demonstration of the ability to engage in communication appropriate for the audience.
- Present scientific material with clarity, accuracy, and precision.

Perform research in a professional, ethical, and safe manner.

- Students must participate in and apply knowledge from required training in laboratory safety and the responsible conduct of research; additional specialized training in these areas is encouraged.
- Students should develop skills in applicable professional areas, such as pedagogy, teamwork and team building, and leadership, through mentoring, instructional activity, and workshops.
- Safety and ethical behavior should be demonstrated in all activities, including both instructional and research activity.

Chemistry: Chemistry Education (Ph.D.)

https://ceps.unh.edu/chemistry/chemistry-phd

Description

The Ph.D. Option in Chemistry Education is designed for students who plan a career at the interface of Science and Education (e.g. discipline-based education research, educational program assessment, STEM curricular design, chemistry teaching, etc.). The rigorous program involves coursework in Chemistry, Psychology and Education and original research in Chemistry Education, leading to the submission of a dissertation. Students with a research-based MS (or equivalent) will be admitted directly to the program. Students with a BS (or equivalent) will first obtain an MS degree, carrying out original laboratory-based research with a faculty mentor, and submitting a thesis. The program has a focus on developing strong writing and oral communication skills. Financial support is typically available through a teaching assistantship.

Requirements

Ph.D. Option in Chemistry Education

- Demonstration of a broad understanding of undergraduate chemistry by passing a series of basic examinations or satisfactory performance in approved courses.

- Demonstration of chemistry laboratory research proficiency by completing a thesis-based M.S. (or equivalent) either at UNH or another university.
- Satisfactory performance in a series of courses in science education, cognition, and qualitative/quantitative research methods.
- Attendance at Department seminars.
- Attendance at Graduate Research Update (GRU) sessions and presentation once annually from year 2 onward.
- Satisfactory presentation of a Thesis Research Proposal (TRP) in the second year of residence,
- Preparation and oral defense of an Original Research Proposal (ORP) in the third year of residence. Successful completion of the Original Research Proposal (ORP) enables the student to advance to candidacy.
- One oral presentation at a regional or technical conference, and one oral or poster presentation at the UNH Graduate Research Symposium.
- Preparation, public presentation, and oral defense of a written dissertation.
- GPA of 3.0 or higher required to graduate.
- Please contact the department for additional information on this option.

Faculty Research Advisor and Dissertation Committee

Students select a research advisor during the first semester in the program after interviewing at least three faculty members. During each semester thereafter, students conduct independent research under the supervision of the Faculty Research Advisor. In the second year of residence and before the Thesis Research Proposal, a dissertation committee is selected. This committee evaluates the student's Thesis Research Proposal and the Original Research Proposal. Once the Original Research Proposal has been passed and the student advances to candidacy, a fifth committee member is selected and added to the Dissertation Committee to evaluate the Dissertation Defense.

Code	Title	Credits
Required department courses		
CHEM 800	Introduction to Chemistry Teaching and Research Practices	1
CHEM 801	Modern Tools for Researchers in the Chemical Sciences	1
CHEM 802	Critical Thinking for Chemists	1
CHEM 803	Creative Thinking for Chemists	1
Chemistry Courses		
CHEM 995	Colloquium (CHEM 995F Colloquium: Chemistry Education)	1-4
CHEM 997	Seminar	1
CHEM 999	Doctoral Research	0
3 Chemistry CORE courses in a sub-discipline recommended by research advisor or MS degree		
Quantitative Statistics		
Choose 2 courses (see examples below)		
PSYC 705	Tests and Measurement	4
PSYC 805	Research Methodology and Statistics I	4
PSYC 806	Research Methodology and Statistics II	4
PSYC 907	Research Methods and Statistics III	4
EDUC 978	Applied Regression Analysis in Educational Research	4
EDUC 979	Applied Multilevel Modeling	4
EDUC 981	Quantitative Inquiry: Methods and Techniques of Educational Research	4
MATH 835	Statistical Methods for Research	3
MATH 836	Advanced Statistical Modeling	3
MATH 839	Applied Regression Analysis	3
Qualitative Methods		
Choose 1 course (example below)		
EDUC 904	Qualitative Inquiry in Research	4
EDUC 982	Qualitative Fieldwork & Data Analysis	4
SOC 904	Sociological Methods IV: Qualitative and Historical Research Methods	4
Cognition		
Choose 1 course (examples below)		
PSYC 783	Cognitive Development	4
PSYC 710	Visual Perception	4
PSYC 712	Psychology of Language	4
PSYC 716	Cognitive Neuroscience	4
PSYC 731	Brain and Behavior	4
PSYC 914	Advanced Seminar in Cognition	4

Student Learning Outcomes

All Chemistry graduate students will be able to:

Display a comprehensive knowledge of chemistry, with greater depth demonstrated in at least one subdiscipline.

- Chemistry students in the Ph.D. and the M.S. program should have a basic knowledge of the field, with that knowledge being at least the level of the material taught in first-year chemistry and the initial courses in undergraduate sub-disciplinary classes (analytical, inorganic, organic, physical chemistry, and biochemistry).

Ph.D. students should demonstrate focused and deep expertise in their area of scholarly exploration, including an understanding of the current status of the topic. M.S. students should also demonstrate clear focus in scholarly pursuits.

- In the area of specialization, a Ph.D. student's knowledge of the field should, at a minimum, be comparable to special topics classes at the graduate level.
- Students should demonstrate capabilities of searching the literature to become familiar with the current state of the field.

Apply critical thinking skills in the evaluation of scientific work, by analyzing, organizing, and evaluating scientific data and knowledge.

- Careful attention to and critical evaluation of material encountered in the literature, in seminars, and research activity is evidence of scientific maturation.

Generate hypotheses, design strategies, perform studies, and interpret results that lead to new knowledge in the field, including the

- Application of central methods and techniques, including laboratory skills, statistical and computational methods, data gathering, and record-keeping to deliver detailed information and reproducible results.
- Demonstration of an understanding of the scientific method through the Original Research Proposal and through laboratory research (dissertation).
- Conduct of consequential scientific inquiry that advances a scientific field as required for a dissertation and peer-reviewed publications.

Communicate scientific information with effectiveness to both experts and novices in oral and written form, including methods, results, and conclusions.

- Demonstration of the ability to engage in communication appropriate for the audience.
- Present scientific material with clarity, accuracy, and precision.

Perform research in a professional, ethical, and safe manner.

- Students must participate in and apply knowledge from required training in laboratory safety and the responsible conduct of research; additional specialized training in these areas is encouraged.
- Students should develop skills in applicable professional areas, such as pedagogy, teamwork and team building, and leadership, through mentoring, instructional activity, and workshops.
- Safety and ethical behavior should be demonstrated in all activities, including both instructional and research activity.

Chemistry (M.S.)

https://ceps.unh.edu/chemistry/program/ms/chemistry

Description

The M.S. program provides students with the opportunity to develop a high degree of proficiency in a specialized research area. The program serves as a stepping stone to jobs in industry, professional school, teaching careers, or for those who would like to strengthen their Chemistry knowledge. All students take coursework, carry out original research with a faculty mentor, and submit a thesis. The program has a focus on developing strong writing and oral communication skills. Financial support is typically available through a teaching assistantship.

Requirements

M.S. Degree Requirements

- Demonstration of a broad understanding of undergraduate chemistry by passing a series of basic examinations or satisfactory performance in approved courses.
- Student must present a total of **30 credits** for completion of the MS program. These 30 credits are as follows:
  - 20+ course credits, at least 8 credits of which must be in courses numbered 900 or above.
  - Satisfactory performance in at least three path-specific (analytical, inorganic, organic, or physical) courses, which is a portion of the 20+ course credits required.
  - 6 to 10 credits of CHEM 899 Thesis/Problems research credits.
- Mandatory attendance at Department Seminars and Graduate Research Updates (GRU).
- Satisfactory presentation of a Thesis Research Proposal (TRP) in the second year of residence.
- Preparation, public presentation, and oral defense of a written thesis.
- Student must maintain a GPA of 3.0 to graduate from the MS program.

Faculty Research Advisor and Thesis Committee

Students select a research advisor during the first semester in the program after interviewing at least three faculty members. During each semester thereafter, students conduct independent research under the supervision of the Faculty Research Advisor. In the second year of residence and before the Thesis Research Proposal, a thesis committee is selected. This committee evaluates the student's Thesis Research Proposal and the Thesis Defense.

Code	Title	Credits
Professional Development Courses		
CHEM 800	Introduction to Chemistry Teaching and Research Practices	1
CHEM 801	Modern Tools for Researchers in the Chemical Sciences	1
CHEM 802	Critical Thinking for Chemists	1
CHEM 991	Graduate Presentation Portfolio	1
CHEM 992	Graduate Writing Portfolio	1
CHEM 997	Seminar	1
Program Courses		
CHEM 808	Spectroscopic Investigations of Organic Molecules	3
CHEM 840	Chemical Biology	3
CHEM 855	Advanced Organic Chemistry	3
CHEM 862	Advanced Chemical Analysis Instrumentation	3
CHEM 902	Theoretical Organic Chemistry II	3
CHEM 903	Advanced Inorganic Chemistry I	3
CHEM 904	Advanced Inorganic Chemistry II	3
CHEM #905	Advanced Physical Chemistry I	3
CHEM 911	Synthetic Organic Chemistry I	4
CHEM 925	Surface Chemistry	3
CHEM 927	Chemical Kinetics and Reaction Dynamics	3
CHEM 930	Advanced Optical Methods	3
CHEM #933	Chemical Separations	3
CHEM 934	Chemical Equilibria	3
CHEM 935	Advanced Analytical Chemistry	3
CHEM 995	Colloquium (Course options: A) Inorganic Chemistry; B) Organic Chemistry; C) Theoretical Organic Chemistry; D) Physical Chemistry; E) Analytical Chemistry; F) Chemical Education.)	1-4
Research		
CHEM 899	Thesis/Problems	1-10

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

All Chemistry graduate students will be able to:

Display a comprehensive knowledge of chemistry, with greater depth demonstrated in at least one subdiscipline.

- Chemistry students in the Ph.D. and the M.S. program should have a basic knowledge of the field, with that knowledge being at least the level of the material taught in first-year chemistry and the initial courses in undergraduate sub-disciplinary classes (analytical, inorganic, organic, physical chemistry, and biochemistry).

Ph.D. students should demonstrate focused and deep expertise in their area of scholarly exploration, including an understanding of the current status of the topic. M.S. students should also demonstrate clear focus in scholarly pursuits.

- In the area of specialization, a Ph.D. student's knowledge of the field should, at a minimum, be comparable to special topics classes at the graduate level.
- Students should demonstrate capabilities of searching the literature to become familiar with the current state of the field.

Apply critical thinking skills in the evaluation of scientific work, by analyzing, organizing, and evaluating scientific data and knowledge.

- Careful attention to and critical evaluation of material encountered in the literature, in seminars, and research activity is evidence of scientific maturation.

Generate hypotheses, design strategies, perform studies, and interpret results that lead to new knowledge in the field, including the

- Application of central methods and techniques, including laboratory skills, statistical and computational methods, data gathering, and record-keeping to deliver detailed information and reproducible results.
- Demonstration of an understanding of the scientific method through the Original Research Proposal and through laboratory research (dissertation).
- Conduct of consequential scientific inquiry that advances a scientific field as required for a dissertation and peer-reviewed publications.

Communicate scientific information with effectiveness to both experts and novices in oral and written form, including methods, results, and conclusions.

- Demonstration of the ability to engage in communication appropriate for the audience.
- Present scientific material with clarity, accuracy, and precision.

Perform research in a professional, ethical, and safe manner.

- Students must participate in and apply knowledge from required training in laboratory safety and the responsible conduct of research; additional specialized training in these areas is encouraged.
- Students should develop skills in applicable professional areas, such as pedagogy, teamwork and team building, and leadership, through mentoring, instructional activity, and workshops.
- Safety and ethical behavior should be demonstrated in all activities, including both instructional and research activity.

Civil and Environmental Engineering (CEE)

Degrees Offered: Ph.D., M.Eng., M.S.

This program is offered in Durham.

The Department of Civil and Environmental Engineering offers the master of engineering degree in civil engineering, the master of science degree in civil engineering, and a Ph.D. degree in civil engineering with the following areas of specialization: structural, materials, geotechnical, water resources, and environmental engineering. Interested applicants are encouraged to visit the department website for information on current research in the department and to contact faculty members in their area of interest directly. The department website has information on program requirements and frequently asked questions. Applicants with questions not answered by the department or graduate school website should write to the graduate program coordinator for specific information.

Admission Requirements

An applicant must have completed a baccalaureate science degree in engineering, mathematics, or science at an accredited college or university. If coursework or laboratory experience is deficient, an admitted student will be required to fulfill, without graduate credit, all undergraduate prerequisites for graduate courses. In some cases, the student's advisor may require additional undergraduate courses in order to achieve a well-integrated program of study.

For more information on the Civil and Environmental Engineering Graduate Program, please email CEE.Graduate@unh.edu.

https://ceps.unh.edu/cee/graduate-programs

Programs

- Civil and Environmental Engineering (Ph.D.) (p. 65)
- Civil and Environmental Engineering (M.Eng.) (p. 66)
- Civil and Environmental Engineering (M.S.) (p. 67)

Faculty

See https://ceps.unh.edu/cee/faculty-staff-directory for faculty.

Civil and Environmental Engineering (Ph.D.)

https://ceps.unh.edu/civil-environmental-engineering/program/phd/civil-engineering

Description

The goal of the Civil and Environmental Engineering program is to elucidate civil and environmental engineering technology by involving students in the design and construction of sustainable infrastructure projects that emphasize safety and public health. Our graduates enhance the quality of life for people both locally and around the world by providing safe structures such as bridges, highways, skyscrapers, tunnels and dams, and by helping to restore and maintain water quality and the environment. Civil Engineering has always been an exciting yet flexible profession filled with opportunities.

Requirements

Following admission into the program, a guidance committee is appointed for the student by the dean of the Graduate School upon recommendation of the advisor and graduate coordinator. This committee assists in outlining the student's course of study and may specify individual coursework requirements. The guidance committee administers the qualifying examination.

The student must pass a qualifying exam that includes both a written and an oral component. The content of the qualifying exam will be determined at the discretion of the guidance committee and will be based on the coursework (both graduate and undergraduate) completed to date. The qualifying exam is pass/fail. At the discretion of the guidance committee a student may conditionally pass the exam and be reevaluated after a specified time period. The qualifying exam must be completed within 18 months of admission for students that have a master’s degree and within 30 months of admission for students that enter the PhD program with only a bachelor’s degree.

Course Credit Requirements: The student must successfully complete at least 42 graded course credit hours beyond a bachelor's degree. These 42 course credit requirements can include 2 courses (up to 8 credits) from the accelerated masters program. Additional course credits beyond these minimum levels may be required by the guidance committee.

Requirements for Optional Minor: An identifiable group of courses (9 credits minimum) in an area outside of the civil engineering department and approved by the guidance committee must be successfully completed to provide a minor to the Ph.D. degree. A minor may be satisfied by courses taken toward a master's degree other than civil engineering, but the credits will not be applied against the 42 credit-hour minimum.

Professional Outreach Experience: A minimum of one semester as a teaching assistant or comparable experience, or preparation and submission of article(s) to refereed journal(s), or presentations at professional meetings is required. The guidance committee will evaluate whether a student's past teaching assistantship satisfies this requirement.

Doctoral Candidates: Upon successful completion of the Ph.D. qualifying examination, a doctoral student is advanced to the status of doctoral candidate. When a student achieves candidacy, a doctoral committee is established. The doctoral committee reviews research, reviews the student's progress, supervises and approves the doctoral dissertation, and administers the final examination (also known as the dissertation defense). The student must present and defend a research proposal within 6 months of achieving candidacy and no later than one year prior to the dissertation defense.

Upon completion of the dissertation, and with the approval of the doctoral committee, the student schedules an oral defense in accordance with the requirements of the Graduate School. For graduation, a B average (3.00 GPA) and successful dissertation defense must be achieved.

Student Learning Outcomes

- Identify and use advanced mathematical, computational, design, and/or experimental skills to solve complex civil and environmental engineering problems;
- Demonstrate advanced technical knowledge in a specialty discipline area within civil and environmental engineering;
- Demonstrate advanced research skills in identifying the state of the art and research needs, formulate hypotheses, design and conduct experiments, collect and analyze data, and interpret results;
- Draw on previously published results to propose, plan, and execute an independent research project that makes original and substantial contributions to advance the discipline;
- Effectively communicate and defend technical ideas, designs, or research results in oral form to technical and non-technical audiences;
- Lead the writing of manuscripts describing research results, and its impacts, in a form suitable for publication in peer-reviewed journals or another appropriate professional outlet;
- Understand and communicate how knowledge and research relate to a broader context outside of academia and the specific discipline; and
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of sustainable engineering solutions in global, social, economic, public policy, and environmental issues.

Civil and Environmental Engineering (M.Eng.)

https://ceps.unh.edu/civil-environmental-engineering/program/meng/civil-engineering

Description

The goal of the Civil and Environmental Engineering program is to elucidate civil and environmental engineering technology by involving students in the design and construction of sustainable infrastructure projects that emphasize safety and public health. Our graduates enhance the quality of life for people both locally and around the world by providing safe structures such as bridges, highways, skyscrapers, tunnels and dams, and by helping to restore and maintain water quality and the environment. Civil Engineering has always been an exciting yet flexible profession filled with opportunities. The Master of Engineering in Civil Engineering requires a concluding experience in addition to coursework.

Requirements

All master of engineering degree students must complete a minimum of **30** total credits. UNH bachelor's degree students admitted to the Accelerated Master's Degree program may register for a maximum of 8 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. M.Eng. students are required to complete one of the following options as a concluding experience (as determined by the Master's Committee):

- **Option A**, Master's Project: Students must complete a 3–credit master's project (CEE 898 Master's Project Paper) on a civil engineering topic.
- **Option B**, Oral Exam: Students must complete an oral exam. The oral exam does not count toward the number of required credits.
- **Option C**, Written Exam: Students must complete a written exam. The written exam does not count toward the number of required credits.

The M.Eng. option is designed to facilitate completion of B.S./M.Eng. civil engineering degrees within five years. M.Eng degree students are not eligible for an assistantship. For graduation, a grade of B- or better in each course, an overall B average (3.00 GPA), and successful completion of one of the above concluding experiences must be achieved.

Specific course requirements vary with focus area within CEE, please refer to the "explore program details" section on our website.

Student Learning Outcomes

- Identify and use advanced mathematical, computational, design, and/or experimental skills to solve complex civil and environmental engineering problems;
- Demonstrate advanced technical knowledge in civil and environmental engineering subject areas (environmental,

geotechnical, materials, structural, sustainability, transportation, or water resources);
- Effectively communicate and defend technical ideas, designs, or research results in written and oral form; and
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of sustainable engineering solutions in global, social, economic, public policy, and environmental issues.

Civil and Environmental Engineering (M.S.)

https://ceps.unh.edu/civil-environmental-engineering/program/ms/civil-engineering

Description

The goal of the Civil and Environmental Engineering program is to elucidate civil and environmental engineering technology by involving students in the design and construction of sustainable infrastructure projects that emphasize safety and public health. Our graduates enhance the quality of life for people both locally and around the world by providing safe structures such as bridges, highways, skyscrapers, tunnels and dams, and by helping to restore and maintain water quality and the environment. Civil Engineering has always been an exciting yet flexible profession filled with opportunities. The Master of Science in Civil Engineering requires the completion of a thesis in addition to coursework.

Requirements

All master of science degree students must complete a minimum of **31 total credits** that includes a minimum of 24 credit hours of regular coursework, 6 thesis credits (CEE 899 Master's Thesis) and a one--credit seminar course. UNH bachelor's degree students admitted to the Accelerated Master's Program may register for a maximum of 8 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.

A formal oral presentation/thesis defense is required. All M.S. degree students are eligible for teaching or research assistantships and are required to register for Master's Student Seminar (CEE 897 Masters Student Seminar) for one semester. Students are required to make one presentation in CEE 897 Masters Student Seminar during their program of study. For graduation, a grade of B- or better in each course, an overall B average (3.00 GPA), and a successful thesis defense must be achieved.

Specific course requirements vary with focus area within CEE, please refer to the "explore program details" section on our website.

Student Learning Outcomes

- Identify and use advanced mathematical, computational, design, and/or experimental skills to solve complex civil and environmental engineering problems;
- Demonstrate advanced technical knowledge in one or more civil and environmental engineering subject areas (environmental, geotechnical, materials, structural, sustainability, transportation, or water resources);
- Formulate hypotheses, design experiments, collect and analyze data, and interpret results;
- Propose, plan, and execute an independent research project related to civil and environmental engineering;
- Effectively communicate and defend technical ideas, designs, or research results in written and oral form; and
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of sustainable engineering solutions in global, social, economic, public policy, and environmental issues.

College Teaching (GRAD)

Degree Offered: Cognate, Graduate Certificate

This program is offered in Durham.

The College Teaching Program helps to prepare graduate students for academic teaching positions, and to prepare and enhance the effectiveness of college teaching for faculty members, post-docs, and graduate students enrolled at institutions other than UNH. The transfer and relationship between theory and research and instructional practice is emphasized in all courses.

This is a University-wide program coordinated by the Office of the Dean of the Graduate School and involving the Center for Excellence and Innovation in Teaching and Learning as well as faculty members from many fields and disciplines. Two academic programs are offered: the **cognate** in college teaching and the **certificate** in college teaching.

> **Cognate in College Teaching**: The Cognate in College Teaching is open to UNH graduate students in a doctoral program or a terminal master's degree program.
>
> **Certificate in College Teaching**: Certificate is open to current faculty members, postdocs, and doctoral students enrolled at institutions other than UNH.

Admission Requirements

Applicants to the cognate program must have the support and recommendation of their doctoral program coordinator.

Test Scores: None
New England Regional: No

https://www.unh.edu/cetl/academic-programs-college-teaching

Programs

- Cognate in College Teaching (p. 68)
- College Teaching (Graduate Certificate) (p. 68)

Faculty

See https://www.unh.edu/cetl/ceitl-staff for faculty.

Cognate in College Teaching

https://www.unh.edu/cetl/cognate

Description

The Cognate in College Teaching offers a series of core and elective courses to prepare individuals to teach at institutions of higher education. The Cognate is available to doctoral students and students in terminal master's degree programs at UNH.

Students must apply and be formally admitted to the program. The Cognate appears as a minor on the student's transcript, and is awarded concurrently with the PhD or Master's degree.

Requirements

All courses must be taken at UNH.

Code	Title	Credits
Core Courses		
GRAD 950	Issues in College Teaching (In Person, Summer)	2
GRAD 951	Teaching with Writing (In Person, Summer)	2
GRAD 961	Cognition, Teaching, and Learning (Online, Summer)	2
GRAD 965	Classroom Research and Assessment Methods (Online, Summer)	2
Electives		
Select four credits from the following:		4
GRAD 970	Special Topics in College Teaching (Online, Summer - every other year)	
With prior approval from the College Teaching Director, the appropriate course(s) or seminar(s) on teaching in a particular discipline (e.g., history, economics, psychology, etc.)(Face to face, AY)		
Portfolio Requirement		
GRAD 998	College Teaching Portfolio (Summer or AY) [1]	1
Total Credits		**13**

[1] Students must create a 1-credit electronic teaching portfolio and have it approved by the directors of the Center for Excellence in Teaching and Learning.

College Teaching (Graduate Certificate)

https://gradschool.unh.edu/program/certificate/college-teaching

Description

The Certificate in College Teaching offers, through a series of core and elective courses, a set of skills and understandings specific to effective teaching in a learner-centered environment. Courses focus on: theories and research in the area of cognitive science that are relevant to understanding and promoting student learning in educational contexts; how to design courses to enhance that learning; how to interact effectively with students; and how to assess teaching and learning. This program is designed to help faculty and post-docs learn and sharpen these skills, and to broaden their knowledge-base in the scholarship of college teaching.

All courses in the program are grounded in the latest research and scholarship in the field of college teaching. The curriculum offers a rich blend of teaching and learning theory, a comprehensive overview of the current best teaching practices in higher education, and practical strategies for applying what is learned.

The certificate is available to faculty members, post-docs, and graduate students enrolled at institutions other than UNH.

Requirements

This program requires the satisfactory completion of 12 academic credits. Requirements include 8 credits in core courses and 4 credits in elective courses.

Code	Title	Credits
Core Courses		
GRAD 950	Issues in College Teaching	2
GRAD 951	Teaching with Writing	2
GRAD 961	Cognition, Teaching, and Learning	2
GRAD 965	Classroom Research and Assessment Methods	2
Electives		
Select a minimum of four credits of the following:		4
GRAD 970	Special Topics in College Teaching	
Total Credits		**12**

Communication Sciences and Disorders (COMM)

Degree Offered: M.S.

This program is offered in Durham.

The Department of Communications Sciences and Disorders (CSD) offers a Master of Science degree. Students are prepared to practice in a variety of job settings within the field of speech-language pathology and to meet the academic and practicum requirements of the American Speech--Language-Hearing Association (ASHA) for the certificate of clinical competence in speech-language pathology. The master of science degree education program in speech-language pathology at the University of New Hampshire is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA) of the American Speech-Language-Hearing Association, 2200 Research Boulevard #310, Rockville, MD 20850; 800.498.2071 or 301.296.5700.

The graduate program integrates an array of academic, research, and clinical experiences to prepare students for a clinical fellowship in speech--language pathology. The graduate curriculum is regularly reviewed and updated to ensure that students have the funds of knowledge and clinical skills to treat the full range communication disorders across the life span in any practice setting. In addition to required courses, students have the opportunity choose from an array of elective courses that best suit their career objectives. This rigorous program emphasizes the importance of translating theory into evidence-based practice.

The UNH Speech-Language-Hearing Center and the Clinic for Neurogenic Communication Disorders offer diagnostic and intervention services and provide clinical training for graduate students in the CSD Program. State-of-the-art evaluations and intervention are offered to individuals of all ages. Graduate students are supervised by professionally certified and licensed CSD faculty to gain clinical experience aligned with academic coursework to deliver the evidence-based interventions.

The Department of Communication Sciences and Disorders Research Laboratories (CSDRL) houses four innovative research programs in

which faculty and students are actively engaged in research projects. Projects include: (a) examinations of the perception and production of prosody at different stages of language acquisition, (b) understanding the development social communication and its association with aspects of quality of life, (c) AphasiaBank data analyses, (d) efficacy of intervention for apraxia of speech, (e) analysis of motor-learning and its application to speech, (f) voice interventions using feedback-based learning, (g) interventions which incorporate mindfulness, (h) analysis of neural and cognitive effects of head injury impacts, and (i) the application of neuroscience in communication disorders.

Admission Requirements

Applicants for admission must possess a bachelor's degree prior to beginning the master's program. While the bachelor's degree need not be in communication sciences and disorders, applicants are expected to complete the following courses, or their equivalents, prior to admission into the graduate program:

- Anatomy and Physiology of the Speech and Hearing Mechanism
- Language Acquisition
- Clinical Phonetics
- Basic Audiology
- Speech-Hearing Science
- Neurology or Neuroanatomy

Applicants must also complete coursework in the following areas in preparation for fulfillment of certification requirements:

- Biology
- Physical Science (Chemistry or Physics)
- Statistics
- Social/Behavioral Sciences
- Typical Human Development across the Life Span
- Multicultural issues

Acceptance to the program is based on grades/grade-point average, letters of recommendation, and a written statement. Generally, accepted students have a minimum grade-point average of 3.6. Grade-point average, personal statements, and other application materials are used for the awarding of graduate assistantships.

https://chhs.unh.edu/directory/all

Programs

- Communication Sciences and Disorders (M.S.) (p. 69)

Faculty

See https://chhs.unh.edu/directory/all for faculty.

Communication Sciences and Disorders (M.S.)

https://chhs.unh.edu/communication-sciences-disorders/program/ms/communication-sciences-disorders

Description

The graduate program in Communication Sciences and Disorders prepares students for professional practice with individuals who face communication challenges across the life span in any practice setting. Students complete a combination of required and elective courses and clinical practicum to apply theory to practice. Students complete a variety of practicum experiences in the university clinic as well as educational, rehabilitative, and private practice settings to enhance applied learning. The Graduate Program of Study includes two full years of study, including two summers and J-term.

Requirements

All graduate students will complete a combination of required and elective courses and clinical practicum to earn a minimum of **59 credits total.** Clinical practicum meets the requirements of the Council for Clinical Certification (CFCC) in Audiology and Speech-Language Pathology, including a minimum of **400 clinical experience hours**.

Code	Title	Credits
REQUIRED COURSES (minimum of 55 credits)		
COMM 801	Principles of Assessment	2
COMM 802	Principles of Intervention	2
COMM 803	Ethical and Professional Issues in Communication Sciences and Disorders I	1
COMM 804	Counseling Clients and Families with Communication Disorders	2
COMM 805	Research Methods in Communication Sciences and Disorders	3
COMM 811	Brain and Behavior	3
COMM 812	Dysphagia	3
COMM 821	Speech Sound Disorders	3
COMM 822	Stuttering	3
COMM 823	Voice Disorders	3
COMM 824	Motor Speech Disorders	3
COMM 831	Early Childhood Language Disorders	3
COMM 832	School-Age & Adolescent Language Disorders	3
COMM 833	Aphasia in Adults	3
COMM 843	Augmentative and Alternative Communication	3
COMM 851	Advanced Audiology for Speech Language Pathologists	3
COMM 870	Clinical Practicum (Minimum of 4 rotations)	1-3
Diagnostic Clinic (Fall or Spring of Year 2)		
COMM 872	Externship (Minimum of 2 rotations)	4

Code	Title	Credits
ELECTIVE COURSES (minimum of 4 credits)		
COMM 841	Cognitive Communication Disorders	2
COMM 842	Autism Spectrum Disorders	2
COMM 895	Special Topics	2
Special Topics include: Language Acquisition, fMRI and the Human Brain, Social Communication, Augmentative and Alternative Communication, and Neural Bases of Cognition and Language in Aging and Acquired Brain Injury		
COMM 899	Master's Thesis	6

Clinical Practicum

All students are required to complete a minimum of four practicum rotations and two externships during their graduate studies. UNH requires students to have 15 documented observation hours prior to the start of clinical work. Since the UNH CSD Graduate Program is a full--time program, we expect students to be available for clinical assignments when not in class.

In year 1, practicum assignments take place at the UNH Speech--Language--Hearing Center and the Clinic for Neurogenic Communication Disorders during the fall, spring, and summer sessions. In year 2, students complete one semester of diagnostic clinic at the UNH SLHC

along with two externships at two different settings. Externships are available at a broad range of department-approved settings, including early intervention programs, education, rehabilitation, health care settings, and private practices.

Students are responsible for transportation to externship locations and other community learning experiences. Externship sites may require a physical, including a tuberculin test; proof of immunizations such as poliomyelitis, rubella and hepatitis; health insurance; and drug/urine testing. In addition, students are responsible for meeting the criminal record clearances established by the practicum site. Failure to pass required medical and other clearance checks could render a student ineligible for a practicum assignment and thus unable to complete program requirements.

Capstone Experience

All graduate students are required to complete a capstone experience - either the Comprehensive Examination or a Master's Thesis.

Comprehensive Examination (Non-thesis)

All students (except those writing a thesis) must pass a Comprehensive Examination designed to assess their mastery of and ability to integrate information from the two--year curriculum. Students will be provided one case study and participate in an oral exam related to the case. To participate in the comprehensive examination students must be in their final semester of graduate studies, have no incompletes or unremediated course failures, be in their final semester for externship experiences, and have no unfilled clinical improvement plans. Students must pass oral exam to pass the comprehensive examination and be eligible to receive the master's degree.

Thesis

Students may conduct research and write a thesis in lieu of the Comprehensive Examination. Upon completion of an original research project, students must defend the thesis in an oral examination and must gain approval of the thesis committee. In addition to required coursework, students must register for **6 credits** of COMM 899 Master's Thesis.

Additional Requirements

In addition to the academic and clinical requirements, the UNH Department of Communication Sciences & Disorders requires students to demonstrate certain essential skills needed to practice as a speech-language pathology. These **Essential Functions,** as distinguished from academic standards, include communication, motor, cognitive, sensory, and behavioral-social abilities that are necessary for satisfactory completion of the curriculum and for professional practice. Some of these abilities should be in place when students begin the program, while others will be developed throughout the program.

Students accepting an offer of admission as well as students in the program are expected to demonstrate these essential functions with or without reasonable accommodations to successfully complete degree requirements. Early each fall, the Essential Functions Policy will be reviewed with new students beginning our program. Students are expected to sign that they have reviewed and understand the policy and will follow the stated guidelines.

Degree Plan

All graduate students will complete a combination of required and elective courses and clinical practicum to earn a minimum of **59credits.** Clinical practicum meets the requirements of the Council for Clinical Certification (CFCC) in Audiology and Speech-Language Pathology, including a minimum of **400 clinical experience hours**.

Course	Title	Credits
First Year		
Summer		
COMM 801	Principles of Assessment	2
COMM 802	Principles of Intervention	2
	Credits	**4**
Fall		
COMM 803	Ethical and Professional Issues in Communication Sciences and Disorders I	1
COMM 805	Research Methods in Communication Sciences and Disorders	3
COMM 811	Brain and Behavior	3
COMM 821	Speech Sound Disorders	3
COMM 831	Early Childhood Language Disorders	3
COMM 870	Clinical Practicum	1
	Credits	**14**
January Term		
COMM 804	Counseling Clients and Families with Communication Disorders	2
COMM 823	Voice Disorders	3
	Credits	**5**
Spring		
COMM 812	Dysphagia	3
COMM 824	Motor Speech Disorders	3
COMM 832	School-Age & Adolescent Language Disorders	3
COMM 833	Aphasia in Adults	3
COMM 851	Advanced Audiology for Speech Language Pathologists	3
COMM 870	Clinical Practicum	1
	Credits	**16**
Second Year		
Summer		
COMM 870	Clinical Practicum	1
Elective Course (Optional)		
	Credits	**1**
Fall		
COMM 843	Augmentative and Alternative Communication	3
COMM 872	Externship	4
COMM 870	Clinical Practicum (Assessment Clinic, taken Fall or Spring)	1
Elective Course		2
	Credits	**10**
Spring		
COMM 822	Stuttering	3
COMM 872	Externship	4

Elective Course	2
Credits	**9**
Total Credits	**59**

Accelerated Master's

Program Eligibility*

- Current UNH student in good standing
- Overall GPA of 3.5+ at the time of application (i.e., including grades from fall semester junior year), GPA must be based on a minimum of 3 semesters at UNH
- Completed a minimum of 86 credits earned/completed (i.e., not including credits in progress). Ideally, 89 credits is preferred.
  - The Graduate School requires that students complete 90 credits before enrolling in 800 level courses.
- Complete all CSD-required courses for Years 1 and 2 (see curriculum)
- Completed KIN 706 Neurology, COMM 504 Basic Audiology Intro to Audiology, and COMM 741 Speech-Language Pathology I.
- Enrolled in COMM 742 Speech-Language Pathology II (and all its prerequisite coursework) and COMM 705 Introduction to Aural Rehabilitation for spring semester junior year

**** Important: Eligibility does not ensure acceptance to the AM program.***

The AM program is designed for and best suited to students who begin the CSD program as Freshmen (in Year 1). Students who transfer into the major may be eligible for the AM program but will need to meet all the above criteria.

Timeline for AM program:

- **Prior to registering for Spring Year 2 courses**: Discuss interest in AM program with UG advisor to begin accelerating program (i.e., enroll in 20 credits in Spring, Year 2)
- **By the first day of classes in Fall of Year 3**: Declare eligibility (submit Intent to Apply to csd.department@unh.edu)
- **During Fall of Year 3**: Enroll in COMM 741 Speech-Language Pathology I(and COMM 723 Observation Skills in Speech-Language Pathology)
- **By the end of Fall of Year 3**: Meet 3.5+ GPA requirement
- **By the application due date**: Submit application to AM program
- **During Spring of Year 3**: Enroll in COMM 705 Introduction to Aural Rehabilitation and COMM 742 Speech-Language Pathology II
- **By April 15 of Year 3, if offered admission to the AM program**:
  - Accept or reject offer of admission to AM program by emailing csd.department@unh.edu
  - Complete and return documentation of intent to accept to the Graduate School
- **During Summer between Years 3 and 4**: Enroll in 2 800-level courses
  - *COMM 801 Principles of Assessment*
  - *COMM 802 Principles of Intervention*
- **During Fall of Year 4**: Enroll in 3 800-level courses + COMM 724 Senior Capstone (and COMM 723 Observation Skills in Speech-Language Pathology if not already taken):
  - *COMM 803 Ethical and Professional Issues in Communication Sciences and Disorders I*
  - *COMM 811 Brain and Behavior*
  - *COMM 821 Speech Sound Disorders*

By the end of the Fall Semester of Year 4: Complete 128 credits and graduate with a BS degree

Recommended Course Sequence Bachelors/Accelerated Master's Program

Course	Title	Credits
First Year		
Fall		
COMM 420	Survey of Communication Disorders	4
PSYC 401	Introduction to Psychology	4
BMS 507	Human Anatomy and Physiology I	4
ENGL 401	First-Year Writing	4
	Credits	**16**
Spring		
MATH 420	Finite Mathematics	4
LING 405	Introduction to Linguistics	4
PHYS 409	Investigating Physics Discovery/Writing Intensive or Elective Course	4
Discovery/Writing Intensive or Elective Course		4
	Credits	**16**
Second Year		
Fall		
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
	Credits	**16**
Spring		
COMM 522	Language Acquisition	4
COMM 636	Speech and Hearing Science	4
PSYC 581	Child Development	4
Discovery/Writing Intensive or Elective Course		4
Discovery or Elective Course		2-4
	Credits	**18-20**
Third Year		
Fall		
COMM 504	Basic Audiology	4
KIN 706 & KIN 707	Neurology and Neurology Lab	6
COMM 741	Speech-Language Pathology I	4
Discovery or Elective Course		4
COMM 723	Observation Skills in Speech-Language Pathology	2
(or other 2-credit elective)		
	Credits	**20**
Spring		
COMM 610	Fact, Fiction, Fraud: Evaluating Motivations, Claims, and Evidence	4
COMM 705	Introduction to Aural Rehabilitation	4
COMM 742	Speech-Language Pathology II	4

Discovery or Elective Course		4
Discovery or Elective Course		4
	Credits	**20**
Fourth Year		
Summer		
COMM 701	Principles of Assessment	2
COMM 702	Principles of Intervention	2
	Credits	**4**
Fall		
COMM 811	Brain and Behavior	3
COMM 821	Speech Sound Disorders	3
COMM 803	Ethical and Professional Issues in Communication Sciences and Disorders I	1
COMM 723	Observation Skills in Speech-Language Pathology	2
(if not taken in Third Year fall)		
COMM 724	Senior Capstone (Professional Issues in Speech Language Pathology W: Writing Intensive))	4
Elective and/or Discovery Course		2-7
	Credits	**15-20**
Spring		
COMM 812	Dysphagia	3
COMM 824	Motor Speech Disorders	3
COMM 832	School-Age & Adolescent Language Disorders	3
COMM 833	Aphasia in Adults	3
COMM 851	Advanced Audiology for Speech Language Pathologists	3
COMM 870	Clinical Practicum	1
	Credits	**16**
Fifth Year		
Summer		
COMM 870	Clinical Practicum	1
	Credits	**1**
Fall		
COMM 805	Research Methods in Communication Sciences and Disorders	3
COMM 831	Early Childhood Language Disorders	3
COMM 843	Augmentative and Alternative Communication	3
COMM 870	Clinical Practicum	1
COMM 870	Clinical Practicum (Diagnostic Clinic Fall or Spring)	1
Fall Elective Courses		2-4
COMM 842	Autism Spectrum Disorders	
COMM 895	Special Topics	
COMM 841	Cognitive Communication Disorders	
	Credits	**13-15**
January Term		
COMM 804	Counseling Clients and Families with Communication Disorders	2
COMM 823	Voice Disorders	3
	Credits	**5**
Spring		
COMM 822	Stuttering	3
COMM 872	Externship	4
COMM 870	Clinical Practicum (Diagnostic Clinic Fall or Spring)	1
Spring Elective Courses		2-4
COMM 895	Special Topics	
Summer		
COMM 872	Externship	4
	Credits	**14-16**
	Total Credits	**174-185**

Student Learning Outcomes

- Demonstrate Appropriate Knowledge of Professional Practice
- Demonstrate Knowledge of Foundations of Speech-Lang Pathology Practice
- Demonstrate Knowledge of Identification and Prevention of Speech-Language and Swallowing Disorders and Differences
- Demonstrate Knowledge of Evaluation of Speech-Language Disorders and Differences
- Demonstrate Knowledge of Intervention of Speech-Language and Swallowing Mechanisms
- Demonstrate General Knowledge and Skills Applicable to Professional Practice

Community Development Policy and Practice (CSPP)

Degree offered: M.A.

The Carsey School of Public Policy's public service graduate degrees offer a unique combination of academic rigor and real-life expertise to prepare you for a career with impact. Geared toward working professionals, our online M.A in Community Development Policy and Practice (MCD) program will equip you for a myriad of careers and jobs while preparing you through real-world training and connecting you to community-based partners and practitioners. You'll learn the basis of community engagement and establish a foundation in sustainable and effective community development practices, all while learning to apply these skill sets across different sectors, including housing, health, finance, business development and more.

In our online, cohort-based community development degree, you'll learn from seasoned practitioners in economics, finance, organizational management, health and safety, and sustainable development. You'll apply effective engagement and problem-solving techniques while working directly with a community on a four-term capstone project. You'll also grow your professional network, connecting with respected experts across disciplines and continents. Designed for working professionals, this online community development program enables you to earn your degree in just 14 months.

https://carsey.unh.edu/community-development-policy-practice-ma

Programs

- Community Development Policy and Practice (M.A.) (p. 73)

Faculty

***See* Carsey School of Public Policy Faculty**

Community Development Policy and Practice (M.A.)

https://carsey.unh.edu/community-development-policy-practice-ma

Description

The online MA in Community Development Policy and Practice program (MCD) prepares you for a career in community and economic development. While earning this online, cohort-based community development degree, you will tackle real-world situations through a capstone community project and engage with leading experts and academics in a program designed for working professionals just like you. Through coursework and experiential opportunities, you will learn from seasoned practitioners in subjects ranging from economics and community financing to community organizing and public health.

- The MCD program is fully online and is ideal for working professionals
- Gain effective community development skills and tools through an applied four-term capstone project in your community
- Connect with respected field experts across disciplines, including faculty and peers
- Start in the fall or spring and graduate in 14 to 24 months
- The GRE is not required to apply to this degree program.

Program Delivery & Location: *Core academic courses for the MCD degree are offered online with choices for taking optional elective courses online or in person on UNH campuses. Students are free to carry out their capstone projects in their chosen community.*

Requirements

Students enrolled in the Carsey School's MA in Community Development Policy and Practice program (MCD) are required to complete a **36-credit** program, consisting of 12 courses including a four-term capstone project:

- Five (5) CORE Curriculum Courses
- Four (4) EXPERIENTIAL LEARNING Courses
- Three (3) ELECTIVE Courses

These provide the applied foundational community and economic development skills in strategy, practice, and analysis for a successful career in community development. In this program, students will examine each of the core interdisciplinary areas within the cross-cutting lenses of public policy, data collection, and analysis as students directly apply what they learn in the classroom through a capstone project centered on community engagement for sustainable development. Further opportunities for depth and specialization are provided through a variety of elective courses which vary each year as well as the opportunity to conduct independent studies to delve deeper into a specific aspect of a student's community or capstone project.

Code	Title	Credits
CORE Required Courses (5 Courses)		
DPP 901	Integrative Approaches to Development Policy and Practice	3
DPP 902	Economic Analysis for Development	3
DPP 905	Fiscal Management for Development Organizations	3
DPP 906	Organizational Management and Leadership	3
DPP 908	Policy Seminar	3
EXPERIENTIAL LEARNING Courses (4 Courses) [1]		
DPP 980	Introduction to Community Development Projects	3
DPP 981	Project Design and Planning	3
DPP 982	Project Implementation and Monitoring	3
DPP 983	Project Evaluation	3
ELECTIVE Courses: Choose Three (3) 3-Credit Courses [2]		**9**
DPP #911	Environmental Factors in Development Practice	
DPP #951	Nuts and Bolts of Microfinance	
DPP #953	Community Medicine and Epidemiology	
DPP 956	Housing Development	
DPP #960	Social Enterprise	
DPP #961	Community Development Finance	
DPP 962	Public Safety and Community Development	
DPP 990	Independent Study	
Total Credits		**36**

1. With full faculty support, students carry out a four-term capstone project in their communities by completing actionable assignments throughout the series of four (4) applied project courses.
2. A variety of elective courses are offered throughout the program. This can also include DPP 990 Independent Study. Students wishing to pursue elective courses outside of the MCD program should consult with their MCD Graduate Academic Advisor for guidance and approval.

Degree Plan

SAMPLE DEGREE PLAN: *Fall Start (Typical)*

Course	Title	Credits
First Year		
Fall		
Term 1		
DPP 901	Integrative Approaches to Development Policy and Practice	3
DPP 980	Introduction to Community Development Projects [1]	3
Term 2		
DPP 906	Organizational Management and Leadership	3
DPP 981	Project Design and Planning [1]	3
	Credits	**12**
Spring		
Term 3		
DPP 902	Economic Analysis for Development	3
DPP 982	Project Implementation and Monitoring [1]	3
Term 4		
DPP 905	Fiscal Management for Development Organizations	3

DPP 983	Project Evaluation [1]	3
	Credits	**12**
Summer		
Term 5		
DPP 908	Policy Seminar	3
MCD Elective Course [2]		3
	Credits	**6**
Second Year		
Fall		
Term 1		
MCD Elective Course [2]		3
MCD Elective Course [2]		3
	Credits	**6**
	Total Credits	**36**

MCD SAMPLE DEGREE PLAN: *Spring Start*

Course	Title	Credits
First Year		
Spring		
Term 3		
DPP 902	Economic Analysis for Development	3
MCD Elective Course [2]		3
Term 4		
DPP 905	Fiscal Management for Development Organizations	3
MCD Elective Course [2]		3
	Credits	**12**
Summer		
Term 5		
DPP 908	Policy Seminar	3
MCD Elective Course [2]		3
	Credits	**6**
Fall		
Term 1		
DPP 901	Integrative Approaches to Development Policy and Practice	3
DPP 980	Introduction to Community Development Projects [1]	3
Term 2		
DPP 906	Organizational Management and Leadership	3
DPP 981	Project Design and Planning [1]	3
	Credits	**12**
Second Year		
Spring		
Term 3		
DPP 982	Project Implementation and Monitoring [1]	3
Term 4		
DPP 983	Project Evaluation [1]	3
	Credits	**6**
	Total Credits	**36**

NOTES:

[1] With full faculty support, students carry out a four-term capstone project in their communities by completing actionable assignments throughout the series of four (4) applied project courses.

[2] A variety of MCD electives and other Carsey graduate courses are offered each term. This includes the MCD Independent Study course (DPP 990) taken under the guidance of an MCD faculty member. Students wishing to pursue elective courses outside of the MCD program should consult with their MCD Academic Advisor for guidance and approval.

Student Learning Outcomes

- Develop interdisciplinary knowledge and skills to integrate theory, policy, data collection, and analysis.
- Acquire an understanding of complex development issues and problems.
- Apply learning to real-world situations.
- Effectively communicate findings to various audiences both verbally and in writing.

Computer Science (CS)

Degrees Offered: Ph.D., M.S.

This program is offered in Durham.

The Department of Computer Science offers both the M.S. and the Ph.D. in computer science.

The M.S. program is designed to help students increase the breadth and depth of their computer science knowledge, strengthen their software development skills, and build their research skills.

The Ph.D. program is designed to develop a student's ability to carry out advanced research, as well as ensure the breadth and depth of computer science knowledge required to obtain a faculty position in academia or a research position in industry or at a national laboratory.

Admission Requirements

The computer science graduate program is designed for students with a B.S. degree in computer science. However, applications from students whose undergraduate degree is not in computer science are also welcome. In this case, a well–defined set of undergraduate prerequisites must be completed as part of the M.S. program of study. The prerequisites include an introduction to computer science, object--oriented programming, data structures, machine organization, operating systems, and computer science theory.

These prerequisites can be satisfied at UNH by the following undergraduate courses:

Code	Title	Credits
CS 415	Introduction to Computer Science I	4
CS 416	Introduction to Computer Science II	4
CS 515	Data Structures and Introduction to Algorithms	4
CS 520	Computer Organization and System-Level Programming	4
CS 620	Operating System Fundamentals	4
CS 659	Introduction to the Theory of Computation	4

Some students may need to take additional mathematics classes.

Students without a B.S. or M.S. in computer science are not normally admitted directly into the Ph.D. program, but it is possible to transfer from the M.S. program to the Ph.D. program.

Applicants must submit current scores (within five years) for the general test of the GRE. Students who have taken computer science courses at UNH can request a waiver of this requirement.

https://ceps.unh.edu/computer-science/

Programs

- Computer Science (Ph.D.) (p. 75)
- Computer Science (M.S.) (p. 75)

Faculty

https://ceps.unh.edu/computer-science/faculty-staff-directory

Computer Science (Ph.D.)

https://ceps.unh.edu/computer-science/program/phd/computer-science

Description

The Ph.D. program is designed to develop a student's ability to carry out advanced research, as well as ensure the breadth and depth of computer science knowledge required to obtain a faculty position in academia or a research position in industry or at a national laboratory. Students first work to obtain breadth knowledge and a faculty research mentor. Then, working with their mentor, they carry out advanced work that results in original research publications and a doctoral dissertation.

Requirements

Code	Title	Credits
CS 900	Graduate Seminar	1
Select six CS graduate courses (of at least 3 credits each) beyond the M.S. or twelve CS graduate courses beyond the B.S. [1]		
Interdisciplinary breadth requirement [2]		
Breadth Requirement [3]		
Depth Requirement [4]		
Dissertation [5]		

1 The courses must satisfy the following requirements:
- Two courses must be implementation intensive (see list below).
- All students must take CS 845 Formal Specification and Verification of Software Systems or CS 858 Algorithms.
- At most two can be CS 998 Independent Study. If two CS 998 courses are taken, they must be taught by different instructors.

2 This requirement must be satisfied by taking a non-CS 800-level or 900-level course. The course must be approved by the student's research mentor.

3 To satisfy this requirement, a Ph.D. student who has previously completed a Masters degree, must take classes from at least three different faculty. All other students must take classes from at least five different faculty.

4 Under the direction of a depth adviser and a depth committee, the student carries out some preliminary research that is likely to lead to a dissertation topic. The student must produce two written reports (a literature survey and a research report) and make a presentation as part of an oral examination on the material. After the student has successfully completed the depth exam and has satisfied the interdisciplinary breadth requirement, the student is advanced to candidacy.

5 The student must complete original research and present and defend a dissertation describing that research. The research is carried out under the supervision of a faculty member dissertation adviser and a dissertation committee of at least five members, including one from outside the department.

Implementation Intensive Courses

Implementation intensive courses include:

Code	Title	Credits
CS 812	Compiler Design	3
CS 820	Systems Programming	3
CS 830	Introduction to Artificial Intelligence	3
CS 835	Introduction to Parallel and Distributed Programming	3
CS 870	Computer Graphics	3
CS 953	Data Science for Knowledge Graphs and Text	3

Student Learning Outcomes

Graduates of the UNH Ph.D. CS program will have an ability to:

- Understand and apply a wide breadth and depth of computer science knowledge.
- Carry out advanced independent computer science research that results in original publications and a doctoral dissertation.
- Obtain a faculty position in academic, or a research position in industry or at a national laboratory.

Computer Science (M.S.)

https://ceps.unh.edu/computer-science/program/ms/computer-science

Description

The M.S. program is designed to help students increase the breadth and depth of their computer science knowledge, strengthen their software development skills, and build their research skills. Professionally-oriented students often complete industry internships, and the program has an outstanding job placement record for its graduates. Research--oriented students complete an M.S. thesis under the guidance of a faculty mentor, which usually leads to publication and provides clear evidence of the developed research skills useful for obtaining a leadership position in industry or to go on to do a Ph.D. Applications are welcomed from students whose undergraduate degree is not in computer science. In this case, a well-defined set of undergraduate prerequisites must be completed as part of the M.S. program of study.

Requirements

The M.S. program has three options: thesis, project, and exam.

M.S. Thesis Option

Code	Title	Credits
CS 900	Graduate Seminar	1
Select eight CS graduate courses of at least 3 credits each [1]		24
CS 899	Master's Thesis [2]	6
Total Credits		**31**

[1] The courses must satisfy the following requirements:
- Two courses must be implementation intensive (see list below)
- All students must take CS 845 Formal Specification and Verification of Software Systems or CS 858 Algorithms
- At least two courses must be above 900
- At most one can be CS 998 Independent Study
- Students must take courses taught by a minimum of five different faculty

[2] The student must complete a thesis under the supervision of a thesis adviser and a thesis committee of at least three members.

M.S. Project Option

Code	Title	Credits
CS 900	Graduate Seminar	1
Select ten CS graduate courses of at least 3 credits each [1]		30
CS 898	Master's Project [2]	3
Total Credits		**34**

[1] The courses must satisfy the following requirements:
- Two courses must be implementation intensive (see list below)
- All students must take CS 845 Formal Specification and Verification of Software Systems or CS 858 Algorithms
- At least three courses must be above 900
- At most one can be CS 998 Independent Study
- Students must take courses taught by a minimum of five different faculty

[2] The student must complete a project under the supervision of a faculty adviser.

M.S. Exam Option

Code	Title	Credits
CS 900	Graduate Seminar	1
Select ten CS graduate courses of at least 3 credits each [1]		30
Comprehensive exam that includes four different examination topics (see list below) [2]		
Total Credits		**31**

[1] The courses must satisfy the following requirements:
- Two courses must be implementation intensive (see list below)
- All students must take CS 845 Formal Specification and Verification of Software Systems or CS 858 Algorithms
- At least three courses must be above 900
- At most one can be CS 998 Independent Study
- Students must take courses taught by a minimum of five different faculty

[2] One topic must be from the Theory topic area. The other three should be selected from three different topic areas (which can include a second theory topic). The topic areas are as follows: a) Theory: Formal Specification and Verification; Algorithms, b) Distributed Systems, c) Artificial Intelligence, d) Computer Graphics, e) Computer Networks, f) Information Retrieval, g) Machine Learning, h) Computer Security, i) Robotics, j) Parallel and Distributed Programming, k) Cloud computing.

Implementation Intensive Courses

Implementation intensive courses include:

Code	Title	Credits
CS 812	Compiler Design	3
CS 820	Systems Programming	3
CS 830	Introduction to Artificial Intelligence	3
CS 835	Introduction to Parallel and Distributed Programming	3
CS 870	Computer Graphics	3
CS 953	Data Science for Knowledge Graphs and Text	3

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Graduates of the UNH M.S. CS program will have an ability to:

- Apply computer science theory to increase the breadth and depth of their computer science knowledge.
- Utilize advance software development skills.
- Carry out guided computer science research.
- Obtain an advanced position in industry or continue onto a PhD program.

Computing

Degrees Offered: M.S.

This program is offered in Manchester.

The Department of Applied Engineering and Sciences at the Manchester campus offers two master's programs in computing to prepare students for professional careers in IT and Cybersecurity Engineering and for advanced studies in a computing discipline.

Designed for people with a strong interest in computing as well as working professionals in computing fields, the graduate professional computing program focuses on project-based and applied learning. Housed at the Manchester campus, graduate computing students are in the heart of the state's tech, corporate and financial activity, which opens doors to a wealth of internship and job opportunities.

Courses are offered year around in fall, spring, and summer terms. Classes are scheduled during the day and in the evening to meet the needs of both full-time and part-time students. If enrolled part-time and taking, on average, two courses per term, students can complete their graduate program of study in two years.

Admission Requirements

Applicants must meet the admission standards of the UNH Graduate School and have a bachelor's degree in a computing or computing-related discipline: computer science, information technology, computer information systems, data science, information sciences, computer engineering, or software engineering.

Students with undergraduate degrees in other fields are also welcome to apply. They are required to demonstrate computing competencies in programming, computing systems and tools, and college-level mathematics. Students can satisfy these prerequisites at the Manchester campus by taking undergraduate COMP courses as determined by the program's admissions committee based on the student's academic and professional background. For diligent undergraduate students, this program is also available as an Accelerated Master's Program.

Programs

- Cybersecurity Engineering (M.S.) (p. 77)
- Information Technology (M.S.) (p. 78)

Faculty

See https://manchester.unh.edu/directory/all?last_name=&person_type=All&category=144 for faculty.

Cybersecurity Engineering (M.S.)

https://manchester.unh.edu/program/ms/cybersecurity-engineering

Description

This program is offered in Manchester.

Cybersecurity touches nearly every facet of an organization. From marketing to legal to finance, employees across the industry are more aware of the flow of data and the measures needed to keep it secure. Technical systems need technical solutions—which is why the University of New Hampshire has launched a Master of Science in Cybersecurity Engineering.

Designed for working professionals and those with a strong interest in cybersecurity, the program combines in-class and online learning on how to develop, engineer and operate secure information systems. You will learn the theoretical underpinnings of information security and have opportunities to apply your knowledge and skills to real-world scenarios and authentic project experiences.

With a greater emphasis on the collection and storage of big data, information security and cloud computing, the demand for cybersecurity engineers has never been higher. The M.S. in Cybersecurity Engineering gives you the technical skills and experience to meet that demand, preparing you to secure information, communications, networks and control systems for any organization.

Career Opportunities

Graduates of the Cybersecurity Engineering program are able to identify, analyze and respond to the complex information security threats that are increasingly common in today's digital landscape. You'll learn skills in core and advanced information security, preparing you to develop, integrate and evaluate secure IT systems and services for any organization.

Requirements

The M.S. in Cybersecurity Engineering program will have two options:

- The Capstone option requires the completion of 11 courses (**33 credits**). The capstone is a work-based project, internship experience or other appropriate activity that integrates the skills and knowledge you developed during the degree program, along with your past experiences, areas of specialization and professional goals. In consultation with an advisor, each student develops a project plan and prepares and delivers a final project agreed upon by the student and advisor.
- The Thesis option consists of 10 courses (**30 credits**) including 6 credits of COMP 899 Master's Thesis (counts as 2 courses) and requires you to research, write and defend a publishable-quality, graduate-level paper. The thesis track is designed for students who may be interested in pursuing further studies (i.e., a doctoral experience).

Code	Title	Credits
Required Courses		
COMP 815	Information Security	3
COMP 835	Secure Networking Technologies	3
COMP 880	Topics (Software Security Principles)	3
COMP 880	Topics (Computer Forensics)	3
COMP 880	Topics (Cryptography)	3
One (1) 3-credit policy course from the following:		**3**
CPRM 810	Foundations of Cybersecurity Policy	
CPRM 830	Security Measures I	
CPRM 850	Security Measures II	
CPRM 870	Cybersecurity Risk Management	
CPRM 880	Cybersecurity Metrics and Evaluation	
Professional Experience		
COMP 801	Integrated Computing Practice [1]	3
Internship (Select from the following) [2]		*3*
COMP 890 & COMP 891	Internship and Career Planning and Internship Practice	
COMP 890 & COMP 892	Internship and Career Planning and Applied Research Internship	
COMP 891	Internship Practice	
COMP 892	Applied Research Internship	
Elective Courses		
Select 1 course (3 credits) for Thesis Option or 3 courses (9 credits) for Project Option		
COMP 805	Full Stack Development	
COMP 820	Database Systems and Technologies	
COMP 821	Big Data for Data Engineers	
COMP 825	Programming Languages	
COMP 830	Software Development	
COMP 840	Machine Learning Applications and Tools	
COMP 850	Neural Networks	
COMP 851	System Integration and Architecture	
COMP 860	Data Visualization & Communication	
COMP 880	Topics	
Capstone Project		
COMP 898	Master's Project	3
or		
COMP 899	Master's Thesis	6

1 Students are required to enroll in COMP 801 Integrated Computing Practice within their first nine credits in the program.

2 Students are required to enroll in at least 1 credit of Professional Experience upon successful completion of nine credits in the program.

COMP 891 Internship Practice and COMP 892 Applied Research Internship may be repeated for a maximum of 6 credits.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Analyze complex computing problems and identify solutions by applying principles of computing.
- Design, implement, and evaluate computing solutions that meet computing requirements with focus on security aspects.
- 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 IT activities.
- Apply security principles and practices to maintain operations in the presence of risks and threats.

Information Technology (M.S.)

https://manchester.unh.edu/program/ms/information-technology

Description

The MS in Information Technology program is a professional graduate program in the applied and fast-changing field of Information Technology. The program prepares students for a professional IT or computing-related career and for advanced studies in a computing discipline. Offered at the University's urban campus in Manchester, a city that embraces cultural diversity, the program welcomes students from all over the word. With classes scheduled during the day and in the evening in fall, spring, and summer terms, the program gives students the flexibility to enroll full- or part-time.

Tools, platforms, and programming languages used in IT industry evolve rapidly. Capitalizing on the campus location in New Hampshire's largest city and the state's corporate and financial center, the program requires an internship experience. With support from many business, technology and non-profit organizations who sponsor internships, students integrate authentic professional experiences in their academic coursework early in the program.

Requirements

Degree Requirements

The M.S. IT program has two options for completion:

- **Master's Project Option (33 Credits)**: 10 courses (30 credits) and Master's Project course (3 credits)
- **Master's Thesis Option (30 Credits)**: 8 courses (24 credits) and Master's Thesis (6 credits)

Both options require completion of 18 core credits.

Code	Title	Credits
Students are required to complete 3 credits in each of the six core areas below.		
Data		**3**
COMP 820	Database Systems and Technologies	3
or COMP 821	Big Data for Data Engineers	
Operations		
COMP 835	Secure Networking Technologies	3
or COMP 851	System Integration and Architecture	
Intelligent Systems		
COMP 840	Machine Learning Applications and Tools	3
or COMP 841	Practical Artificial Intelligence	
Development		
COMP 805	Full Stack Development	3
or COMP 830	Software Development	
Security		
COMP 815	Information Security	3
or COMP 885	Applied Cryptography	
Professional Experience [1]		**3**
COMP 801	Integrated Computing Practice	3
Internship (Select from the following) [2]		
COMP 890 & COMP 891	Internship and Career Planning and Internship Practice	
COMP 890 & COMP 892	Internship and Career Planning and Applied Research Internship	
COMP 891	Internship Practice	
COMP 892	Applied Research Internship	
Elective Courses		**6-12**
Master's Project Option requires 12 credits of elective coursework. Master's Thesis Option requires 6 credits of elective coursework		
Elective courses can be in various disciplines, including computer science (CS), computing (COMP), business and administration (ADMN), analytics and data science (DATA), and more. Depending on the culminating experience option (project or thesis), there are two or four elective courses required.		
Culminating Experience		
Select one of the following:		
COMP 898	Master's Project	3
COMP 899	Master's Thesis	6

1 Students are required to enroll in COMP 801 Integrated Computing Practice within their first nine credits in the program.

2 Students are required to enroll in at least 1 credit of Professional Experience upon successful completion of nine credits in the program. COMP 891 Internship Practice and COMP 892 Applied Research Internship may be repeated for a maximum of 6 credits.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Analyze complex computing problems and identify solutions by applying principles of computing.
- Design, implement, and evaluate computing solutions that meet IT computing requirements.
- 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 IT activities.
- Identify and analyze user needs in the process of developing and operating computing systems.

Cybersecurity Policy and Risk Management (CPRM)

https://online.unh.edu/cprm

Overview

Degree Offered: M.S.

This program is offered online.

The demand for master's-level cybersecurity and risk management professionals is on the rise in the U.S. and globally. Guided by full-time faculty, practicing experts and senior executives, the CPRM degree fosters the strategic thinking, policy development and risk management skills that will set you apart in the high-demand cybersecurity field. Our highly interdisciplinary program is designed for students and working professionals with a variety of backgrounds — business, healthcare, IT, finance, homeland security, law and more — so you do not need an undergraduate degree in a technical field to be successful.

Programs

- Cybersecurity Policy and Risk Management (M.S.) (p. 79)

Faculty

https://online.unh.edu/program/ms/cybersecurity-policy-risk-management#collapse_314

Cybersecurity Policy and Risk Management (M.S.)

https://online.unh.edu/program/ms/cybersecurity-policy-risk-management

Description

This program is offered online.

The M.S. in Cybersecurity Policy and Risk Management (CPRM) program cultivates strategic thinking, policy development, and risk-management skills for students interested in careers in business or government. The program features full-time faculty and industry experts who help blend strategy and policy with preparedness, incident response, recovery, and resilience – the heart of our security studies discipline.

Students may come from business, public administration, healthcare, finance, homeland defense and security, retail, law, insurance, and a myriad of technical and engineering disciplines. Prior experience or undergraduate degrees in technical fields are not required.

This is an online only program, taught over five 8-week terms per academic calendar year.

Requirements

The degree requires a minimum **30 graduate credits** made up of nine core courses and culminating with a required capstone experience. The capstone involves a project custom-designed by each student (in cooperation with an advisor) to address real-world or work-related challenges in cybersecurity. Students research into the chosen challenge/problem, and then synthesize and apply their knowledge to recommend solutions or other deliverables that help address the problem.

Code	Title	Credits
Core Courses (All Required)		
CPRM 810	Foundations of Cybersecurity Policy	3
CPRM 820	Policy Development and Communication	3
CPRM 830	Security Measures I	3
CPRM 840	Cybersecurity Standards, Regulations, and Laws	3
CPRM 850	Security Measures II	3
CPRM 860	Incident Response and Investigation	3
CPRM 870	Cybersecurity Risk Management	3
CPRM 880	Cybersecurity Metrics and Evaluation	3
CPRM 890	Organizations, Change Management, and Leadership	3
Concluding Experience		
CPRM 898	Capstone Project	3
Total Credits		**30**

Accelerated Master's

UNH students may be considered for "Accelerated Master's" (AM) dual degree status which permits you to begin studying for a master's degree while still finishing your bachelor's degree.

When taking courses in AM status, you earn course credit toward both your undergraduate and graduate degrees.

This saves time and money and gives a boost to your career prospects and workplace advancement.

See the Graduate School site for AM application requirements and support.

The AM option for MS CPRM is open to UNH students at Durham and Manchester campuses.

Undergraduate degrees

The MS CPRM program accepts students from all undergraduate degrees, both non-technical and technical. Students may come from business, public administration, healthcare, finance, homeland defense and security, retail, law, insurance, and a myriad of technical and engineering disciplines. Prior experience or education in technical fields is not required.

The AM program for MS CPRM also aligns with UNH's minor in Cybersecurity Policy, which means that you can earn the Cybersecurity Minor alongside your chosen major.

Timeline

- **Junior year**: Apply for the MS CPRM program under the "Accelerated Master's" (AM) option.
- **Senior year**: If accepted as an AM student, begin taking the approved classes (see below) and receive credit toward both your undergraduate and graduate degrees. For MS CPRM, you may start taking classes only in Fall or in Spring. Students **must** begin with CPRM 810 Foundations of Cybersecurity Policy as their first class.

Program Rules

All CPRM courses are taught asynchronously online in our intensive 8-week term structure and at the graduate level only. There are two consecutive terms in the Fall semester and two in the Spring.

AM students may start their MS CPRM studies only at the beginning of Fall or Spring (first taking CPRM 810 Foundations of Cybersecurity Policy). A Summer start is not permitted.

AM students are not permitted to take more than one CPRM class per term without prior approval by the CPRM program coordinator.

This rule is put into place because AM students will be starting CPRM classes while also completing bachelor degree requirements in the senior year (typically including demanding classes such as capstones or other challenging classes), and we want to preserve the best option for student success in both your undergraduate and graduate pursuits.

To complete the MS CPRM degree, students must fulfill all requirements for the program (p. 79).

Courses

While in AM status, you may take **up to 12 credits of the following courses**. These credits will apply to both your undergraduate and MS CPRM degree.

You must begin with CPRM 810 Foundations of Cybersecurity Policy (which is offered in Term 1 in the Fall and Term 3 in the Spring).

Code	Title	Credits
CPRM 810	Foundations of Cybersecurity Policy	3
CPRM 820	Policy Development and Communication	3
CPRM 830	Security Measures I	3
CPRM 840	Cybersecurity Standards, Regulations, and Laws	3
CPRM 850	Security Measures II	3
CPRM 890	Organizations, Change Management, and Leadership	3

Example Schedules

These are only examples. Once accepted into the AM option for MS CPRM, you will work with your MS CPRM advisor to establish a schedule that works best for you.

Fall Start

Course	Title	Credits
Fall		
Junior Year		
	Apply for the MS CPRM program under the "Accelerated Master's" (AM) option	
Fall of Senior Year		
CPRM 810	Foundations of Cybersecurity Policy (Term 1)	3
CPRM 830	Security Measures I (Term 2)	3
Spring of Senior Year		
CPRM 850	Security Measures II (Term 3)	3
CPRM 840	Cybersecurity Standards, Regulations, and Laws (Term 4)	3
After Bachelor's Degree Awarded		
	Transition to normal graduate student status and continue with the remaining requirements for the MS CPRM program. See important comments below re: this transition.	
	Credits	**12**
	Total Credits	**12**

Spring Start

Course	Title	Credits
Spring		
Junior Year		
	Apply for the MS CPRM program under the "Accelerated Master's" (AM) option	
Fall of Senior Year		
	Take only your undergraduate courses per your bachelor's study plan	
Spring of Senior Year		
CPRM 810	Foundations of Cybersecurity Policy (Term 3)	3
CPRM 830	Security Measures I (Term 4)	3
Summer of Senior Year		
	If you are still pursuing your bachelor's degree (e.g., will graduate in September rather than May), you may elect to take CPRM 850 in Term 5 of the summer semester.	
CPRM 850	Security Measures II (Term 5)	3
After Bachelor's Degree Awarded		
	Transition to normal graduate student status and continue with the remaining requirements for the MS CPRM program. See important comments below re: this transition.	
	Credits	**9**
	Total Credits	**9**

Transition to normal graduate student status
Upon completion and award of your undergraduate degree, you will no longer be an "AM" student but will transition to normal graduate student status.

It is important to plan for this transition in advance, as there will be both academic and financial implications to consider.

Be sure to reach out to all available advisors to help you plan for a smooth transition.

Student Learning Outcomes

- Describe & explain the conceptual framework of cybersecurity and its role in risk management; and discuss the history and various approaches to cybersecurity.
- Analyze the conceptual framework of cybersecurity, and identify & integrate the standards and other resources for the professional development, implementation, and management of cybersecurity policies and methods.
- Reflect on the organizational structures, information, and skillsets required for ongoing evaluation & revision of cybersecurity in a variety of real-world organizations.
- Communicate professionally and effectively with upper management, regulators, partners, colleagues, clients, and other end-users regarding cybersecurity planning and incident management.
- Explain & justify the needs for cybersecurity policy development, implementation, and management (within or across businesses, agencies, other organizations, industries, sectors, and nations).
- Strategize & customize cybersecurity risk management policies and processes for private or public organizations, with balanced consideration of organizational goals, regulatory mandates, industry best practices, and professional ethics.

Decision Sciences (DS)

The Decision Sciences (DS) Department within the Peter T. Paul College of Business and Economics consists of faculty from three disciplines: business statistics, operations research/management, and management information systems. The Decision Sciences faculty focuses on developing analytical methods to aid business decision making. The expertise in the Department can be segmented into three main building blocks of business analytics:

• Descriptive analytics deals with storing/accessing data via databases, pre-processing data, and visually representing/summarizing historical patterns to gain managerial insights.
• Predictive analytics deals with modeling/quantifying uncertainty and building models that assist in producing forecasts/predictions for future phenomena.
• Prescriptive analytics deals with optimal business decisions when firms are faced with limited resources.

The Department also coordinates the B.S. Business Administration options in Information Systems & Business Analytics and Entrepreneurial Studies, as well as the MBA Information Systems & Business Analytics specialization and the graduate certificate in Business Analytics. The Peter T. Paul College is accredited by the Association to Advance Collegiate Schools of Business (AACSB).

https://paulcollege.unh.edu/decision-sciences-department

Programs

- Business Analytics (M.S.) (p. 81)
- Business Analytics (Graduate Certificate) (p. 83)

Faculty

Decision Sciences Faculty

Business Analytics (M.S.)

https://paulcollege.unh.edu/program/ms/business-analytics

Description

The Master of Science in Business Analytics (MSBA), offered by the Peter T. Paul College of Business and Economics, prepares students for careers related to data analytics and quantitative decision making in modern organizations. Graduates from the MSBA program will be armed with skills in data storing/pre-processing/visualization, in building prediction/forecasting models, and in formulating/solving optimal business decision problems when faced with limited resources. The MSBA program places heavy emphasis on building both the theoretical fundamentals and the practical applications of business analytics supported by relevant and modern programming skills. In addition, the MSBA curriculum is designed to foster teamwork and presentation skills that will help students to seamlessly transition into relevant corporate roles.

The MSBA is a STEM-designated program and consists of required and elective coursework. Courses follow an 8-week-long term. The program can be completed in 9 months (taking three courses per term), or 12 months (taking two to three courses per term). The MSBA program requires that applicants possess an introductory level of exposure to Calculus and programming. General familiarity with basic concepts from Calculus I, Calculus II (e.g. functions, derivation, and integration), and Linear Algebra (basic matrix operations) as well as prior exposure to at least one programming language (C++, Python, R, Java, SQL, etc.) are highly desirable. Any students without Calculus, Linear Algebra, and programming fundamentals will have access to resources to acquire the relevant background prior to joining the program.

In addition, applicants are required to have a bachelor's degree and to submit a GMAT or GRE test score from within the last five years. The emphasis will be on the quantitative score for both tests, and waivers will be considered on a case-by-case basis. International students are also required to submit a TOEFL score (waivers will be considered on a case-by-case basis).

The field of Business Analytics has grown rapidly over the last few years due to technological advancements and the ease of access to data for decision making in organizations ranging from small to large. Every firm is interested in hiring and training individuals with analytical capabilities to sustain competitive advantage in the marketplace. A list of examples of careers in business analytics is as follows:

- Business Analytics & Optimization Consultant
- Business Case Modeling Analyst/Consultant
- Business Intelligence Analyst
- Decision Science Analyst

- Analyst & Planner (Six Sigma)
- Internal Quantitative Marketing Strategy Consultant
- Manager of Modeling and Analytics
- Pricing & Revenue Optimization Analyst
- Project Manager/Promotion Response Analytics
- Quantitative Analyst – Asset Allocation
- Quantitative Analyst – Insurance Risk
- Quantitative Marketing Solutions Director & Manager
- Quantitative Modeler
- Quantitative Research Analyst

Requirements

The MSBA program requires students to take 12 courses (a total of **36 credit hours**), from which 10 are required core courses and 2 are electives. A listing of core courses is below. Full-time students take two or three courses per term.

Code	Title	Credits
The Foundation		
Mathematics for Business Analytics (Online Module) [1]		0
Core Courses		
DS 801	Business Intelligence	3
DS 802	Probability and Simulation	3
DS 803	Fundamentals of Statistical Analysis	3
DS 804	Exploration and Communication of Data	3
DS 805	Statistical Learning	3
DS 806	Optimization Methods I	3
DS 807	Modeling Unstructured Data	3
DS 808	Optimization Methods II	3
DS 809	Time Series Analysis	3
DS 810	Big Data and AI: Strategy and Analytics (Capstone)	3
2 Approved Electives [2]		6
Total Credits		**36**

1 The online module acts as a refresher for the mathematical background needed for the program and is designed to prepare students for the MSBA program.

2 Below is a list of suggested elective courses from the MBA program. Other courses from other UNH graduate programs may be substituted with a petition.
Depending on the availability, students can take the below courses in a face-to-face format or in an online format.

Code	Title	Credits
Approved Electives		
ADMN 827	Hospitality Operations & Financial Metrics	
ADMN 829	Corporate Financial Strategy	
ADMN 830	Investments	
ADMN 834	Private Equity/Venture Capital	
ADMN 846	International Financial Management	
ADMN 852	Marketing Research	
ADMN 863	Marketing Analytics	
ADMN 864	New Product Development	
ADMN 898	Topics (Digital Marketing)	
ADMN 898	Topics (Applied Financial Modeling and Analytics)	
ADMN 898	Topics (Big Data in Finance)	
ADMN 898	Topics (Project Management)	
ADMN 912	Managing Yourself & Leading Others	
ADMN 919	Accounting/Financial Reporting, Budgeting, and Analysis	
ADMN 926	Leveraging Technology for Competitive Advantage	
ADMN 930	Financial Management/Raising and Investing Money	
ADMN 940	Managing Operations	
ADMN 960	Marketing/Building Customer Value	
ADMN 970	Economics of Competition	

Accelerated Master's

The Accelerated Master of Science in Business Analytics (MSBA) option provides an opportunity for UNH undergraduate students to begin graduate study while completing a bachelor's degree—making you stand out among other job applicants with advanced skills and increasing your earning potential. Qualified students can begin earning graduate credit during their undergraduate programs, allowing them to maximize their time on campus and return on their educational investment.

Eligibility

- Current UNH undergraduate student with a GPA of 3.2 or higher.
- Apply **before** completing 90 undergraduate credits.
- Acceptance into the Accelerated Master's Program ***before*** taking 800-level courses.

Accelerated MSBA Requirements

- Qualified students may complete up to 6 credits at the 800-level during their undergraduate studies, earning dual credit toward their B.S. and M.S. degrees.
- Once a qualified student matriculates into the MSBA program (after completing undergraduate degree), the student will take a minimum of 30 additional credits to complete the 36 credit MSBA program requirement.
- Students are required to earn a B- or better in graduate courses to earn credits toward their degree.

Approved Dual Credit Electives

To earn graduate credits, students need to enroll in the 800-level sections of approved dual credit courses. The 800-level sections require additional work beyond the requirements for the undergraduate versions. The following is the list of approved dual credit courses for the accelerated path in the MSBA program:

Code	Title	Credits
DS 720	Topics in Decision Sciences II	4
DS 774	E-Business	4
DS 768	Forecasting Analytics	4

Student Learning Outcomes

- Students will demonstrate knowledge of content areas of business analytics.
- Students will demonstrate the ability to solve complex business problems.
- Students will demonstrate effective oral communication behaviors.
- Students will demonstrate effective written communication behaviors.
- Students will demonstrate ability to cleanse, aggregate and visualize data.
- Students will demonstrate ability to apply statistical inference techniques to business and societal problems.

- Students will effectively develop and interpret optimization and simulation software output to inform business or policy decision making.

Business Analytics (Graduate Certificate)

https://paulcollege.unh.edu/program/certificate/business-analytics

Description

The graduate certificate in business analytics is a great choice for working business professionals who completed their education before the current focus on analytics, and who are interested in developing knowledge and skills in this expanding interdisciplinary business area. Students can pursue the certificate alone or in conjunction with a graduate degree. All classes are available online, with some courses available in a face-to-face format.

Highlights

- You will take courses alongside MBA students and be taught by the same world-class faculty.
- You will collaborate with working professionals with experience in a globally diverse range of industries.
- You will have access to a program advisor and career development tools.

Requirements

Credits: Students will complete 4 courses for a total of 12 credits
GPA: Students must have a minimum 3.0 GPA at certificate completion, and earn a B- or better in all classes

Code	Title	Credits
Required Courses		**9**
ADMN 873	Data Management and Visualization	
ADMN 872	Predictive Analytics	
ADMN 875	Prescriptive Analytics	
Elective (Select one course)		**3**
ADMN 863	Marketing Analytics	
ADMN 898	Topics (Applied Financial Modeling and Analytics)	
ADMN 898	Topics (Tools for Business Analytics)	
ADMN 898	Topics (Programming for Business Analytics)	
ADMN 950	Data Driven Decisions	
Total Credits		**12**

Earth Sciences (ESCI)

Degree Offered: M.S.

This program is offered in Durham.

The Department of Earth Sciences offers the master of science degree in Earth Sciences as well as options in geochemical systems, geology and ocean mapping. The department also offers the master of science degree in hydrology, and a master of science and a Ph.D. in Oceanography (p. 234). A Ph.D. in Earth and Environmental Sciences is offered through the Natural Resources and Earth System Science Program (p. 193). Students may also pursue a graduate certificate in Ocean Mapping, offered in partnership with the Center for Coastal and Ocean Mapping. Graduate students in the department may conduct research with faculty members in the Department of Earth Sciences; the Institute for the Study of Earth, Oceans, and Space; the Center for Coastal and Ocean Mapping; and the School of Marine Science and Ocean Engineering. Durham, where the University is located, is situated where the Oyster River enters Great Bay, one of the most important estuaries of the Gulf of Maine. Only ten miles away are the Atlantic beaches and Portsmouth, a deep water harbor.

The M. S. Earth Sciences is intended for students who are interested in geospatial analysis of earth systems, regional climate analysis of ocean and atmosphere, instrumental records of earth processes, earth observing systems and interpretation, modeling of earth processes and changes, quantitative analysis of Earth system dynamics, or other interdisciplinary topics related to the earth sciences not covered in one of the options below.

The M.S. Earth Sciences: Geochemical Systems option is intended for students with interests in all aspects of geochemistry: bedrock, sediment, water, ice, and air with particular emphasis on interpreting and modeling the interaction of these media (e.g., biogeochemistry, air quality, and climate change).

The M.S. Earth Sciences: Geology option is intended for students with interests in petrology, mineralogy, structural geology, tectonics, geophysics, sedimentology, glacial geology, paleoclimate, glaciology, hydrogeology, stratigraphy, paleontology, low- or high-temperature geochemistry, and isotope geochemistry.

The M.S. Earth Sciences: Ocean Mapping option is intended for students with interests in hydrography and hydrographic survey technology.

The M.S. in Hydrology is intended for students with interests in fluvial processes, global–scale hydrology, groundwater hydrology, hydroclimatology, surface-water hydrology, water quality, and quantitative and statistical hydrology, and water resource management.

https://ceps.unh.edu/earth-sciences

Programs

- Earth Sciences (M.S.) (p. 83)
- Earth Sciences: Geochemical Systems (M.S.) (p. 85)
- Earth Sciences: Geology (M.S.) (p. 86)
- Earth Sciences: Ocean Mapping (M.S.) (p. 88)
- Hydrology (M.S.) (p. 89)

Faculty

See https://nextcatalog.unh.edu/graduate/programs-study/earth-sciences/ for faculty.

Earth Sciences (M.S.)

https://ceps.unh.edu/earth-sciences/program/ms/earth-sciences

Description

This program is intended for students with interests in all aspects of the Earth sciences, including atmospheric sciences, hydrology, geochemistry, geology, oceanography, with particular emphasis on geospatial analysis of earth systems, regional climate analysis of ocean and atmosphere,

instrumental records of earth processes, earth observing systems and interpretation, modeling of earth processes and changes, quantitative analysis of Earth system dynamics, and other interdisciplinary topics related to the earth sciences.

Admission Requirements

An applicant to the M.S. program is expected to have demonstrated competency in the following college courses: one year each of calculus and chemistry and two semesters of physics and/or biology. In addition, the applicant is expected to have an undergraduate degree or equivalent in geology, chemistry, physics, mathematics, computer science, engineering, or the biological sciences. Students lacking some background in a particular area may be admitted provided they are prepared to complete courses, without graduate credit, in which they may be deficient. The program of study a student wishes to follow and the student's undergraduate major determine the level of preparation necessary. The preparation of each student is determined before the beginning of the first semester in residence in order to plan the course of study. Each entering student is assigned an academic adviser to assist in planning a program of study.

Requirements

Degree Requirements

Students in the thesis option must satisfactorily complete at least **30 graduate credits**, which include the credits accumulated in the core curriculum. Students in this option must complete a master's thesis (6 credits) and give an oral presentation of the results.

Students in the non-thesis option must satisfactorily complete at least **34 graduate credits**, which includes the core curriculum, a 2–credit directed research project (ESCI 898 Directed Research), and a written and oral presentation of that research.

Earth Sciences

All students will select a total of three core courses from two core areas (methods and disciplinary courses) to complete as part of the program. Any course used to satisfy core requirements must be a graduate-level classroom course of at least 3 credits offered by the Department of Earth Sciences. Independent study courses may not be used to satisfy core requirements. Within one year of enrollment, students must complete and receive their advisor's signature on a Coursework Approval Form, which lists the student's planned coursework. Students are also required to take ESCI 997 Seminar in Earth Sciences and ESCI 998 Proposal Development, preferably within the first year of enrollment.

The core curriculum for Earth Sciences normally includes:

Code	Title	Credits
Required Courses:		
ESCI 997	Seminar in Earth Sciences (first year)	1
ESCI 998	Proposal Development (first year)	1
Select a total of three Earth Sciences core courses from two core areas (methods and disciplinary courses)		**9-12**
Select Master's Thesis or Directed Research:		
ESCI 899	Master's Thesis (6 credits)	
ESCI 898	Directed Research (2 credits)	
Elective Courses		

Additional electives are to be selected from graduate level courses in the department and/or from graduate level courses in related disciplines outside of the department (e.g., civil and environmental engineering, natural resources, chemistry, mathematics and statistics, and computer science). More detailed information is available from the department.

Degree Plan

Course	Title	Credits
First Year		
Fall		
Core Curriculum 1	Course	4
Elective I Course		3-4
ESCI 997	Seminar in Earth Sciences	1
	Credits	**8-9**
Spring		
Core Curriculum 2	Course	4
Elective 2 Course		3-4
ESCI 998	Proposal Development	1
	Credits	**8-9**
Second Year		
Fall		
Core Curriculum 3	Course	3-4
ESCI 899	Master's Thesis (or Elective for Directed Research Option)	3-4
	Credits	**6-8**
Spring		
Elective 3 Course		3-4
ESCI 899 or ESCI 898	Master's Thesis or Directed Research	2 or3
	Credits	**5-7**
	Total Credits	**27-33**

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Students graduating with a MS in Earth Sciences should achieve the following learning outcomes:

Core Knowledge

- Demonstrate a foundation of knowledge in Earth sciences that results in expertise and an understanding of the topics in the student specialty.
- Demonstrate basic knowledge of how the processes within this field interact with other related disciplines.

- Demonstrate specialized knowledge of a field within Earth sciences sufficient to conduct substantive supervised research.

Research Methods and Analysis

- Identify and demonstrate knowledge of a range of qualitative and quantitative methodologies typically used in Earth sciences research.
- Discover and critically read published research in the Earth sciences and related fields of mathematics, statistics, physics, chemistry, and biology.
- Frame empirical research and/or theory guided by prior knowledge.
- Implement a rigorous study using appropriate methods, measures and techniques.
- Critically evaluate and systematically analyze data to reach appropriate findings and interpretations

Scholarly Communication

- Structure a coherent argument that rigorously presents and evaluates evidence to support claims.
- Review and cogently synthesize relevant literature.
- Write at a level and in a style of English consistent with that found in leading academic journals.
- Understand and properly use styles of citing, referencing, and formatting found in leading academic journals.
- Clearly convey research findings through oral presentation supported by appropriate digital media.
- Cogently summarize research and its significance to non-specialist audiences.

Professionalism and Pedagogy

- Prepare manuscripts that meet the standards of academic and research journals and respond appropriately to recommendations for revision.
- Demonstrate collaboration, leadership and teamwork.
- Create a welcoming environment that is supportive, inclusive and equitable.
- Make effective contributions to university, community and professional service.
- Communicate effectively to groups in a lecture format.

Earth Sciences: Geochemical Systems (M.S.)

Description

The option in Geochemical Systems is intended for students with interests in all aspects of geochemistry: bedrock, sediment, water, ice, and air with particular emphasis on interpreting and modeling the interaction of these media (e.g., biogeochemistry, air quality, and climate change).

Admission Requirements

An applicant to the M.S. program is expected to have demonstrated competency in the following college courses: one year each of calculus and chemistry and two semesters of physics and/or biology. In addition, the applicant is expected to have an undergraduate degree or equivalent in geology, chemistry, physics, mathematics, engineering, or the biological sciences. Students lacking some background in a particular area may be admitted provided they are prepared to complete courses, without graduate credit, in which they may be deficient. The program of study a student wishes to follow and the student's undergraduate major determine the level of preparation necessary. The preparation of each student is determined before the beginning of the first semester in residence in order to plan the course of study. Each entering student is assigned an academic adviser to assist in planning a program of study.

Requirements

Degree Requirements

Students in the thesis option must satisfactorily complete at least **30 graduate credits**, which include the credits accumulated in the core curriculum. Students in this option must complete a master's thesis (6 credits) and give an oral presentation of the results.

Students in the non-thesis option must satisfactorily complete at least **34 graduate credits**, which includes the core curriculum, a 2--credit directed research project (ESCI 898 Directed Research), and a written and oral presentation of that research.

Geochemical Systems

Code	Title	Credits
Required Courses:		
ESCI 997	Seminar in Earth Sciences (first year)	1
ESCI 998	Proposal Development (first year)	1
Select two of the following courses:		**6-8**
ESCI 841	Geochemistry	
ESCI 845	Isotope Geochemistry	
ESCI 847	Aqueous Geochemistry	
ESCI 852	Chemical Oceanography	
ESCI 860	Paleoceanography	
ESCI 865	Paleoclimatology	
NR 844	Biogeochemistry	
Plus one of the following		**4**
ESCI 801	Quantitative Methods in Earth Sciences	
ESCI 820	Ocean Measurements Lab	
ESCI 864	Spectral Analysis of Geophysical Time Series Data	
ESCI 877	GIS for Earth & Environmental Sciences	
ESCI 878	Remote Sensing Earth & Environmental Sciences	
Select Master's Thesis or Directed Research:		
ESCI 899	Master's Thesis (6 credits)	
ESCI 898	Directed Research (2 credits)	
Elective Courses		

Additional electives are to be selected from graduate level courses in the department and/or from graduate level courses in related disciplines outside of the department (e.g., civil and environmental engineering, natural resources, chemistry, mathematics and statistics, and computer science). More detailed information is available from the department.

Degree Plan

Course	Title	Credits
First Year		
Fall		
Core Curriculum 1 Course		4
Elective I Course		3-4

ESCI 997	Seminar in Earth Sciences	1
	Credits	**8-9**
Spring		
Core Curriculum 2 Course		4
Elective 2 Course		3-4
ESCI 998	Proposal Development	1
	Credits	**8-9**
Second Year		
Fall		
Core Curriculum 3 Course		3-4
ESCI 899	Master's Thesis (or Elective for Directed Research Option)	3-4
	Credits	**6-8**
Spring		
Elective 3 Course		3-4
ESCI 899 or ESCI 898	Master's Thesis or Directed Research	2 or3
	Credits	**5-7**
	Total Credits	**27-33**

Student Learning Outcomes

Students graduating with a MS in Earth Sciences: Geochemical Systems should achieve the following learning outcomes:

Core Knowledge

- Demonstrate a foundation of knowledge in Geochemical Systems that results in expertise and an understanding of the chemistry and chemical interactions of the Earth's mantle, crust, or on the surface of the Earth in terrestrial, aquatic, or atmospheric environments at a range of timescales focused on, for example, biogeochemical processes that govern the distribution and cycling of elements and nutrients, processes that add and remove elements in various environments, or the chemical transformations and exchanges between the atmosphere, oceans, and solid Earth.
- Demonstrate basic knowledge of how the processes within this field interact with other related disciplines.
- Demonstrate specialized knowledge of a field within geochemical processes and elemental cycles on Earth sufficient to conduct substantive supervised research.

Research Methods and Analysis

- Identify and demonstrate knowledge of a range of qualitative and quantitative methodologies typically used in geochemistry research.
- Discover and critically read published research in the Earth sciences and related fields of mathematics, statistics, physics, chemistry, and biology.
- Frame empirical research and/or theory guided by prior knowledge.
- Implement a rigorous study using appropriate methods, measures and techniques.
- Critically evaluate and systematically analyze data to reach appropriate findings and interpretations

Scholarly Communication

- Structure a coherent argument that rigorously presents and evaluates evidence to support claims.
- Review and cogently synthesize relevant literature.
- Write at a level and in a style of English consistent with that found in leading academic journals.
- Understand and properly use styles of citing, referencing, and formatting found in leading academic journals.
- Clearly convey research findings through oral presentation supported by appropriate digital media.
- Cogently summarize research and its significance to non-specialist audiences.

Professionalism and Pedagogy

- Prepare manuscripts that meet the standards of academic and research journals and respond appropriately to recommendations for revision.
- Demonstrate collaboration, leadership and teamwork.
- Create a welcoming environment that is supportive, inclusive and equitable.
- Make effective contributions to university, community and professional service.
- Communicate effectively to groups in a lecture format.

Earth Sciences: Geology (M.S.)

https://ceps.unh.edu/earth-sciences/program/ms/earth-sciences-geology

Description

This option is for students with interests in petrology, mineralogy, structural geology, tectonics, geophysics, sedimentology, glacial geology, paleoclimate, glaciology, hydrogeology, stratigraphy, paleontology, low- or high-temperature geochemistry, and isotope geochemistry, both those seeking a broad background in geology and also for those wishing to study one area in depth.

Admission Requirements

An applicant to the M.S. program is expected to have demonstrated competency in the following college courses: one year each of calculus and chemistry and two semesters of physics and/or biology. In addition, the applicant is expected to have an undergraduate degree or equivalent in geology, chemistry, physics, mathematics, computer science, engineering, or the biological sciences. Students lacking some background in a particular area may be admitted provided they are prepared to complete courses, without graduate credit, in which they may be deficient. The program of study a student wishes to follow and the student's undergraduate major determine the level of preparation necessary. The preparation of each student is determined before the beginning of the first semester in residence in order to plan the course of study. Each entering student is assigned an academic adviser to assist in planning a program of study.

Requirements

Degree Requirements

Students in the thesis option must satisfactorily complete at least **30 graduate credits**, which include the credits accumulated in the core curriculum. Students in this option must complete a master's thesis (6 credits) and give an oral presentation of the results.

Students in the non-thesis option must satisfactorily complete at least **34 graduate credits**, which includes the core curriculum, a 2--credit directed research project (ESCI 898 Directed Research), and a written and oral presentation of that research.

Geology

The core curriculum for the option in geology normally includes:

Code	Title	Credits
Required Courses:		
ESCI 997	Seminar in Earth Sciences (first year)	1
ESCI 998	Proposal Development (first year)	1
Select at least three of the following courses:		**11-12**
ESCI 826	Igneous and Metamorphic Petrology	
ESCI 834	Geophysics	
ESCI 841	Geochemistry	
ESCI 845	Isotope Geochemistry	
ESCI 854	Sedimentology	
ESCI 856	Geotectonics	
ESCI 859	Geological Oceanography	
ESCI 862	Glacial Geology	
ESCI 866	Volcanology	
Select Master's Thesis or Directed Research:		
ESCI 899	Master's Thesis (6 credits total)	
ESCI 898	Directed Research (2 credits)	
Elective Courses		

Additional electives are to be selected from graduate level courses in the department and/or from graduate level courses in related disciplines outside of the department (e.g., civil and environmental engineering, natural resources, chemistry, mathematics and statistics, and computer science). More detailed information is available from the department.

Degree Plan

Course	Title	Credits
First Year		
Fall		
Core Curriculum 1 Course		4
Elective I Course		3-4
ESCI 997	Seminar in Earth Sciences	1
	Credits	**8-9**
Spring		
Core Curriculum 2 Course		4
Elective 2 Course		3-4
ESCI 998	Proposal Development	1
	Credits	**8-9**
Second Year		
Fall		
Core Curriculum 3 Course		3-4
ESCI 899	Master's Thesis (or Elective for Directed Research Option)	3-4
	Credits	**6-8**
Spring		
Elective 3 Course		3-4
ESCI 899 or ESCI 898	Master's Thesis or Directed Research	2 or3
	Credits	**5-7**
	Total Credits	**27-33**

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Students graduating with a MS in Earth Sciences: Geology should achieve the following learning outcomes:

Core Knowledge

- Demonstrate a foundation of knowledge in Geology that results in expertise in at least one of the following:
    - Solid Earth Processes: An understanding of geology, geophysics, or petrology at a range of timescales, focused on, for example, the structure of the Earth, plate tectonic reconstructions, seismology and earthquake hazards, magmatic, volcanic, or metamorphic processes, or other studies that allow for the reconstruction of geologic, geophysical, or petrologic processes at a range of spatial and time scales.
    - Earth Surface Processes: An understanding of surficial processes and their manifestations in the geologic record at a range of timescales, focused on, for example, sedimentology, glacial geology, paleontology, geomorphology and landscape evolution, limnology, and paleoclimatology.
- Demonstrate basic knowledge of how the processes within each of these fields interact with other related disciplines.
- Demonstrate specialized knowledge of a field within geology or geophysics sufficient to conduct substantive supervised research.

Research Methods and Analysis

- Identify and demonstrate knowledge of a range of qualitative and quantitative methodologies typically used in geological research.
- Discover and critically read published research in the Earth sciences and related fields of mathematics, statistics, physics, chemistry, and biology.
- Frame empirical research and/or theory guided by prior knowledge.

- Implement a rigorous study using appropriate methods, measures and techniques.
- Critically evaluate and systematically analyze data to reach appropriate findings and interpretations.

Scholarly Communication

- Structure a coherent argument that rigorously presents and evaluates evidence to support claims.
- Review and cogently synthesize relevant literature.
- Write at a level and in a style of English consistent with that found in leading academic journals.
- Understand and properly use styles of citing, referencing, and formatting found in leading academic journals.
- Clearly convey research findings through oral presentation supported by appropriate digital media.
- Cogently summarize research and its significance to non-specialist audiences.

Professionalism and Pedagogy

- Prepare manuscripts that meet the standards of academic and research journals and respond appropriately to recommendations for revision.
- Demonstrate collaboration, leadership and teamwork.
- Create a welcoming environment that is supportive, inclusive and equitable.
- Make effective contributions to university, community and professional service.
- Communicate effectively to groups in a lecture format.

Earth Sciences: Ocean Mapping (M.S.)

https://ceps.unh.edu/earth-sciences/program/ms/ocean-mapping

Description

A degree option in Ocean Mapping is for students with interests in hydrography and hydrographic survey technology who wish to prepare for careers in such areas as federal and institutional marine research, federal and international positions in hydrographic surveying, the environment, private sector offshore mineral resources exploration industries, and marine hardware and software development. The study of ocean mapping is a key niche in the ocean technology field.

Hydrography, in the context of this program, is the measurement and definition of the configuration of the bottoms and adjacent land areas of oceans, lakes, rivers, harbors, and other water areas, and the tides (or water levels) and currents that occur in those bodies of water. It includes elements of both physical oceanography, and surveying and mapping.

Ocean mapping is a broader concept that includes not only the elements of hydrography, but also encompasses such topics as the geologic characterization of the seabed and the mapping of living resources and habitats.

Admission Requirements

An applicant to the M.S. program is expected to have demonstrated competency in the following college courses: one year of calculus, one semester of chemistry, and at least three additional semesters of chemistry, physics, and/or biology. In addition, the applicant is expected to have an undergraduate degree or equivalent in geology, chemistry, physics, mathematics, computer science, engineering, or the biological sciences. Students lacking some background in a particular area may be admitted provided they are prepared to complete courses, without graduate credit, in which they may be deficient. The program of study a student wishes to follow and the student's undergraduate major determine the level of preparation necessary. The preparation of each student is determined before the beginning of the first semester in residence in order to plan the course of study. Each entering student is assigned an academic adviser to assist in planning a program of study.

More information is available about program from the Center for Coastal and Ocean Mapping (CCOM), which oversees this degree program.

Requirements

Degree Requirements

Students in the thesis option must satisfactorily complete at least **30 graduate credits**, which include the credits accumulated in the core curriculum. Students in this option must complete a master's thesis (6 credits) and give an oral presentation of the results.

Students in the non-thesis option must satisfactorily complete at least **34 graduate credits**, which includes the core curriculum, a 2--credit directed research project (ESCI 898 Directed Research), and a written and oral presentation of that research.

Ocean Mapping

The core curriculum for the option in ocean mapping normally includes:

Code	Title	Credits
Required Courses:		
ESCI 997	Seminar in Earth Sciences (first year)	1
ESCI 998	Proposal Development (first year)	1
Additional Courses		
ESCI 858	Introduction to Physical Oceanography	3 or 2
or ESCI 868	Applied Physical Oceanography for Hydrographic Surveyors	
ESCI 859	Geological Oceanography	4 or 2
or ESCI 869	Marine Geology and Geophysics for Hydrographic Surveyors	
ESCI 871	Geodesy and Positioning for Ocean Mapping	4
ESCI 872	Applied Tools for Ocean Mapping	2
ESCI 874	Integrated Seabed Mapping Systems	4
ESCI 875	Advanced Topics in Ocean Mapping	4
ESCI 972	Hydrographic Field Course	4
MATH 831	Mathematics for Geodesy	3
Select Master's Thesis or Directed Research:		
ESCI 899	Master's Thesis (6 Credits)	
ESCI 898	Directed Research (2 Credits)	

Students may fulfill the Category A (professional) International Federation of Surveyors/International Hydrographic Organization/ International Cartographic Association (FIG/IHO) Standards of Competence for Hydrographic Surveyors by completing some additional specialized requirements. For more information, please visit the Center for Coastal and Ocean Mapping website, www.ccom.unh.edu.

Degree Plan

Course	Title	Credits
First Year		
Fall		
ESCI 872	Applied Tools for Ocean Mapping	2
ESCI 874	Integrated Seabed Mapping Systems	4
ESCI 997	Seminar in Earth Sciences	1
MATH 831	Mathematics for Geodesy	3
	Credits	**10**
Spring		
ESCI 871	Geodesy and Positioning for Ocean Mapping	4
ESCI 875	Advanced Topics in Ocean Mapping	4
ESCI 998	Proposal Development	1
	Credits	**9**
Summer		
ESCI 972	Hydrographic Field Course	4
	Credits	**4**
Second Year		
Fall		
ESCI 858	Introduction to Physical Oceanography	3
ESCI 859	Geological Oceanography	4
ESCI 899	Master's Thesis (or Elective for Directed Research Option)	3-4
	Credits	**10-11**
Spring		
Elective		3-4
ESCI 899 or ESCI 898	Master's Thesis or Directed Research	2 or3
	Credits	**5-7**
	Total Credits	**38-41**

Student Learning Outcomes

Students graduating with a MS in Earth Sciences: Ocean Mapping should achieve the following learning outcomes:

Core Knowledge

- Demonstrate foundational knowledge in ocean mapping technology and physical oceanographic and tidal processes that result in expertise focused on applications of hydrography to determine the configuration of subsea and adjacent land topography and geomorphology of oceans, lakes, rivers, harbors, and other water bodies.
- Demonstrate basic knowledge of how hydrography and ocean mapping interact with other related disciplines.
- Demonstrate specialized knowledge of ocean mapping sufficient to conduct substantive supervised research.

Research Methods and Analysis

- Identify and demonstrate knowledge of a range of qualitative and quantitative methodologies typically used in ocean mapping research.
- Discover and critically read published research in the Earth sciences and related fields of mathematics, statistics, physics, chemistry, and biology.
- Frame empirical research and/or theory guided by prior knowledge.
- Implement a rigorous study using appropriate methods, measures and techniques.
- Critically evaluate and systematically analyze data to reach appropriate findings and interpretations.

Scholarly Communication

- Structure a coherent argument that rigorously presents and evaluates evidence to support claims.
- Review and cogently synthesize relevant literature.
- Write at a level and in a style of English consistent with that found in leading academic journals.
- Understand and properly use styles of citing, referencing, and formatting found in leading academic journals.
- Clearly convey research findings through oral presentation supported by appropriate digital media.
- Cogently summarize research and its significance to non-specialist audiences.

Professionalism and Pedagogy

- Prepare manuscripts that meet the standards of academic and research journals and respond appropriately to recommendations for revision.
- Demonstrate collaboration, leadership and teamwork.
- Create a welcoming environment that is supportive, inclusive and equitable.
- Make effective contributions to university, community and professional service.
- Communicate effectively to groups in a lecture format.

Hydrology (M.S.)

https://ceps.unh.edu/earth-sciences/program/ms/hydrology

Description

This program is intended for students interests in fluvial processes, global-scale hydrology, groundwater hydrology, hydroclimatology, water quality, quantitative and statistical hydrology, and water resource management.

Admission Requirements

An applicant to the M.S. program is expected to have demonstrated competency in the following college courses: one year each of calculus and chemistry and two semesters of physics and/or biology. In addition, the applicant is expected to have an undergraduate degree or equivalent in geology, chemistry, physics, mathematics, computer science, engineering, or the biological sciences. Students lacking some background in a particular area may be admitted provided they are prepared to complete courses, without graduate credit, in which they may be deficient. The program of study a student wishes to follow and

the student's undergraduate major determine the level of preparation necessary. The preparation of each student is determined before the beginning of the first semester in residence in order to plan the course of study. Each entering student is assigned an academic adviser to assist in planning a program of study.

Requirements

Degree Requirements

Students in the thesis option must satisfactorily complete at least **30 graduate credits**, which include the credits accumulated in the core curriculum. Students in this option must complete a 6 credit master's thesis (ESCI 899) and give an oral presentation of the results.

Students in the non-thesis option must satisfactorily complete at least **34 graduate credits**, which includes the core curriculum, a 2--credit directed research project (ESCI 898 Directed Research), and a written and oral presentation of that research.

Hydrology

The core curriculum for the option in hydrology normally includes:

Code	Title	Credits
Required Courses:		
ESCI 997	Seminar in Earth Sciences (first year)	
ESCI 998	Proposal Development (first year)	
Additional Courses		
ESCI 805	Principles of Hydrology	
ESCI 810	Groundwater Hydrology	
Select Master's Thesis or Directed Research:		
ESCI 899	Master's Thesis	
ESCI 898	Directed Research	
Elective Courses		

Additional electives are to be selected from graduate level courses in the department and/or from graduate level courses in related disciplines outside of the department (e.g., civil and environmental engineering, natural resources, chemistry, mathematics and statistics, and computer science). More detailed information is available from the department.

Degree Plan

Course	Title	Credits
First Year		
Fall		
ESCI 805	Principles of Hydrology	4
Elective 1 Course		3-4
ESCI 997	Seminar in Earth Sciences	1
	Credits	**8-9**
Spring		
ESCI 810	Groundwater Hydrology	4
Elective 2 Course		3-4
ESCI 998	Proposal Development	1
	Credits	**8-9**
Second Year		
Fall		
Elective 3 Course		3-4
ESCI 899	Master's Thesis (or Elective for Directed Research Option)	3-4
	Credits	**6-8**
Spring		
Elective 4 Course		3-4
ESCI 899 or ESCI 898	Master's Thesis or Directed Research	2 or3
	Credits	**5-7**
	Total Credits	**27-33**

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Students graduating with a MS in Hydrology should achieve the following learning outcomes:

Core Knowledge

- Demonstrate knowledge of core concepts in the hydrologic sciences, including: 1) Conceptualizing a water budget and expressing it as a mathematical equation and 2) Understanding and proficient use of Darcy's Law
- Demonstrate general knowledge of hydrologic fluxes such as evaporation, precipitation, infiltration, and transpiration, and physical factors that affect them.
- Demonstrate an understanding of the uses and limitations of hydrologic models.
- Demonstrate specialized knowledge of a field within hydrology sufficient to conduct substantive supervised research.

Research Methods and Analysis

- Identify and demonstrate knowledge of a range of qualitative and quantitative methodologies typically used in hydrologic research.
- Discover and critically read published research in the Earth sciences and related fields of mathematics, statistics, physics, chemistry, and biology.
- Frame empirical research and/or theory guided by prior knowledge.
- Implement a rigorous study using appropriate methods, measures and techniques.
- Critically evaluate and systematically analyze data to reach appropriate findings and interpretations.

Scholarly Communication

- Structure a coherent argument that rigorously presents and evaluates evidence to support claims.
- Review and cogently synthesize relevant literature.

- Write at a level and in a style of English consistent with that found in leading academic journals.
- Understand and properly use styles of citing, referencing, and formatting found in leading academic journals.
- Clearly convey research findings through oral presentation supported by appropriate digital media.
- Cogently summarize research and its significance to non-specialist audiences.

Professionalism and Pedagogy

- Prepare manuscripts that meet the standards of academic and research journals and respond appropriately to recommendations for revision.
- Demonstrate collaboration, leadership and teamwork.
- Create a welcoming environment that is supportive, inclusive and equitable.
- Make effective contributions to university, community and professional service.
- Communicate effectively to groups in a lecture format.

Economics (ECON)

Degrees Offered: M.S., Ph.D.

These programs are offered in Durham.

The Department of Economics at Paul College (hereafter the Department) offers two of the most distinctive graduate Economics programs in the country.

The M.S. in Economics is a STEM designated, one-year program that offers two tracks. The academic track is for students whose goal is to become a research economist and possibly earn a Ph.D. The industry track is for students who seek careers as consultants and analysts helping businesses make better decisions using big data.

The Ph. D in Economics is also a STEM designated program. Its unique dual-focus curriculum trains students to become impactful research economists and college teachers. Paul College's Economics faculty is internationally known for its research in International Macroeconomics, International Trade, , Health Economics, and Environmental Economics. It is also renowned for its contributions to the History of Economic Thought and Economic Methodology.

M.S. and Ph.D. students participate in the Department's weekly research seminar, which attracts leading economists and researchers from around the country.

Admission Requirements

Beyond the Graduate School's requirements , applicants must submit current scores (within the past five years) from the general test of the Graduate Record Exam (GRE). Students' undergraduate and graduate experiences should show evidence of superior ability and, for the Ph.D. , the promise of independent scholarship. Undergraduate preparation should include undergraduate courses in intermediate economic theory, econometrics, calculus, and statistics.

https://paulcollege.unh.edu/economics

Programs

- Economics (M.S.) (p. 91)
- Economics (Ph.D.) (p. 92)

Faculty

See https://paulcollege.unh.edu/directory/all for faculty.

Economics (M.S.)

https://paulcollege.unh.edu/economics/program/ms/economics

Description

Paul College's STEM designated Master of Science in Economics is a breed apart. The program offers an academic track and an industry track. Students also have the flexibility of pursuing a mixed track that combines courses from the academic and industry tracks.

The academic track provides a full year of doctoral-level economic theory, econometric analysis, and research seminar. It is designed for students whose goal is to become a research economist and possibly a Ph.D. economist.

The industry track's curriculum is unlike any other Master's program in the country. It is interdisciplinary, weaving together economic theory, data analytics, statistical methods, and data modeling. The program's mix of doctoral-level and applied classes is also distinctive. Students learn economic theory and statistical methods at the doctoral level. They also use economic theory and data to understand a range of business decision problems. Innovative applied classes include Macroeconomic Consulting and Strategy Analysis: Games and Auctions.

Few other Master's programs in the country provide a toolkit with comparable interdisciplinary range or rigor. Students learn economic theory and econometrics, code in R and STATA, and learn SQL, PowerBI, and Tableau all in one year. Graduates are uniquely trained to help businesses understand the market context, formulate decision problems, and manage the data analysis. People with this training are in high demand by organizations of all stripes.

Students enroll in an intensive Mathematical Economics course during the month of August. The program culminates with a capstone experience, which depends on a student's chosen track.

The program can be completed in 12 months. It starts with an intensive Mathematical Economics course that is taught in a concentrated manner over the first two weeks of the Fall semester. It is followed by two semesters of coursework. Some of the industry-track courses are scheduled on the 8-week term calendar. These term classes entail 3-credit hours and meet 3.5 hours a week. A capstone experience completes the degree requirements. Industry track students' capstone entails a corporate consulting project in the spring, while academic track students take a comprehensive exam in microeconomic or macroeconomic theory in early summer.

Requirements

The program requires a minimum of **32 credit hours** of coursework and a capstone experience. All students must complete four core classes.

Code	Title	Credits
The Core		
ECON 825	Mathematical Economics [1]	4
ECON 926	Econometrics I	4
ECON 927	Econometrics II	4
ECON 976	Microeconomics I	4
Industry Track		
DS 801	Business Intelligence [2]	3
DS 804	Exploration and Communication of Data [2]	3
ECON 890	Analytical Economics in Practice (Capstone) [2]	3
ECON 871	Macroeconomic Consulting [2]	3
ECON 875	Strategy Analysis: Games and Auctions [2]	3
Elective [3]		
Academic Track		
ECON 972	Macroeconomics I	4
ECON 973	Macroeconomics II	4
ECON 977	Microeconomics II	4
ECON 988	Graduate Economics Seminar (Fall and Spring)	4
Capstone - Comprehensive Exam		
Mixed Track		
ECON 871	Macroeconomic Consulting [2]	3 or 4
or ECON 972	Macroeconomics I	

At least 15 credits of classes (if ECON 972 is selected) or 14 credits of classes (if ECON 871 is selected) from either the industry or academic track. Students are recommended to take at least 5 credits of classes beyond the core during the fall semester and 8 credits of classes beyond the core during the spring semester.

1 Course is offered in the first two weeks of the Fall semester and involves in-class and online learning. It provides the mathematical foundation needed for the fall theory and econometrics classes.

2 Course is scheduled on an 8-week term calendar and entails 32 hours of contact time.

3 Electives include ECON 928 Econometrics III, Time Series Econometrics, DS 809 Time Series Analysis, DS 807 Modeling Unstructured Data, MATH 838 Data Mining and Predictive Analytics, ACFI 810 Big Data in Finance, ADMN 863 Marketing Analytics, and other approved classes. The number of credit hours will vary depending on the choice of the elective.

Accelerated Master's

Our Accelerated Master of Science in Economics (MSE) option provides an opportunity for UNH undergraduate students to begin graduate study while completing a bachelor's degree—making you stand out among other job applicants with advanced skills and increasing your earning potential. Qualified students can begin earning graduate credit during their undergraduate programs, allowing them to maximize their time on campus and return on their educational investment.

Eligibility:

- Current UNH undergraduate student with a GPA of 3.2 or higher.
- Apply **before** completing 90 undergraduate credits.
- Acceptance into the Accelerated Master's Program ***before*** taking 800-level courses.

Accelerated MSE Requirements:

- Qualified students may complete up to 12 credits at the 800-level during their undergraduate studies, earning dual credit toward their B.S. and M.S. degrees.
- Once a qualified student matriculates into the MSE program (after completing undergraduate degree), the student will take a minimum of 20 additional credits to complete the 32 credit MSE program requirement.
- Students will be required to earn a B- or better in graduate courses to earn credits toward their degree.

Approved Dual Credit Electives

To earn graduate credits, students need to enroll in the 800-level sections of approved dual credit courses. The 800-level sections require additional work beyond the requirements for the undergraduate versions. The following is the list of approved dual credit courses for the accelerated path in the MSE program:

Code	Title	Credits
ECON 871	Macroeconomic Consulting	3
ECON 875	Strategy Analysis: Games and Auctions	3
MATH 838	Data Mining and Predictive Analytics	3
Other approved 800-level electives		

Student Learning Outcomes

Core Competencies

- Utilize economic theory to formulate and solve optimization problems for consumer and firm decision making (e.g., marginal analysis).
- Apply statistical and econometric methods using programming languages to analyze and draw valid conclusions from data.
- Demonstrate an ability to formulate well-designed research projects.

Industry Track

- Apply principles of data analytics to store, manage, and visualize large datasets.
- Identify and demonstrate how economic theory, econometrics, and data analytics can be applied to decision making at an enterprise level.

Academic Track

- Apply advanced graduate-level microeconomic and macroeconomic theory to understand markets and the economy.
- Demonstrate an ability to comprehend and critique current scholarly research in macroeconomics and microeconomics.

Economics (Ph.D.)

https://paulcollege.unh.edu/economics/program/phd/economics

Description

Admission to the doctoral program is reserved for students who demonstrate exceptional promise in economics. Students pursue the Ph.D. for various reasons, including a desire to make research contributions to the discipline and to teach economics at the college level.

The STEM designated program is nationally recognized for its dual focus on training research economists and college teachers. No other program provides more individualized mentoring to help students develop as research economists and college teachers. Students develop research skills early on through an integrative research experience. A cornerstone of this experience is the department's weekly research seminar, in which students write critical reviews and referee reports on the papers presented, act as discussants, and present their own research.

The program begins with ECON 825 Mathematical Economics, which is taught in a concentrated manner over the first two weeks of the Fall semester.

UNH's Ph.D. in Economics is a research degree that provides students with a deep understanding of economic theory, institutions, and empirical analysis. Graduates move into faculty positions at other institutions of higher learning. They also pursue careers as professional economists in industry and government.

Cognate in College Teaching

Students can also earn the Cognate in College Teaching, which is a separate certificate program that includes coursework and mentoring in teaching economics. The dual-focus Ph.D. has a superior record of student publications and placement into tenure-track assistant professor positions. Some of our graduates also pursue a non-academic career.

In conjunction with the Graduate School's Teaching Excellence Program, the department has developed a nationally known program of formal training in pedagogy for students whose career goals include teaching at the college level. This program – the Cognate in College Teaching – is an option that Ph.D. students may select in addition to the requirements of the doctoral degree. The Cognate is awarded, upon satisfaction of all requirements, concurrently with the Ph.D. The Cognate can only be awarded in conjunction with the Ph.D. and none of the course requirements of the Cognate can be substituted for those of the Ph.D.

To enter the program, a student must formally apply to the Graduate Dean after at least one year of full-time graduate studies in economics. Admission to the Cognate is decided by the graduate dean, based upon recommendations of the Economics Graduate Program Coordinator and the Teaching Excellence Program Director. More information about the cognate and requirements is available from the Center for Excellence and Innovation in Teaching & Learning.

Requirements

Degree Requirements

Requirements include eleven core courses, two comprehensive theory exams, field courses, two fields of concentration (one major and the other minor), four semesters of seminar, research workshop, a major field capstone experience, doctoral dissertation proposal defense and final defense. Candidacy is reached following successful completion of:

1. comprehensive theory examinations in microeconomics and macroeconomics;
2. capstone experience in major field (health economics, environmental economics or international economics);
3. naming an advisor willing to chair the student's dissertation committee and a viable dissertation topic.

Code	Title	Credits
Core Courses		
ECON 825	Mathematical Economics [1]	4
ECON 976	Microeconomics I	4
ECON 977	Microeconomics II	4
ECON 972	Macroeconomics I	4
ECON 973	Macroeconomics II	4
ECON 926	Econometrics I	4
ECON 927	Econometrics II	4
ECON 928	Econometrics III, Time Series Econometrics	4
ECON 929	Econometrics IV, Advanced Econometrics	4
ECON 957	History of Economic Thought	4
or ECON #958	Topics in Economic Thought and Methodology	
Research Skills		
ECON #979	Research Skills [2]	2
Graduate Economics Seminar		
ECON 988	Graduate Economics Seminar [3]	8
Research Workshop		
ECON 996	Research Workshop [4]	2
Comprehensive Examinations in Microeconomics and Macroeconomics		
Fields of Concentration (one major and one minor)		

1. Course is offered in a concentrated manner over 2 weeks at the beginning of the fall semester. It provides the mathematical foundation needed for the fall theory and econometrics classes.
2. Students begin work on a significant research project under the guidance of a faculty member and the instructor of ECON #979 Research Skills in the second year of study.
3. Students are required to sign up for the Graduate Economics Seminar in both fall and spring semesters during their first two years of study for a total of 8 credits.
4. Beyond their second year of study, students continue to participate in the department's weekly seminar by enrolling in one semester of Research Workshop.

Comprehensive Examinations in Microeconomics and Macroeconomics

Written evidence of proficiency in economic theory is demonstrated by passing comprehensive examinations in Microeconomics and Macroeconomics. To sit for a theory examination, students must have passed (B- or higher) the first-year required theory courses. Students should take both theory examinations at the end of their first year of study. Per Graduate School and Departmental policy, the number of attempts at the comprehensive theory examinations is restricted to two per examination. These examinations are given each year in June and, if a second attempt is necessary, in early August. A student who does not show up on a scheduled test date will have the examination counted as one of their attempts.

Fields of Concentration

Students must complete the requirements for one major field and one minor field. A student designates their major field no later than the beginning of the third year of study and must have departmental approval to change the major field thereafter.

Environmental Economics

Code	Title	Credits
Major Field Course Requirements		
ECON 908	Environmental Economics: Theory and Policy	4
ECON 909	Environmental Valuation	4
RECO #911	Natural and Environmental Resource Management (or other approved course)	4
Minor Field Course Requirements		

ECON 908	Environmental Economics: Theory and Policy	4
ECON 909	Environmental Valuation	4

Health Economics

Code	Title	Credits
Major Field Course Requirements		
ECON 941	Empirical Analysis in Health Economics	4
ECON 942	Theoretical Analysis in Health Economics	4
Minor Field Course Requirements		
ECON 941	Empirical Analysis in Health Economics	4
ECON 942	Theoretical Analysis in Health Economics	4

International Economics

Code	Title	Credits
Major Field Course Requirements		
ECON 945	International Trade	4
ECON 946	Open Economy Macroeconomics	4
Minor Field Course Requirements		
ECON 945	International Trade	4
ECON 946	Open Economy Macroeconomics	4

Capstone Experience in Major Field

For Health and International fields, comprehensive field examinations are given twice a year, in January and June. Students should take their major field examination on the first date possible following completion of their field courses. To sit for the field examination, students must have passed both their theory comprehensive examinations. Students are permitted two attempts to pass the field examination. A student who does not show up on a scheduled test date will have the examination counted as one of their attempts.

For the Environmental field, the student must successfully complete RECO #911 Natural and Environmental Resource Management or another approved course and arrange with their advisor to complete the field research paper requirement within 9 months of completing their final field course.

Graduate Economics Seminar

Students are required to sign up for the Graduate Economics Seminar (ECON 988) in both semesters during each of their first two years of study.

Research Skills

In the ECON #979 Research Skills course, students pursue a significant research project under the guidance of a faculty member and the class instructor. Students are expected to complete a research paper and present it in class.

The course is normally taken in a student's second year of study. Students also present their research in a conference-style format in their third year of study, typically in the department's graduate seminar series. The presentation may involve either a *significant* extension of their second-year paper from ECON #979 Research Skills or a new research project. The third-year presentation requirement may satisfy the presentation requirement for ECON 996 Research Workshop.

Research Workshop

Beyond their second year of study, students continue to participate in the department's weekly seminar by enrolling in one semester of Research Workshop (ECON 996). Research Workshop students present their own research in the research seminar series. Students should secure a dissertation adviser prior to signing up for their Research Workshop. The research workshop requirement should be completed by the end of the fifth year of study.

Dissertation Proposal Defense

Prior to defending their proposal, a student must find a dissertation chair and form a dissertation committee. The dissertation proposal may be defended as part of the Research Workshop or separately from the Workshop.

Final Dissertation Defense

Cognate in College Teaching Requirements

The Cognate in College Teaching offers a series of core and elective courses to prepare individuals to teach at institutions of higher education. The Cognate is available to doctoral students and students in selected master's degree programs at UNH. Students must apply and be formally admitted to the program. The Cognate appears as a minor on the student's transcript, and is awarded concurrently with the Ph.D. or Master's degree. Students elect, with the permission of their graduate coordinator, to add the cognate to their graduate degree. The cognate will be awarded at the time of the award of the qualifying graduate degree. More information about the cognate and requirements is available from the Center for Excellence and Innovation in Teaching & Learning.

Student Learning Outcomes

- Students will demonstrate a deep understanding in the three core fields of Economics (Microeconomics, Macroeconomics, and Econometrics).
- Students will gain expertise in their major field of study (Environmental Economics, Health Economics, or International Economics).
- Students will produce original and independent research that makes theoretical and/or empirical contributions to one or more existing literatures.
- Students will be able to analyze relevant data sets using appropriate econometric methods.
- Students will produce research papers that meet a professional standard in terms of clarity of thought and effective organization.
- Students will demonstrate strong skills in presenting their research in professional settings.

Education (CPSO)

Programs: M.S., Teacher Certification

Offered Online

The College of Professional Studies-Online, Education Academic Center offers a Master of Science in Instruction and Leadership, and multiple post-baccalaureate Teacher Certification programs for initial certification or additional certification for already certified teachers.

Admission Requirements

Master's Degrees

Admission requirements include:

- Bachelor's degree with a 3.0 GPA average in the last 60 credit hours, or Graduate Degree completed from a regionally accredited college or university with a 3.0 GPA minimum overall.
- Official transcripts for all previous college work.
- Transcripts from other countries will need to be translated and evaluated prior to full acceptance.
- 500-1000 word statement which includes professional goals and aspirations, motivation for applying for the degree, and relevant formal or informal experiences. The statement is evaluated on applicant's writing and its content alignment with the program's purpose and outcomes.
- Two (2) Professional or academic references.
- Contact information for references is submitted via the admissions application. This will generate an email inviting references to complete a short questionnaire to assess candidacy. A formal letter of recommendation is not required; however, references are welcome to upload one within the questionnaire.
- Current résumé.

Post-Baccalaureate Teacher Certifications

Admission requirements include:

- Bachelor's degree with a 3.0 GPA average for the last 60 credit hours or a 3.0 GPA at the graduate level from a regionally accredited college or university.
- Official transcripts for all previous college work.
- 500-1,000 word statement that describes why you would be an effective educator in the certification area you are seeking and how your professional and personal experiences will assist your pursuit.
- Two (2) professional or academic references.
- Contact information for your references is submitted via the admission application. This will generate an email inviting your references to complete a short questionnaire to assess your candidacy. A formal letter of recommendation is not required; however, your references are welcome to upload one within the questionnaire.
- Current resume.
- Passing PRAXIS CORE Academic Skills for Educators scores or current teacher certification (applicants who have not yet fulfilled this requirement are eligible for admission, though it will need to be fulfilled prior to taking EDC 700 Introduction to Field Experience and Program Requirements).

Programs

- Instruction and Leadership (M.S.) (p. 96)
- Early Childhood Education & Early Childhood Special Education (Teacher Certification) (p. 96)
- General Special Education (Teacher Certification) (p. 97)
- Life Sciences, Grades 7-12 (Teacher Certification) (p. 98)
- General Special Education and Elementary Education (Teacher Certification) (p. 99)
- Mathematics, Middle Level (Teacher Certification) (p. 100)
- Mathematics, Upper Level (Teacher Certification) (p. 101)
- Digital Learning Specialist (Teacher Certification for Already Certified Teachers) (p. 102)
- Early Childhood Education & Early Childhood Special Education (Teacher Certification for Already Certified Teachers) (p. 103)
- Elementary Education, Grades K-8 (Teacher Certification for Already Certified Teachers) (p. 104)
- Emotional Behavioral Disabilities (Teacher Certification for Already Certified Teachers) (p. 105)
- General Special Education, Grades K-12 (Teacher Certification for Already Certified Teachers) (p. 106)
- Intellectual Developmental Disabilities (Teacher Certification for Already Certified Teachers) (p. 107)
- Learning Disabilities (Teacher Certification for Already Certified Teachers) (p. 107)
- Mathematics, Middle Level (Teacher Certification for Already Certified Teachers) (p. 108)
- Mathematics, Upper Level (Teacher Certification for Already Certified Teachers) (p. 109)
- Reading & Writing Specialist (Teacher Certification for Already Certified Teachers) (p. 110)
- Reading and Writing Teacher (Teacher Certification for Already Certified Teachers) (p. 111)

Learning Outcomes

Outcomes-Based Learning

Our greatest concern is that our graduates develop a specific set of skills and abilities.

The College's outcome-based degree programs and curriculum:

- Provide standards to be met in demonstrating competence
- Form a base from which to design and pursue learning activities
- Foster the ability to demonstrate self-directed learning

In addition to individual student assessment and grading, learning outcomes assessment is conducted in all programs to ensure the quality of our programs and to prompt ongoing improvements in teaching and learning.

Graduate Degree Learning Outcomes

Based in our commitment to our students through our mission, vision and values, every graduate degree program at the College of Professional Studies - Online provides students with opportunities to learn and demonstrate their abilities to do the following:

Communicate, particularly

- Communicate effectively—orally and written—with respect to theories, arguments, methods, and concepts, using supplemental materials and technology as appropriate.
- Disaggregate, reformulate and adapt principle ideas, techniques or methods when completing a paper or project.
- Contribute to, expand, evaluate or refine the scholarship within the field of study.

- Collaborate with diverse people and teams using elements of effective team dynamics to effectively and appropriately structure team work.

Think critically and comprehensively, particularly

- Demonstrate analytical skills needed to gather and assess information to influence data-driven decision making.
- Exhibit a conceptual understanding of the most widely applicable methodologies of decision-making; for example, employ creative problem solving for strategic planning.
- Demonstrate critical thinking, appropriate analytical models, and critical reasoning processes to evaluate evidence, select among alternatives, and generate creative options in furtherance of effective decision making.

Apply knowledge to workplace and community, particularly

- Display competency and appropriate skills for working effectively with people from diverse backgrounds and orientations.
- Effectively engage in one's broader community through various forms of outreach.
- Design and implement a project that requires the application of advanced knowledge to a practical challenge and articulate the insights gained from the experience.[1]

Gain specialized knowledge, particularly

- Demonstrate proficiency in specialized skills and technologies needed to participate in the intellectual and organizational aspects of one's profession.

[1] *Not applicable to Graduate Certificate programs.*

Instruction and Leadership (M.S.)

https://cps.unh.edu/online/program/ms/leadership

Description

The Master of Science in Instruction and Leadership is designed as a capstone degree for UNH CPS Post Baccalaureate teacher certification completers interested in improving their effectiveness as a teacher and who want to become effective teacher leaders who are focused on the improved learning of their PK-12 students. Graduate students in this program learn from research-based techniques to collaborate with peers to create positive change and to promote increased student success.

Requirements

Degree Requirements

Minimum Credit Requirement: 36 credits
Minimum Residency Requirement: 12 credits must be taken UNH
Minimum GPA Requirement: 3.0

Code	Title	Credits
Major in Instruction and Leadership [1]		
Specialization Component [2]		24
EDC 890	Leadership Essentials: Evaluation of Teaching and Learning	3
EDC 891	Leadership Essentials to Develop and Support a Professional Culture	3
EDC 892	Capstone Project I: Leadership Essentials to Strategically Think, Plan, Implement & Evaluate	3
Integrative Capstone:		
EDC 893	Capstone Project II: Leadership Essentials to Strategically Think, Plan, Implement, & Evaluate	3
Total Credits		**36**

[1] A minimum grade of B- is required in all coursework.
[2] The Specialization Component of this program is made up of 24 graduate credits and may include an approved post baccalaureate and/or an approved graduate content area. Contact your program director to determine your Specialization Component for this program.

Student Learning Outcomes

Students will have the opportunity to:

- Develop and support a dynamic teaching and learning environment;
- Promote and support professional school culture to nurture all learners;
- Utilize leadership skills from a teacher-leader perspective to design, plan, and implement ongoing action research.

Early Childhood Education & Early Childhood Special Education (Teacher Certification)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Post Bac - ECE & ECSPED [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 801	Special Education Law	4
EDC 802	Young Children with Exceptionalities, Birth to Age 8	4
EDC 803	The Dynamic Role of the Special Educator	4
Intermediate Level Education Courses		
EDC 804	Assessment of Young Children in EC/ECSPED - Birth to Age 8	4
EDC 805	Collaboration, Consultation and Teaming In Early Childhood & Early Childhood Special Education	4
EDC 806	IFSP, IEP, and Transition Plans, Birth to Age 8	2
EDC 807	Behavior Interventions for Young Children	4
Advanced Level Education Courses		
EDC 808	Science, Technology, Engineering, and Mathematics in Early Childhood and Early Child Spec. Ed. 0-8	4
EDC 809	Teaching Language Arts and Literacy in Early Childhood and Early Childhood Special Education	6
EDC 810	Curriculum, Assessment & Instruction in Early Childhood and Early Childhood Spec Educ. Birth-Age 8	4
EDC 885	Culminating Teaching Experience and Seminar	4
Total Credits		**45**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification:

- **Praxis Core Academic Skills For Educators Exam** required. Passing Praxis Core Exam scores, NH DOE waiver or current NH teaching certification must be submitted prior to completion of EDU 700 Introduction to Field Experience and Program Requirements (1 s.h.) EDU 700 Introduction to Field Experience and Program Requirements (1 s.h.) EDU 700 Introduction to Field Experience and Program Requirements (1 s.h.) to continue with clinical courses.
- **Praxis II-EC Education of Young Children Exam** required. Students must attempt to pass Praxis II exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.
- **Pearson Foundations of Reading Exam** required. Students must attempt to pass Pearson Foundations of Reading Exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
EDC 801	Special Education Law Nonclinical	4
EDC 802	Young Children with Exceptionalities, Birth to Age 8 Nonclinical	4
	Credits	**9**
Spring		
EDC 803	The Dynamic Role of the Special Educator Clinical A	4
EDC 804	Assessment of Young Children in EC/ECSPED - Birth to Age 8 Clinical B	4
EDC 807	Behavior Interventions for Young Children Clinical A	4
	Credits	**12**
Second Year		
Fall		
EDC 805	Collaboration, Consultation and Teaming In Early Childhood & Early Childhood Special Education Clinical B	4
EDC 806	IFSP, IEP, and Transition Plans, Birth to Age 8 Clinical B	2
EDC 808	Science, Technology, Engineering, and Mathematics in Early Childhood and Early Child Spec. Ed. 0-8 Clinical A	4
EDC 809	Teaching Language Arts and Literacy in Early Childhood and Early Childhood Special Education Clinical A	6
	Credits	**16**
Spring		
EDC 810	Curriculum, Assessment & Instruction in Early Childhood and Early Childhood Spec Educ. Birth-Age 8 Clinical A	4
EDC 885	Culminating Teaching Experience and Seminar Clinical A	4
	Credits	**8**
	Total Credits	**45**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

General Special Education (Teacher Certification)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Major in SPED Cert - Post Bac [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 801	Special Education Law	4
EDC 803	The Dynamic Role of the Special Educator	4
EDC 816	Students with Disabilities	4
EDC 817	Managing Student Behavior	4
Intermediate Level Education Courses		
EDC 818	Transition Planning and Developing IEPs	2
EDC 820	Instructional Methods, Strategies and Technologies to Meet the Needs of All Students	4
EDC 821	Assessment of Students with Disabilities	4
Advanced Level Education Courses		

EDC 823	Teaching Language Arts and Literacy	6
EDC 885	Culminating Teaching Experience and Seminar	4
Total Credits		**37**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification.

- **Praxis Core Academic Skills For Educators Exam** required. Passing Praxis Core Exam scores, NH DOE waiver or current NH teaching certification must be submitted prior to completion of EDC 800 Introduction to Field Experience/Program Requirements to continue with clinical courses.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
EDC 801	Special Education Law Nonclinical	4
EDC 816	Students with Disabilities Nonclinical	4
	Credits	**9**
Spring		
EDC 803	The Dynamic Role of the Special Educator Cinical A	4
EDC 817	Managing Student Behavior Clinical A	4
	Credits	**8**
Second Year		
Fall		
EDC 818	Transition Planning and Developing IEPs Clinical B	2
EDC 820	Instructional Methods, Strategies and Technologies to Meet the Needs of All Students Clinical A	4
EDC 821	Assessment of Students with Disabilities Clinical B	4
EDC 823	Teaching Language Arts and Literacy Clinical A	6
	Credits	**16**
Spring		
EDC 885	Culminating Teaching Experience and Seminar Clinical A	4
	Credits	**4**
	Total Credits	**37**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Life Sciences, Grades 7-12 (Teacher Certification)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving, and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Major in Life Sciences - Post Bac [1]		
Introductory Level Education Courses		
EDC 845	Natural Selection and Evolution	3
EDC 846	Life Sciences Across the Curriculum	3
EDC 847A	Introductory Field Experiences	1
EDC 847B	Introductory Field Experiences	1
EDC 847C	Introductory Field Experiences	1
EDC 847D	Introductory Field Experiences	1
Intermediate Level Education Courses		
EDC 848	Structure and Function in Life Sciences	3
EDC 849	Matter and Energy in Organisms and Ecosystems	3
EDC 850	Teaching Life Sciences: Ecosystems-Interdependent Relationships	3
EDC 851A	Intermediate Field Experiences	1
EDC 851B	Intermediate Field Experiences	1
EDC 851C	Intermediate Field Experiences	1
EDC 851D	Intermediate Field Experiences	1
Advanced Level Education Courses		
EDC 852	Teaching Life Sciences: Genetics-Inheritance and Variation of Traits	3
EDC 853	Math Across the Life Sciences	3
EDC 854A	Advanced Field Experiences	1
EDC 854B	Advanced Field Experiences	1
EDC 854C	Advanced Field Experiences	1
EDC 854D	Advanced Field Experiences	1
EDC 855	Culminating Experience for Life Science	2
Total Credits		**35**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification.

- **Praxis Core Academic Skills For Educators Exam** required. Passing Praxis Core Exam scores, NH DOE waiver or current NH teaching certification must be submitted prior to completion of EDC 800 Introduction to Field Experience/Program Requirements to continue with clinical courses.
- **Praxis II-Biology: Content Knowledge Exam** required. Students must attempt to pass Praxis II exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 845	Natural Selection and Evolution Nonclinical	3
EDC 846	Life Sciences Across the Curriculum Nonclinical	3
EDC 847A	Introductory Field Experiences Clinical A	1
EDC 847B	Introductory Field Experiences Clinical A	1
EDC 847C	Introductory Field Experiences Clinical A	1
EDC 847D	Introductory Field Experiences Clinical A	1
EDC 848	Structure and Function in Life Sciences Nonclinical	3
	Credits	**13**
Spring		
EDC 849	Matter and Energy in Organisms and Ecosystems Nonclinical	3
EDC 850	Teaching Life Sciences: Ecosystems-Interdependent Relationships Nonclinical	3
EDC 851A	Intermediate Field Experiences Clinical A	1
EDC 851B	Intermediate Field Experiences Clinical A	1
EDC 851C	Intermediate Field Experiences Clinical A	1
EDC 851D	Intermediate Field Experiences Clinical A	1
	Credits	**10**
Second Year		
Fall		
EDC 852	Teaching Life Sciences: Genetics-Inheritance and Variation of Traits Nonclinical	3
EDC 853	Math Across the Life Sciences Nonclinical	3
EDC 854A	Advanced Field Experiences Clinical A	1
EDC 854B	Advanced Field Experiences Clinical A	1
EDC 854C	Advanced Field Experiences Clinical A	1
EDC 854D	Advanced Field Experiences Clinical A	1
EDC 855	Culminating Experience for Life Science Clinical A	2
	Credits	**12**
	Total Credits	**35**

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies, and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery, and assessment of instruction to improve learning achievement of Pre-K-12 students.

General Special Education and Elementary Education (Teacher Certification)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Major in GSE & EE [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 801	Special Education Law	4
EDC 803	The Dynamic Role of the Special Educator	4
EDC 816	Students with Disabilities	4
EDC 817	Managing Student Behavior	4
Intermediate Level Education Courses		
EDC 818	Transition Planning and Developing IEPs	2
EDC 819	Using Technology to Teach Social Studies	4
EDC 821	Assessment of Students with Disabilities	4
EDC 822	Strategies for Teaching Science	4
Advanced Level Education Courses		
EDC 823	Teaching Language Arts and Literacy	6
EDC 824	Elementary School Mathematics Methods	4
EDC 885	Culminating Teaching Experience and Seminar	4
Total Credits		**45**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification.

Candidates who qualify for K-8 certification must also complete Praxis II-Middle School Content Exam.

- **Praxis Core Academic Skills For Educators Exam** required. Passing Praxis Core Exam scores, NH DOE waiver or current NH teaching certification must be submitted prior to completion of EDC 800 Introduction to Field Experience/Program Requirements to continue with clinical courses.
- **Praxis II-Elementary Education Multiple Subject Exam** required. Students must attempt to pass a Praxis II exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification. Candidates who qualify for K-8 certification must also complete Praxis II- Middle School Content Exam.
- **Pearson Foundations of Reading Exam** required. Students must attempt to pass Pearson Foundations of Reading Exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
EDC 803	The Dynamic Role of the Special Educator Clinical A	4
	Credits	**5**
Spring		
EDC 817	Managing Student Behavior Clinical A	4
EDC 816	Students with Disabilities Nonclinical	4
EDC 801	Special Education Law Nonclinical	4
EDC 819	Using Technology to Teach Social Studies Clinical A	4
	Credits	**16**
Second Year		
Fall		
EDC 822	Strategies for Teaching Science Clinical A	4
EDC 821	Assessment of Students with Disabilities Clinical B	4
EDC 823	Teaching Language Arts and Literacy Clinical A	6
EDC 818	Transition Planning and Developing IEPs Clinical B	2
	Credits	**16**
Spring		
EDC 824	Elementary School Mathematics Methods Clinical A	4
EDC 885	Culminating Teaching Experience and Seminar Clinical A	4
	Credits	**8**
	Total Credits	**45**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Mathematics, Middle Level (Teacher Certification)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Major in Post-Bacc Cert Mathematics Middle Level [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 817	Managing Student Behavior	4
EDC 831	Aspects of Mathematics Learning	4
MTH 801	Probability and Statistics	4
Intermediate Level Education Courses		
EDC 832	Reading and Writing in the Mathematics Content Area	4
MTH 802	Mathematical Proof for Educators	4
MTH 803	Number Systems	4
MTH 804	Geometric Structures for Teachers	4
MTH 805	Calculus I	4
MTH 806	History of Mathematics	4
Advanced Level Education Courses		
MTH 808	Discrete Mathematics	4
MTH 810	Algebra Theory for Teachers	4
EDC 833	Middle School Mathematics Methods	4
EDC 885	Culminating Teaching Experience and Seminar	4
Total Credits		**53**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification.

- **Praxis Core Academic Skills For Educators Exam** required. Passing Praxis Core Exam scores, NH DOE waiver or current NH teaching certification must be submitted prior to completion of EDC 800 Introduction to Field Experience/Program Requirements (1 s.h.) to continue with clinical courses.
- **Praxis II-Middle School Math Exam** required. Students must attempt to pass Praxis II exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
MTH 801	Probability and Statistics Nonclinical	4
MTH 802	Mathematical Proof for Educators Nonclinical	4
	Credits	**9**
Spring		
EDC 817	Managing Student Behavior Clinical A	4
EDC 831	Aspects of Mathematics Learning Clinical A	4
MTH 803	Number Systems Nonclinical	4
MTH 804	Geometric Structures for Teachers Nonclinical	4
	Credits	**16**
Second Year		
Fall		
EDC 832	Reading and Writing in the Mathematics Content Area Clinical A	4
EDC 833	Middle School Mathematics Methods Clinical A	4
MTH 805	Calculus I Nonclinical	4
MTH 806	History of Mathematics Nonclinical	4
	Credits	**16**
Spring		
EDC 885	Culminating Teaching Experience and Seminar Clinical A	4
MTH 808	Discrete Mathematics Nonclinical	4
MTH 810	Algebra Theory for Teachers Nonclinical	4
	Credits	**12**
	Total Credits	**53**

Note: Only 1 Clinical A course is allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Mathematics, Upper Level (Teacher Certification)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Major in Math Upper Level [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 817	Managing Student Behavior	4
EDC 831	Aspects of Mathematics Learning	4
MTH 801	Probability and Statistics	4
Intermediate Level Education Courses		
MTH 802	Mathematical Proof for Educators	4
MTH 803	Number Systems	4
MTH 804	Geometric Structures for Teachers	4
MTH 805	Calculus I	4
MTH 806	History of Mathematics	4
EDC 832	Reading and Writing in the Mathematics Content Area	4
Advanced Level Education Courses		
MTH 809	Linear Algebra	4
MTH 808	Discrete Mathematics	4
MTH 807	Calculus II	4
EDC 834	Secondary School Mathematics Methods	4
EDC 885	Culminating Teaching Experience and Seminar	4
Total Credits		**57**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification.

- **Praxis Core Academic Skills For Educators Exam** required. Passing Praxis Core Exam scores, NH DOE waiver or current NH teaching certification must be submitted prior to completion of EDC 800

Introduction to Field Experience/Program Requirements to continue with clinical courses.

- **Praxis II-Math Content Knowledge Exam** required. Students must attempt to pass Praxis II exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
MTH 801	Probability and Statistics Nonclinical	4
MTH 802	Mathematical Proof for Educators Nonclinical	4
	Credits	**9**
Spring		
EDC 817	Managing Student Behavior Clinical A	4
EDC 831	Aspects of Mathematics Learning Clinical A	4
MTH 803	Number Systems Nonclinical	4
MTH 804	Geometric Structures for Teachers Nonclinical	4
	Credits	**16**
Second Year		
Fall		
EDC 832	Reading and Writing in the Mathematics Content Area Clinical A	4
EDC 834	Secondary School Mathematics Methods Clinical A	4
MTH 805	Calculus I Nonclinical	4
MTH 806	History of Mathematics Nonclinical	4
	Credits	**16**
Spring		
EDC 885	Culminating Teaching Experience and Seminar Clinical A	4
MTH 808	Discrete Mathematics Nonclinical	4
MTH 809	Linear Algebra Nonclinical	4
MTH 807	Calculus II Nonclinical	4
	Credits	**16**
	Total Credits	**57**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Digital Learning Specialist (Teacher Certification for Already Certified Teachers)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Major in Digital Learning Specialist for ACT [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 858	Introduction to Digital Learning	3
EDC 859	Curricular Theory of Technological Integration	3
Intermediate Level Education Courses		
EDC 860	Pedagogical Practice and Management of Technological Integration	3
EDC 861	Meeting the Needs of All Learners Through Technological Integration	3
Advanced Level Education Courses		
EDC 863	Professionalism, Leadership and Administrative Understandings and Practice for Tech. Integration	3
EDC 864	Culminating Teaching Experience: Clinical Synthesis and Implementation of Technological Integration	3
Total Credits		**19**

[1] A minimum grade of B- is required in all Major coursework.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
EDC 858	Introduction to Digital Learning Nonclinical	3

EDC 859	Curricular Theory of Technological Integration Clinical A	3
	Credits	**7**
Spring		
EDC 860	Pedagogical Practice and Management of Technological Integration Clinical A	3
EDC 861	Meeting the Needs of All Learners Through Technological Integration Clinical A	3
	Credits	**6**
Second Year		
Fall		
EDC 863	Professionalism, Leadership and Administrative Understandings and Practice for Tech. Integration Clinical A	3
EDC 864	Culminating Teaching Experience: Clinical Synthesis and Implementation of Technological Integration Clinical A	3
	Credits	**6**
	Total Credits	**19**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Early Childhood Education & Early Childhood Special Education (Teacher Certification for Already Certified Teachers)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Major in EC & EC SPED for Already Cert Teachers [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 801	Special Education Law	4
EDC 802	Young Children with Exceptionalities, Birth to Age 8	4
EDC 803	The Dynamic Role of the Special Educator	4
Intermediate Level Education Courses		
EDC 804	Assessment of Young Children in EC/ECSPED - Birth to Age 8	4
EDC 805	Collaboration, Consultation and Teaming In Early Childhood & Early Childhood Special Education	4
EDC 806	IFSP, IEP, and Transition Plans, Birth to Age 8	2
EDC 807	Behavior Interventions for Young Children	4
Advanced Level Education Courses		
EDC 808	Science, Technology, Engineering, and Mathematics in Early Childhood and Early Child Spec. Ed. 0-8	4
EDC 809	Teaching Language Arts and Literacy in Early Childhood and Early Childhood Special Education	6
EDC 810	Curriculum, Assessment & Instruction in Early Childhood and Early Childhood Spec Educ. Birth-Age 8	4
EDC 885	Culminating Teaching Experience and Seminar	4
Total Credits		**45**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification.

- **Praxis Core Academic Skills For Educators Exam** required. Passing Praxis Core Exam scores, NH DOE waiver or current NH teaching certification must be submitted prior to completion of EDU 700 Introduction to Field Experience and Program Requirements (1 s.h.)EDU 700 Introduction to Field Experience and Program Requirements (1 s.h.)EDU 700 Introduction to Field Experience and Program Requirements (1 s.h.) to continue with clinical courses.
- **Praxis II - EC Education of Young Children Exam** required. Students must attempt to pass Praxis II exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.
- **Pearson Foundations of Reading Exam** required. Students must attempt to pass Pearson Foundations of Reading Exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
EDC 801	Special Education Law Nonclinical	4
EDC 802	Young Children with Exceptionalities, Birth to Age 8 Nonclinical	4
	Credits	**9**

Spring		
EDC 803	The Dynamic Role of the Special Educator Clinical A	4
EDC 804	Assessment of Young Children in EC/ ECSPED - Birth to Age 8 Clinical B	4
EDC 807	Behavior Interventions for Young Children Clinical A	4
	Credits	**12**
Second Year		
Fall		
EDC 805	Collaboration, Consultation and Teaming In Early Childhood & Early Childhood Special Education Clinical B	4
EDC 806	IFSP, IEP, and Transition Plans, Birth to Age 8 Clinical B	2
EDC 808	Science, Technology, Engineering, and Mathematics in Early Childhood and Early Child Spec. Ed. 0-8 Clinical A	4
EDC 809	Teaching Language Arts and Literacy in Early Childhood and Early Childhood Special Education Clinical A	6
	Credits	**16**
Spring		
EDC 810	Curriculum, Assessment & Instruction in Early Childhood and Early Childhood Spec Educ. Birth-Age 8 Clinical A	4
EDC 885	Culminating Teaching Experience and Seminar Clinical A	4
	Credits	**8**
	Total Credits	**45**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Elementary Education, Grades K-8 (Teacher Certification for Already Certified Teachers)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Major in Elementary ED for Already Cert Teachers [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 816	Students with Disabilities	4
EDC 801	Special Education Law	4
EDC 803	The Dynamic Role of the Special Educator	4
EDC 817	Managing Student Behavior	4
Intermediate Level Education Courses		
EDC 821	Assessment of Students with Disabilities	4
EDC 819	Using Technology to Teach Social Studies	4
EDC 822	Strategies for Teaching Science	4
EDC 818	Transition Planning and Developing IEPs	2
Advanced Level Education Courses		
EDC 823	Teaching Language Arts and Literacy	6
EDC 824	Elementary School Mathematics Methods	4
EDC 885	Culminating Teaching Experience and Seminar	4
Total Credits		**45**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification.

Candidates who qualify for K-8 certification must also complete Praxis II-Middle School Content Exam.

- **Praxis Core Academic Skills For Educators Exam** required. Passing Praxis Core Exam scores, NH DOE waiver or current NH teaching certification must be submitted prior to completion of EDC 800 Introduction to Field Experience/Program Requirements to continue with clinical courses.
- **Praxis II-Elementary Education Multiple Subject Exam** required. Students must attempt to pass Praxis II exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification. Candidates who qualify for K-8 certification must also complete Praxis II- Middle School Content Exam.
- **Pearson Foundations of Reading Exam** required. Students must attempt to pass Pearson Foundations of Reading Exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
EDC 803	The Dynamic Role of the Special Educator Clinical A	4
	Credits	**5**
Spring		
EDC 801	Special Education Law Nonclinical	4
EDC 816	Students with Disabilities Nonclinical	4
EDC 817	Managing Student Behavior Clinical A	4
EDC 819	Using Technology to Teach Social Studies Clinical A	4
	Credits	**16**
Second Year		
Fall		
EDC 818	Transition Planning and Developing IEPs Clinical B	2
EDC 821	Assessment of Students with Disabilities Clinical B	4
EDC 822	Strategies for Teaching Science Clinical A	4
EDC 823	Teaching Language Arts and Literacy Clinical A	6
	Credits	**16**
Spring		
EDC 824	Elementary School Mathematics Methods Clinical A	4
EDC 885	Culminating Teaching Experience and Seminar Clinical A	4
	Credits	**8**
	Total Credits	**45**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Emotional Behavioral Disabilities (Teacher Certification for Already Certified Teachers)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Prerequisite: Must have a Special Education Teaching Certificate.

Code	Title	Credits
Post Bac Emotional/Behavioral Disabilities [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
Intermediate Level Education Courses		
EDC 866	Dynamic Assessment: Complexities of Identification in LD,EBD, and IDD	6
EDC 867	Behavioral Supports for Complex Behaviors	4
EDC 868	Advanced Assistive and Educational Technology	4
Advanced Level Education Courses		
EDC 870	Advanced Programming for Emotional/Behavioral Disabilities	4
EDC 873	Advanced Curriculum, Assessment and Instruction for Emotional/Behavioral Disabilities	4
Total Credits		**23**

[1] A minimum grade of B- is required in all Major coursework.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 866	Dynamic Assessment: Complexities of Identification in LD,EBD, and IDD Clinical B	6
EDC 867	Behavioral Supports for Complex Behaviors Clinical A	4
	Credits	**11**
Spring		
EDC 868	Advanced Assistive and Educational Technology Clinical A	4

EDC 870	Advanced Programming for Emotional/ Behavioral Disabilities Clinical B	4
EDC 873	Advanced Curriculum, Assessment and Instruction for Emotional/Behavioral Disabilities Clinical A	4
	Credits	**12**
	Total Credits	**23**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

General Special Education, Grades K-12 (Teacher Certification for Already Certified Teachers)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Major in SPED CERT for Already Cert Teachers [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 801	Special Education Law	4
EDC 803	The Dynamic Role of the Special Educator	4
EDC 816	Students with Disabilities	4
EDC 817	Managing Student Behavior	4
Intermediate Level Education Courses		
EDC 818	Transition Planning and Developing IEPs	2
EDC 820	Instructional Methods, Strategies and Technologies to Meet the Needs of All Students	4
EDC 821	Assessment of Students with Disabilities	4
Advanced Level Education Courses		
EDC 823	Teaching Language Arts and Literacy	6
EDC 885	Culminating Teaching Experience and Seminar	4
Total Credits		**37**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification.

- **Praxis Core Academic Skills For Educators Exam** required. Passing Praxis Core Exam scores, NH DOE waiver or current NH teaching certification must be submitted prior to completion of EDC 800 Introduction to Field Experience/Program Requirements to continue with clinical courses.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
	Credits	**1**
Spring		
EDC 801	Special Education Law Nonclinical	4
EDC 803	The Dynamic Role of the Special Educator Clinical A	4
EDC 816	Students with Disabilities Nonclinical	4
EDC 817	Managing Student Behavior Clinical A	4
	Credits	**16**
Second Year		
Fall		
EDC 818	Transition Planning and Developing IEPs Clinical B	2
EDC 820	Instructional Methods, Strategies and Technologies to Meet the Needs of All Students Clinical A	4
EDC 821	Assessment of Students with Disabilities Clinical B	4
EDC 823	Teaching Language Arts and Literacy Clinical A	6
	Credits	**16**
Spring		
EDC 885	Culminating Teaching Experience and Seminar Clinical A	4
	Credits	**4**
	Total Credits	**37**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Intellectual Developmental Disabilities (Teacher Certification for Already Certified Teachers)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Prerequisite: Must have a Special Education Teaching Certificate.

Code	Title	Credits
Post Bac Intellectual/ Developmental Disablities [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
Intermediate Level Education Courses		
EDC 866	Dynamic Assessment: Complexities of Identification in LD,EBD, and IDD	6
EDC 867	Behavioral Supports for Complex Behaviors	4
EDC 868	Advanced Assistive and Educational Technology	4
Advanced Level Education Courses		
EDC 871	Advanced Programming for Intellectual and Developmental Disabilities	4
EDC 874	Advanced Curriculum, Assessment and Instruction for Intellectual and Developmental Disabilities	4
Total Credits		**23**

[1] A minimum grade of B- is required in all Major coursework.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
EDC 866	Dynamic Assessment: Complexities of Identification in LD,EBD, and IDD CIlinical B	6
EDC 867	Behavioral Supports for Complex Behaviors Clinical A	4
	Credits	**11**
Spring		
EDC 868	Advanced Assistive and Educational Technology Clinical A	4
EDC 871	Advanced Programming for Intellectual and Developmental Disabilities Clinical B	4
EDC 874	Advanced Curriculum, Assessment and Instruction for Intellectual and Developmental Disabilities Clinical A	4
	Credits	**12**
	Total Credits	**23**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Learning Disabilities (Teacher Certification for Already Certified Teachers)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Prerequisite: Must have a Special Education Teaching Certificate.

Code	Title	Credits
Post Bac - Specific Learning Disabilities [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
Intermediate Level Education Courses		
EDC 866	Dynamic Assessment: Complexities of Identification in LD,EBD, and IDD	6
EDC 867	Behavioral Supports for Complex Behaviors	4
EDC 868	Advanced Assistive and Educational Technology	4
Advanced Level Education Courses		
EDC 869	Advanced Programming for Students with Learning Disabilities	4

EDC 872	Advanced Curriculum, Assessment and Instruction for Students with Learning Disabilities	4
Total Credits		**23**

[1] A minimum grade of B- is required in all Major coursework.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
EDC 866	Dynamic Assessment: Complexities of Identification in LD,EBD, and IDD Clinical B	6
EDC 867	Behavioral Supports for Complex Behaviors Clinical A	4
	Credits	**11**
Spring		
EDC 868	Advanced Assistive and Educational Technology Clinical A	4
EDC 869	Advanced Programming for Students with Learning Disabilities Clinical B	4
EDC 872	Advanced Curriculum, Assessment and Instruction for Students with Learning Disabilities Clinical A	4
	Credits	**12**
	Total Credits	**23**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Mathematics, Middle Level (Teacher Certification for Already Certified Teachers)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Major in Math Middle Level for ACT [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 817	Managing Student Behavior	4
EDC 831	Aspects of Mathematics Learning	4
MTH 801	Probability and Statistics	4
Intermediate Level Education Courses		
MTH 802	Mathematical Proof for Educators	4
MTH 803	Number Systems	4
MTH 804	Geometric Structures for Teachers	4
MTH 805	Calculus I	4
MTH 806	History of Mathematics	4
EDC 832	Reading and Writing in the Mathematics Content Area	4
Advanced Level Education Courses		
EDC 833	Middle School Mathematics Methods	4
MTH 808	Discrete Mathematics	4
MTH 810	Algebra Theory for Teachers	4
EDC 885	Culminating Teaching Experience and Seminar	4
Total Credits		**53**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification.

- **Praxis Core Academic Skills For Educators Exam** required. Passing Praxis Core Exam scores, NH DOE waiver or current NH teaching certification must be submitted prior to completion of EDC 800 Introduction to Field Experience/Program Requirements to continue with clinical courses.
- **Praxis II-Middle School Math Exam** required. Students must attempt to pass Praxis II exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should

develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
MTH 801	Probability and Statistics Nonclinical	4
MTH 802	Mathematical Proof for Educators Nonclinical	4
	Credits	**9**
Spring		
EDC 817	Managing Student Behavior Clinical A	4
EDC 831	Aspects of Mathematics Learning Clinical A	4
MTH 803	Number Systems Nonclinical	4
MTH 804	Geometric Structures for Teachers Nonclinical	4
	Credits	**16**
Second Year		
Fall		
EDC 832	Reading and Writing in the Mathematics Content Area Clinical A	4
EDC 833	Middle School Mathematics Methods Clinical A	4
MTH 805	Calculus I Nonclinical	4
MTH 806	History of Mathematics Nonclinical	4
	Credits	**16**
Spring		
MTH 808	Discrete Mathematics Nonclinical	4
MTH 810	Algebra Theory for Teachers Nonclinical	4
EDC 885	Culminating Teaching Experience and Seminar Clinical A	4
	Credits	**12**
	Total Credits	**53**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Mathematics, Upper Level (Teacher Certification for Already Certified Teachers)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Major in Math Upper Level for ACT [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 817	Managing Student Behavior	4
EDC 831	Aspects of Mathematics Learning	4
MTH 801	Probability and Statistics	4
Intermediate Level Education Courses		
MTH 802	Mathematical Proof for Educators	4
MTH 803	Number Systems	4
MTH 804	Geometric Structures for Teachers	4
MTH 805	Calculus I	4
MTH 806	History of Mathematics	4
EDC 832	Reading and Writing in the Mathematics Content Area	4
Advanced Level Education Courses		
EDC 834	Secondary School Mathematics Methods	4
MTH 809	Linear Algebra	4
MTH 808	Discrete Mathematics	4
MTH 807	Calculus II	4
EDC 885	Culminating Teaching Experience and Seminar	4
Total Credits		**57**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification.

- **Praxis Core Academic Skills For Educators Exam** required. Passing Praxis Core Exam scores, NH DOE waiver or current NH teaching certification must be submitted prior to completion of EDC 800 Introduction to Field Experience/Program Requirements to continue with clinical courses.
- **Praxis II-Math Content Knowledge Exam** required. Students must attempt to pass Praxis II exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should

develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
MTH 801	Probability and Statistics Nonclinical	4
MTH 802	Mathematical Proof for Educators Nonclinical	4
	Credits	**9**
Spring		
EDC 817	Managing Student Behavior Clinical A	4
MTH 803	Number Systems Nonclinical	4
EDC 831	Aspects of Mathematics Learning Clinical A	4
MTH 804	Geometric Structures for Teachers Nonclinical	4
	Credits	**16**
Second Year		
Fall		
EDC 832	Reading and Writing in the Mathematics Content Area Clinical A	4
EDC 834	Secondary School Mathematics Methods Clinical A	4
MTH 805	Calculus I Nonclinical	4
MTH 806	History of Mathematics Nonclinical	4
	Credits	**16**
Spring		
MTH 807	Calculus II Nonclinical	4
MTH 808	Discrete Mathematics Nonclinical	4
MTH 809	Linear Algebra Nonclinical	4
EDC 885	Culminating Teaching Experience and Seminar Clinical A	4
	Credits	**16**
	Total Credits	**57**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Reading & Writing Specialist (Teacher Certification for Already Certified Teachers)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Prerequisites: Must have completed a master's degree in a literacy-related field as defined by state certification guidelines and have three years classroom teaching experience.

Code	Title	Credits
Post Bac Reading & Writing Specialist [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 823	Teaching Language Arts and Literacy	6
EDC 875	Foundations of Language and Literacy Development	4
Intermediate Level Education Courses		
EDC 876	Reading and Writing Disabilities: Assessment and Instruction	4
EDC 877	Content Area Literacy	4
Advanced Level Education Courses		
EDC 879	Role of the Reading and Writing Specialist I - Practicum	6
EDC 880	Role of the Reading and Writing Specialist II - Practicum	6
Total Credits		**31**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification.

- **Pearson Foundations of Reading Exam** required. Students must attempt to pass Pearson Foundations of Reading Exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.
- **Earned Master's Degree** required. The RWS certification requires an earned master's degree in a literacy-related area.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
EDC 823	Teaching Language Arts and Literacy Clinical A	6
EDC 875	Foundations of Language and Literacy Development Clinical B	4
	Credits	**11**
Spring		
EDC 876	Reading and Writing Disabilities: Assessment and Instruction Clinical A	4
EDC 877	Content Area Literacy Clinical A	4
	Credits	**8**
Second Year		
Fall		
EDC 879	Role of the Reading and Writing Specialist I - Practicum Clinical A	6
EDC 880	Role of the Reading and Writing Specialist II - Practicum Clinical A	6
	Credits	**12**
	Total Credits	**31**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students Will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Reading and Writing Teacher (Teacher Certification for Already Certified Teachers)

Description

This Post-Baccalaureate Program is for candidates interested in pursuing teacher certification. The Post-Baccalaureate Teacher Certification program is designed for 21st Century Educators, providing an in-depth focus on the critical issues that are transforming the landscape of education - innovation, critical thinking, problem solving and collaboration.

Requirements

Minimum GPA requirement of 3.0

Code	Title	Credits
Post Bac Reading & Writing Teacher [1]		
Introductory Level Education Courses		
EDC 800	Introduction to Field Experience/Program Requirements	1
EDC 823	Teaching Language Arts and Literacy	6
Intermediate Level Education Courses		
EDC 875	Foundations of Language and Literacy Development	4
EDC 876	Reading and Writing Disabilities: Assessment and Instruction	4
EDC 877	Content Area Literacy	4
Advanced Level Education Courses		
EDC 878	Developing Literate Students, K-12	4
EDC 885	Culminating Teaching Experience and Seminar	4
Total Credits		**27**

[1] A minimum grade of B- is required in all Major coursework.

State Certification Requirements

The following requirements must be completed in order to be recommended to the state for Teacher Certification.

- **Pearson Foundations of Reading Exam** required. Students must attempt to pass Pearson Foundations of Reading Exam prior to taking the Culminating Teaching Experience & Seminar. Passing exam scores are required for state certification.

Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH CPS Online students should develop individual academic plans with their academic advisor during their first semester at UNH.

Sample Course Sequence

Course	Title	Credits
First Year		
Fall		
EDC 800	Introduction to Field Experience/Program Requirements Nonclinical; Complete CHRC Process	1
EDC 823	Teaching Language Arts and Literacy Clinical A	6
EDC 875	Foundations of Language and Literacy Development Clinical B	4
	Credits	**11**
Spring		
EDC 876	Reading and Writing Disabilities: Assessment and Instruction Clinical A	4
EDC 877	Content Area Literacy Clinical A	4
	Credits	**8**
Second Year		
Fall		
EDC 878	Developing Literate Students, K-12 Clinical A	4

EDC 885	Culminating Teaching Experience and Seminar Clinical A	4
	Credits	**8**
	Total Credits	**27**

Note: Only 1 Clinical A course allowed per term

Student Learning Outcomes

Students will:

- Be reflective and knowledgeable about learners and are able to employ instructional methods, strategies and technologies to meet the needs of all students;
- Have a rich understanding of the subject/s that they teach;
- Employ best practices in the planning, delivery and assessment of instruction to improve learning achievement of Pre-K-12 students.

Education (EDUC)

Degrees Offered: Ph.D., Ed.S., M.Ed., M.A.T., Graduate Certificate

Programs are offered in Durham, Manchester, and online.

The Education Department offers a variety of programs leading to the master's degree, the doctor of philosophy degree, and the education specialist degree. The department also offers graduate certificate programs.

The master of arts in teaching is offered in secondary education. The master of education is offered in early childhood education (including an option in special needs), elementary education, secondary education, and special education.

The M.Ed. in Educational Studies does not lead to certification and can be completed fully online.

The education specialist degrees are offered in educational administration and supervision.

The doctor of philosophy is offered in education.

Graduate certificates are offered in Curriculum and Instructional Leadership, Trauma Informed Policy & Practice (TIPP), and Special Education Administration.

Admission Requirements

In addition to the materials required by the Graduate School, individual programs within the department may have additional admissions requirements. Applicants should refer to specific program descriptions. Consultation with a program faculty member is recommended. In all cases, the applicant's relevant experience, references, and professional goals will be considered in the admission process.

Action on applications to Education Department programs varies by individual program. Applicants to this program must refer to the online Programs of Study listing for additional application instructions. This can be done by referring to the Graduate School's Admissions web page and then Application Requirements. The additional application instructions can be found under Requirements and Supplemental Documents.

https://cola.unh.edu/education

Programs

- Education (Ph.D.) (p. 112)
- Early Childhood Education (M.Ed.) (p. 114)
- Early Childhood Education: Special Needs (M.Ed.) (p. 115)
- Educational Administration & Supervision (Ed.S.) (p. 116)
- Educational Studies (M.Ed.) (p. 117)
- Elementary Education (M.Ed.) (p. 117)
- Secondary Education (M.A.T.) (p. 119)
- Secondary Education (M.Ed.) (p. 121)
- Special Education (M.Ed.) (p. 123)
- Autism Spectrum Disorder (Graduate Certificate) (p. 124)
- Curriculum and Instructional Leadership (Graduate Certificate) (p. 124)
- Special Education Administration (Graduate Certificate) (p. 125)
- Trauma Informed Policy and Practice (Graduate Certificate) (p. 125)

Faculty

See https://cola.unh.edu/education/faculty-staff-directory for faculty.

Education (Ph.D.)

https://cola.unh.edu/education/program/phd/education

Description

The program of Education offers a Ph.D. in education with specialization in fields related to the areas of:

1. children and youth in communities;
2. curriculum and instruction/teacher education;
3. experiential/outdoor education;
4. leadership and policy studies

The doctoral program is designed to engender a broad understanding of the field of education by encouraging focused scholarly inquiry grounded in the reality of educational practice across varied formal and informal settings. Professors and students work to place educational issues in philosophical, socio-cultural, and policy--related contexts. The program enrolls full-- and part-time students.

An individual program of study is planned by the student and her or his guidance committee. Each student's program includes a set of common core courses, specialized study, a number of selected electives from across areas of inquiry, and required research preparation. Students must meet specific University, department, and program requirements. Within this framework, individual programs can vary widely from student to student depending upon the student's own interests and goals.

The Ph.D. in education provides students with preparation for research, teaching, and leadership in a variety of settings. Graduates hold positions at all levels of schooling, from colleges and universities to K--12 schools. Former students are also involved in work as policy makers, community agency directors, consultants, and research analysts.

Program information: Contact the Education Department by phone: (603) 862-2310 or email: education.department@unh.edu. (education.department@unh.edu)

Admission

Students admitted to the program must have completed a master's degree in education or a related field. Entering students are generally expected to have some experience working in areas related to education, broadly conceptualized. To apply, candidates must submit a Graduate School application and transcripts of all undergraduate and graduate coursework.

In addition to the personal statement required on the Graduate School application, candidates must submit an essay on an educational issue. This essay should discuss one issue in the field of education that is of interest to the candidate. It should explore the opportunities and challenges this issue poses and explain why the applicant finds it personally compelling (1,000 to 1,500 words in length).

Prior to completing and submitting the application, it is highly recommended that the candidate contact the Director of the Division of Educational Studies, who directs the Ph.D. in Education program, to arrange a phone, skype, or on-campus appointment to discuss their interests and fit with current research of faculty in the Education Department. Contact the EducationDepartment by phone: (603) 862-2310 or email: education.department@unh.edu. (education.department@unh.edu)

Requirements

Degree Requirements

Candidates for the degree must meet admission requirements, develop and complete an approved program of study in consultation with their guidance committee, complete required coursework, undergo an annual assessment review by the Doctoral Advisory Committee, develop and submit a passing qualifying paper, establish a dissertation committee, develop an approved dissertation proposal to advance to candidacy, write and present the dissertation, and pass the final oral examination.

Program of Studies

Upon acceptance to the program, students are assigned an adviser. During the first year of study, students identify, either in consultation with their adviser or with the director of doctoral studies, faculty members to serve as their guidance committee. Programs for the doctoral degree in education are planned individually by students and their guidance committees. The program of study consists of four major elements: common core courses, specialization specific to the student's scholarly interests, a number of selected electives from across areas of inquiry, and research preparation, including specific advanced research modules.

Students typically complete **52 to 64** hours in graduate coursework following their matriculation. These hours do not include (EDUC 999 Doctoral Research).

At least five of the below common core courses are required of all students:

Code	Title	Credits
Required Common Core Courses		
EDUC 902	Doctoral Pro-seminar	4
EDUC 904	Qualitative Inquiry in Research	4
EDUC 905	Critical Inquiry in Education	4
EDUC 906	The Literature Review in Educational Research: Interdisciplinary Perspectives	4
EDUC 981	Quantitative Inquiry: Methods and Techniques of Educational Research	4
Pre-requisites for EDUC 981:		
EDUC 881	Introduction to Statistics: Inquiry, Analysis, and Decision Making	4
EDUC 978	Applied Regression Analysis in Educational Research	4
Specialization Areas and Requirements:		
Children and Youth in Communities		
Childhood Focus required courses: [1]		
HDFS 930	Child Development in Context	
EDUC #948	Leadership and Advocacy in Early Childhood Education	
EDUC 950	Understanding Culture in Research on Learning and Development	
RMP 970	Teaching Practicum	
Adolescent Focus required courses*: [1]		
EDUC 950	Understanding Culture in Research on Learning and Development	
HDFS #950	Contemporary Issues in Adolescent Development	
RMP 970	Teaching Practicum	
Curriculum and Instruction/Teacher Education		
Select five courses from the following:		
EDUC 950	Understanding Culture in Research on Learning and Development	
EDUC 958	Analysis of Teaching and Learning	
EDUC 959	Issues in Education	
EDUC 960	Curriculum Development	
EDUC 986	Philosophy of Education	
EDUC 991	Curriculum Theory I	
EDUC #992	Curriculum Theory II	
Experiential/Outdoor Education		
Select five courses from the following:		
EDUC 986	Philosophy of Education	
KIN 882	Therapeutic Applications of Adventure Programming	
KIN 883	Psych Factors of Adventure Ed	
KIN 884	Historical Foundations of Outdoor Experiential Education	
KIN #885	Program Models and Evaluation in Outdoor Education	
KIN #886	Organization and Administration of Outdoor Education Programs	
KIN 895	Advanced Studies	
KIN 897	Advanced Topics in Outdoor Education	
Leadership and Policy Studies		
EDUC 964	Human Resources in Education	
P-12 Focus required courses:		
EDUC 973	Policy, Politics, and Planning in Education	
EDUC 977	Leadership: The District Level Administrator	
Higher Education Focus required courses:		
EDUC 970	Foundations for Leadership in Higher Education	
EDUC 976	Policy and Governance in Higher Education	
Select a minimum of eight credits of elective coursework from the following:		
EDUC 897	Special Topics in Education (Topics: Students, the Law & Higher Education, and Faculty & Higher Education Law)	
EDUC 959	Issues in Education	
EDUC 962	Educational Finance and Business Management	
EDUC 967	School Law	
EDUC 968	Collective Bargaining in Public Education	
EDUC 995	Independent Study (School Facilities)	

[1] Additional required electives chosen in consultation with student's Guidance Committee. Students complete a minimum of five courses (20 credits) within, or directly related to, their chosen area of inquiry.

Integrative Coursework

Select two advanced inquiry education courses (e.g., EDUC 979 Applied Multilevel Modeling), courses in a different specialization, or courses taken in another department (e.g., psychology, sociology, economics, family studies).

Qualifying Paper

As a step toward Ph.D. candidacy, students must satisfactorily complete a qualifying paper as well as all other program requirements. After completing most of their coursework, and under advice of the student's guidance committee, students may formally undertake the qualifying paper. The student formally proposes a qualifying paper concept to the guidance committee and undertakes writing the paper once the proposal is approved. The paper is evaluated by the student's guidance committee. The qualifying paper is used to evaluate the student's general knowledge in relevant areas of inquiry, and their fitness for engaging in research, particularly in the subject proposed for the dissertation.

Dissertation

To complete the degree, the student must present and defend a dissertation of original research and publishable quality.

Student Learning Outcomes

- Students will demonstrate general knowledge of the field of educational research, including types of research questions and methods of inquiry used in the field.
- Students will learn to critique and design qualitative and quantitative educational research, and they will be able to identify and craft good argumentation in educational scholarship.
- Students will demonstrate expertise in at least one form of data analysis or a non-empirical form of inquiry (e.g., historical, philosophical, literary).
- Students will gain expertise in one or more substantive areas of inquiry in educational research.

Early Childhood Education (M.Ed.)

https://cola.unh.edu/education/program/med/early-childhood-education

Description

The Education Department offers the master of education degree in early childhood education and an option in special needs. When completed in conjunction with a degree, certification is available as an early childhood teacher (PreK - 3rd). Certification requirements are additional to the master's degree but may be completed as electives for the degree. This program is an advanced course of study designed for teachers, administrators, and other early childhood practitioners who wish to improve their professional competence and broaden their career opportunities. The program emphasizes the acquisition of knowledge and competencies in child development (birth through eight years), learning environments, developmentally appropriate curriculum, developmental and cultural diversity, and professional leadership. The coursework culminates in extensive field-based experience.

Admission Requirements

All admitted students are expected to have had at least one course in child development at the upper division level and at least 200 hours of supervised classroom experience with children from birth through eight years of age, or the equivalent.

Admission Criteria

In determining admission of students to teacher education graduate programs, several criteria are used:

1. The undergraduate record. The undergraduate overall minimum grade point average for admission is 3.0. The undergraduate grade point average of students admitted to the graduate programs in teacher education is approximately 3.55 (based on 2020 admissions). For UNH students pursuing the Accelerated Masters, a minimum GPA of 3.2 is required.
2. Praxis Core Academic Skills for Educators (Core) exam scores are required. Applicants must obtain, at a minimum, a qualifying score (as set by the state of New Hampshire at the time of testing) on all three (Reading, Writing, and Mathematics) Core exams in order to be considered for admission. Current NH qualifying scores may be found at the ETS Praxis Website under the "Tests required for all licensure areas" page.
3. Clearance on a criminal history records check through the NH Department of Safety.
4. Additional required application materials can be found at the Graduate School Website under programs.

Requirements

The M.Ed. degree requires a minimum of **36** graduate-level credits. The exact number of credit hours will depend on the student's background, competencies, and professional goals, and will be determined by the adviser.

Code	Title	Credits
Core Requirements		
EDUC 861	Designing Curriculum for Inclusive, Equitable Settings for Young Children (birth-8)	4
EDUC #942	Socio-cultural Perspectives on Teaching and Learning	4
EDUC #948	Leadership and Advocacy in Early Childhood Education	4
Special Needs Requirement		**4**
EDUC 856	Advocating for Diverse and Inclusive Family-School-Community Partnerships	
or EDUC 860	Introduction to Young Children with Special Needs	
or EDUC 862	Curriculum for Young Children with Special Needs: Evaluation and Program Design	
Internship Requirement		**3-4**
EDUC 900B	Internship and Seminar in Early Childhood Education	
or EDUC 901B	Internship and Seminar in Early Childhood Education	
Electives		
Select in consultation with program adviser based on interest or optional certification requirements.		
Optional: Teacher Certification requirements		**14**
EDUC 803F	Teaching Elementary School Science	
EDUC 803M	Teaching Elementary Social Studies	
EDUC 806	Teaching & Learning Literacy in the Elementary Classroom	
EDUC 845	Math with Technology in Early Education	
Note: Some students may exceed the minimum credit requirement while completing the required coursework and teacher certification requirements.		
Concluding Experience [1]		

[1] **Concluding Experiences**: Teacher Candidate Assessment of Performance (TCAP) and Graduate Portfolio
TCAP. In 2013, all New Hampshire institutions of higher education (IHEs) that prepare educators voted unanimously to adapt, pilot and validate a common assessment of teacher interns. All IHE's were committed to adapting a common assessment tool that would evaluate teacher candidates' preparedness for the classroom, and simultaneously serve as a tool for candidate and programmatic learning. To that end, the IHE Network adapted the California PACT for New Hampshire classrooms. A central goal of the NHTCAP is to act as an assessment of learning as well as an assessment for learning.

Graduate Portfolio: By the end of the graduate program in Early Childhood, students should be able to provide evidence of their professional development in a variety of ways. Through the presentation of a graduate portfolio, students will demonstrate professional knowledge and competencies.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Students will demonstrate an understanding of theories of learning and development and theories of instruction, as they apply to children from birth through age eight.
- Students will demonstrate the ability to translate those theories into developmentally appropriate practices for all children, including those who are culturally and/or developmentally diverse.

Early Childhood Education: Special Needs (M.Ed.)

https://cola.unh.edu/education/program/med/early-childhood-education-special-needs

Description

The Education Department offers the master of education degree in early childhood education with an option in special needs. When completed in conjunction with a degree, certification is available as an early childhood special education teacher (birth through eight years). Certification requirements are additional to the master's degree but may be completed as electives for the degree.

This program is an advanced course of study designed for teachers, administrators, and other early childhood practitioners who wish to improve their professional competence and broaden their career opportunities. The program emphasizes the acquisition of knowledge and competencies in child development (birth through eight years), learning environments, developmentally appropriate curriculum, developmental and cultural diversity, and professional leadership. The coursework culminates in extensive field–based experience.

Admission Requirements

All admitted students are expected to have had at least one course in child development at the upper division level and at least 200 hours of supervised classroom experience with children from birth through eight years of age, or the equivalent.

In addition to the early childhood core requirements described above, students choosing this option will concentrate on young children who are at risk for, or have, developmental difficulties and special needs. Coursework emphasizes an understanding of the role of the family, community, and social policy in early development and intervention. The program is non categorical in its approach to assessment and educational planning.

Admission Criteria

In determining admission of students to teacher education graduate programs, several criteria are used:

1. The undergraduate record. The undergraduate overall minimum grade point average for admission is 3.0. The undergraduate grade point average of students admitted to the graduate programs in teacher education is approximately 3.55 (based on 2020 admissions). For UNH students pursuing the Accelerated Masters, a minimum GPA of 3.2 is required.
2. Praxis Core Academic Skills for Educators (Core) exam scores are required. Applicants must obtain, at a minimum, a qualifying score (as set by the state of New Hampshire at the time of testing) on all three (Reading, Writing, and Mathematics) Core exams in order to be considered for admission. Current NH qualifying scores may be found at the ETS Praxis Website under the "Tests required for all licensure areas" page.
3. Clearance on a criminal history records check through the NH Department of Safety.
4. Additional required application materials can be found at the Graduate School website under programs.

Requirements

The M.Ed. degree requires a minimum of **36** graduate-level credits. The exact number of credit hours will depend on the student's background, competencies, and professional goals, and will be determined by the adviser.

Code	Title	Credits
Core Requirements		
EDUC 861	Designing Curriculum for Inclusive, Equitable Settings for Young Children (birth-8)	4
EDUC #942	Socio-cultural Perspectives on Teaching and Learning	4
EDUC #948	Leadership and Advocacy in Early Childhood Education	4
Additional Special Needs Requirements		
EDUC 860	Introduction to Young Children with Special Needs	4
EDUC 862	Curriculum for Young Children with Special Needs: Evaluation and Program Design	4
EDUC 856	Advocating for Diverse and Inclusive Family-School-Community Partnerships	4
Internship Requirements		
EDUC 900B	Internship and Seminar in Early Childhood Education [1]	3 or 4
EDUC 901B	Internship and Seminar in Early Childhood Education [1, 2]	3 or 4
Electives [2]		
EDUC 803F	Teaching Elementary School Science	4
EDUC 803M	Teaching Elementary Social Studies	4
EDUC 806	Teaching & Learning Literacy in the Elementary Classroom	4
EDUC 845	Math with Technology in Early Education	2
Concluding Experience [3]		

Note: All coursework listed above must be completed, therefore some students may exceed the minimum credit requirement while completing the required coursework.

[1] Students seeking Dual Certification in ECE and ECSE need to register for 4-credits

[2] Select in consultation with the program advisor based on interest and certification requirements. Teacher Certification option (for those seeking Teacher Certification).

[3] **Concluding Experiences:** Teacher Candidate Assessment of Performance (TCAP) and Graduate Portfolio
TCAP: In 2013, all New Hampshire institutions of higher education (IHEs) that prepare educators voted unanimously to adapt, pilot and validate a common assessment of teacher interns. All IHE's were committed to adapting a common assessment tool that would evaluate teacher candidates' preparedness for the classroom, and simultaneously serve as a tool for candidate and programmatic learning. To that end, the IHE Network adapted the California PACT for New Hampshire classrooms. A central goal of the NHTCAP is to act as an assessment of learning as well as an assessment for learning.
Graduate Portfolio: By the end of the graduate program in Early Childhood with Special Needs Option, students should be able to provide evidence of their professional development in a variety of ways. Through the presentation of a graduate portfolio, students will demonstrate professional knowledge and competencies.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Students will demonstrate an understanding of theories of learning and development and theories of instruction, as they apply to children from birth through age eight.
- Students will demonstrate the ability to translate those theories into developmentally appropriate practices for all children, including those who are culturally and/or developmentally diverse.

Educational Administration & Supervision (Ed.S.)

https://cola.unh.edu/education/program/eds/administration-supervision

Description

This program is designed for those who possess a master's degree in school administration or a master's degree in a related educational field. This program offers advanced preparation for those educators who desire careers as school superintendents, assistant superintendents, state department of education personnel, vocational education coordinators, curriculum coordinators, or educational personnel in private organizations. This program leads to certification as a superintendent in New Hampshire. It is possible to also receive certification as a principal under special circumstances.

Requirements

Code	Title	Credits
Core Requirements		
EDUC 964	Human Resources in Education	4
EDUC 968	Collective Bargaining in Public Education	4
EDUC 973	Policy, Politics, and Planning in Education	4
EDUC 977	Leadership: The District Level Administrator	4
EDUC 995	Independent Study (School Facilities)	4
Electives		
Select eight credits in consultation with the program adviser [1]		8
Concluding Experience		
A student must complete a field internship and a significant field project in an approved administrative setting.		8
EDUC 974	Educational Administrative Internship	
Total Credits		**36**

[1] A student who does not hold a master's degree in administration may be required to take specific courses as electives.

Student Learning Outcomes

The call in our society for strong, creative leadership of our organizations is universal. Educational organizations are no less impacted by this need for quality leadership than are businesses, non-profit organizations, and government. The Department of Education, in general, and the program in Administration and Supervision, in particular, is responsible for training educational leaders who will fill leadership roles in the schools, institutions of higher education, educational research centers, and government.

Professional preparation is a blend of gaining expert knowledge, developing analytical and personal skills, and applying them in real world settings. Study at a research institution like UNH provides the link between theory and practice, concepts and actions. Our faculty infuse their courses with the strong belief that professionals develop and use concepts and research that provide a basis for handling new challenges of practice.[1] We use scholarship as the foundation for our preparation of leaders who will engage with the communities they serve. Our graduate programs of professional educational preparation prepare our students to lead and engage their communities based on the application of in-depth scholarship to leading educational institutions.

Graduate students in our Education Specialist degree program will be able to:

Articulate a vision and a mission grounded in core values that reflect the ability to:

- Develop an educational mission for the educational institution, in collaboration with constituencies.
- Develop an educational mission that promotes academic success and well-being of all students.
- Articulate a vision of an educational institution.
- Cultivate and articulate core values.
- Model the vision, mission and core values through ethical and professional practices.

Exhibit leadership skills that reflect the ability to:

- Demonstrate knowledge and the application of: effective leadership practices; the legal foundations that impact the institution, including human resources, civil rights, and civil liberties; the policy making

process, planning, and evaluation; and the ability to consistently use strong interpersonal skills to work collaboratively.
- Gather information about the educational community served by the educational institution to be used in meaningful engagement and assessment.

Develop management skills that reflect the ability to:

- Use resources efficiently to develop the capacity of school personnel, and to maintain a safe environment.
- Establish programs and procedures that meet the mission, vision, and core values of the educational institution.
- Develop crisis response protocols to proactively react to emergency situations, including short-term specific incidents and longer-term systemic incidents.

Pursue, through leadership and management skills and activities, the core values of creating and sustaining a culture of diversity, equity, and inclusion that reflect the ability to:

- Create a culture in which students, faculty, and staff are treated fairly and respectfully, and that protects their rights and dignity as individuals.
- Infuse an ethic of care for all participants in the educational institution.
- Implement policies and practices that support a culture that values diversity, equity, and inclusion.
- Articulate, advocate, and cultivate polices and practices that reflect the core value of a culture of diversity, equity, and inclusion.

[1] Student learning outcomes are actualized in our classroom instruction, assignments, and field experiences. We ground our classroom instruction, which supports the student learning outcomes, in the practices identified by the National Policy Board for Educational Leaders *Professional Standards for Educational Leaders* (2015), and the New Hampshire Department of Education regulations.

Educational Studies (M.Ed.)

https://cola.unh.edu/education/program/med/educational-studies

Description

The Master of Education in Educational Studies is a master's degree program that can be completed fully or partially online. It is designed for educators who wish to expand their knowledge of education, improve their educational practice, and positively impact public and private schools. The M.Ed. is also intended to provide a foundation in educational studies for individuals broadly interested in education in a variety of settings, including business, educational and research centers, and national and state agencies. The program provides a context in which participants can develop tools of inquiry to investigate questions about teaching, mentoring, learning and school reform, and to inspire others to work toward educational change. This program does not lead to a teaching or administrative credential.

The program is structured around a knowledge and application core that includes a course on contemporary issues in education, a course on the analysis of teaching, mentoring and learning, and a course on educational research methods. Program participants will also complete electives, designed to provide depth or breadth to their course of study. Finally, program participants will complete an inquiry project course in which they develop a literature review on an educational issue of their choice, conduct research, and present their findings in the context of the course. The program includes flexible options for study, including a fully online option.

Please visit the Graduate School website for detailed instructions about applying to the program.

Requirements

The M.Ed. in Educational Studies requires a minimum of **30 credits**.

Code	Title	Credits
Core Required Courses		
EDUC 959	Issues in Education	4
EDUC 958	Analysis of Teaching and Learning	4
EDUC 882	Introduction to Research Methods	4
Elective Courses		
Select four elective courses [1]		14-16
Concluding Experience Course		
EDUC 884	Educators as Researchers	4
Total Credits		**30-32**

[1] Program participants choose a set of four elective courses in consultation with their advisor, reflecting their personal, professional, and academic interests, needs, and goals. The electives are intended to provide breadth and depth to each participant's course of study. At least two electives must be courses in the Education Department at UNH (8 credits). The other two elective courses may be taken in education, another department at UNH, or another approved institution with the appropriate permission and consistent with Graduate School transfer credit policies (6 – 8 credits, depending on school / department). Electives can be online, hybrid, or face-to-face courses.

Student Learning Outcomes

- Students will learn how to analyze and critique issues in education.
- Students will apply learning theory to educational issues in both formal and informal learning contexts.
- Students will learn to critique and design educational research.
- Students will gain expertise in one or more substantive areas of inquiry in educational research, policy, and/or practice.

Elementary Education (M.Ed.)

https://cola.unh.edu/education/program/med/elementary-education

Description

The Elementary Education program provides an M.Ed. degree and leads to certification for those who plan to teach in elementary schools.

- UNH students can begin preparation for teaching at the undergraduate level and apply to a fifth year* of graduate studies.
- During the fifth year, students complete a full year of internship with professional course work in education.

- Students enrolled in an undergraduate degree program outside of the education department can also apply to the fifth year* graduate program.

  * With no prior course work in education, these programs will normally require two years to achieve licensure and a degree.

Students who have previously completed a baccalaureate degree may also enter the teacher preparation program at the graduate level.

Admission Criteria

In determining admission of students to teacher education graduate programs, several criteria are used:

1. The undergraduate record. The undergraduate overall minimum grade point average for admission is 3.0. The undergraduate grade point average of students admitted to the graduate programs in teacher education is approximately 3.55 (based on 2020 admissions).
2. Positive recommendations from EDUC 500 Exploring Teaching, EDUC 935A Seminar and Practicum in Teaching or the equivalent and from those able to relay information about a candidate's performance in teaching situations or related areas.
3. Praxis Core Academic Skills for Educators (Core) exam scores are required. Applicants must obtain, at a minimum, a qualifying score (as set by the state of New Hampshire at the time of testing) on all three (Reading, Writing, and Mathematics) Core exams in order to be considered for admission. Current NH qualifying scores may be found at the ETS Praxis Website on the "Tests required for all licensure areas" page.
4. Additional required application materials can be found at the Graduate School website under *Programs*.

Requirements

Degree Requirements

The M.Ed. degree requires a minimum of **32 graduate credits**. Some students will require more than 32 credits, depending on the coursework they have completed prior to entering the program.

Any Education course taken for a teacher licensure requirement must be completed with a grade of **B-** or better. This applies to any courses from other departments that have been designated as equivalent to an Education course.

Core Requirements (may be taken at the undergraduate or graduate level).

Code	Title	Credits
EDUC 500	Exploring Teaching	4
or EDUC 935A	Seminar and Practicum in Teaching	
EDUC 605	Educational Perspectives in Critical Times	4
or EDUC 959	Issues in Education	
EDUC 801	Human Development & Learning: Cultural Perspectives [1]	4
EDUC 803F	Teaching Elementary School Science	4
EDUC 803M	Teaching Elementary Social Studies	4
EDUC 806	Teaching & Learning Literacy in the Elementary Classroom	4
MATH 801	Exploring Mathematics for Teachers I	3
or MATH 601	Exploring Mathematics for Teachers I	
MATH 703	Teaching of Mathematics in Grades K-5	4
EDUC 851A	Inclusive Elementary Education: Literacies and Learning for Diverse Learners	4
Internship (Select one of the following options) [2]		
EDUC 900A & EDUC 808	Internship and Seminar in Teaching and Literacy Assessment for Elementary Classroom Teachers (Fall semester)	8
EDUC 901A & EDUC 809	Internship and Seminar in Teaching and Supporting Readers in Elementary Classrooms (Spring semester)	8
OR		
EDUC 900A & EDUC 812	Internship and Seminar in Teaching and Teaching Multilingual Learners [3]	8
or ENGL 815	Teaching English as a Second Language: Theory and Methods	
EDUC 901A & ENGL 816	Internship and Seminar in Teaching and Curriculum, Materials and Assessment in English as a Second Language [3]	8
Note: All coursework listed above must be completed, therefore some students may exceed the minimum credit requirement while completing the required coursework.		

1 At the undergraduate level, students who take both HDFS 525 Human Development and HDFS 623 Developmental Perspectives on Infancy and Early Childhood meet the requirement for EDUC 701.

2 A Master's Inquiry Project is required during the internship year.

3 ENGL 815 & ENGL 816 are to be taken during the internship year as an alternative sequence to EDUC 808 & EDUC 809. If one or both of these courses is taken prior to the internship year, students must take the EDUC 808/EDUC 809 sequence during the internship.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

GOAL ONE: OUR GRADUATES ARE KNOWLEDGEABLE IN THE SUBJECTS THEY TEACH. Our graduates:

- 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.
- identify associated content necessary for students to understand these themes and concepts.

GOAL TWO: OUR GRADUATES ARE COMMITTED TO KNOWING THEIR STUDENTS AND CULTIVATING A COMMUNITY OF LEARNERS. Our graduates:

- understand how students develop and learn.
- treat students equitably and work diligently to help each student reach his or her potential.
- create and maintain an atmosphere conducive to learning.
- recognize diversity among their students and adjust their practice accordingly.
- create and maintain an atmosphere fostering mutual respect and caring.
- cultivate within their own students a recognition and valuing of diversity.

GOAL THREE: OUR GRADUATES KNOW HOW TO TEACH SUBJECT MATTER TO STUDENTS. Our graduates:

- demonstrate specialized knowledge of how to teach subject matter to their students.
- use multiple approaches to facilitate student learning.
- create lessons that are engaging and motivating for students.
- create learning experiences that are appropriately challenging for all students.
- involve students in thoughtful inquiry and reflection.
- ensure that students understand the purpose of activities within and across lessons and units.

GOAL FOUR: OUR GRADUATES EFFECTIVELY MONITOR STUDENT LEARNING. Our graduates:

- use multiple strategies to assess students.
- regularly assess student progress using appropriate measures.
- demonstrate the ability to make informed decisions about students and their learning based on classroom, district, and state assessments.

GOAL FIVE: OUR GRADUATES ARE THOUGHTFUL AND REFLECTIVE PRACTITIONERS WHO LEARN FROM EXPERIENCE.Our graduates:

- make well-reasoned choices and decisions within the complex and demanding conditions of teaching.
- analyze the effects of their actions and make appropriate changes.
- take into account the moral and philosophical implications of educational decisions.
- improve their practice by reflecting on their own experience, observing others, seeking advice, and drawing upon educational research and scholarship.

GOAL SIX: OUR GRADUATES UNDERSTAND THE NATURE OF SCHOOL REFORM AND THEIR ROLES AS AGENTS OF CHANGE. Our graduates:

- 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.
- develop and articulate their own conceptual and philosophical perspective on teaching and learning based on professional experience and current theories and research in education.
- develop an understanding of how leadership is informed by varied perspectives on the structure of public education, the nature of educational change, and the teacher's role in the change process.
- are willing to take risks as advocates for the benefit of students, teachers, and the profession.

GOAL SEVEN: OUR GRADUATES ARE ACTIVE MEMBERS OF LEARNING AND PROFESSIONAL COMMUNITIES. Our graduates:

- work with colleagues to enhance their own teaching, learning, and professional development.
- work collaboratively with students, peers, and community members to create and contribute to effective learning environments.
- participate in professional organizations.
- continue to pursue avenues of inquiry into the teaching and learning process through study, research, and dialogue.

Secondary Education (M.A.T.)

https://cola.unh.edu/education/program/mat/secondary-education

Description

The Secondary Education program provides certification and an M.A.T. degree for those who wish to teach in secondary schools.

What is the difference between an M.Ed. and the M.A.T in Secondary Education? The M.A.T. requires that at least three graduate-level courses be in an area of subject matter concentration rather than in education. The basic program to achieve these ends is the five-year program in which students begin preparation for teaching at the undergraduate level with a semester of field experience and professional course work in education. Students complete a baccalaureate degree outside of education and move into a fifth year of study and full-year internship which lead to either the M.Ed. or M.A.T. degree and licensure for teaching. Students who have already completed a baccalaureate degree may also enter the teacher preparation program at the graduate level. With no prior course work in education, these programs will normally require two years to achieve licensure and a degree.

Admission Criteria

In determining admission of students to teacher education graduate programs, several criteria are used:

1. The undergraduate record. The undergraduate overall minimum grade point average for admission is 3.0. The undergraduate grade point average of students admitted to the graduate programs in teacher education is approximately 3.55 (based on 2020 admissions). For students pursuing the Accelerated Masters, a minimum GPA of 3.2 is required.
2. Positive recommendations from EDUC 500 Exploring Teaching, EDUC 935A Seminar and Practicum in Teaching or the equivalent, and from those able to relay information about a candidate's performance in teaching situations or related areas.
3. Praxis Core Academic Skills for Educators (Core) exam scores are required. Applicants must obtain, at a minimum, a qualifying score (as set by the state of New Hampshire at the time of testing) on all three (Reading, Writing, and Mathematics) Core exams in order to be considered for admission. Current NH qualifying scores may be found at the ETS Praxis Website under the “Tests required for all licensure areas” page.
4. Clearance on a criminal history records check through the NH Department of Safety.
5. Additional required application materials can be found at the Graduate School website under programs.

Requirements

Degree Requirements

The M.A.T. degree requires a minimum of 32 hours of graduate-level credits. The exact number of credit hours will depend on the student's academic background, competencies, and professional goals, and will be determined by the adviser.

Any Education course taken for a teacher licensure requirement must be completed with a grade of **B-** or better. This applies to any courses

from other departments that have been designated as equivalent to an Education course.

Code	Title	Credits
Core Requirements (may be taken at the undergraduate or graduate level).		
EDUC 500	Exploring Teaching	4
or EDUC 935A	Seminar and Practicum in Teaching	
EDUC 605	Educational Perspectives in Critical Times	4
or EDUC 959	Issues in Education	
EDUC 801	Human Development & Learning: Cultural Perspectives	4
EDUC 807	Teaching Reading through the Content Areas (807 is required for licensure in Art, Biology, Chemistry, Earth Science, General Science, Physcis, and Social Studies)	2
EDUC 851B	Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions	4
Subject Field Curriculum Methods Course(s) (for example, EDUC 791/EDUC 891 Methods of Teaching Secondary School Science)		
EDUC 900A	Internship and Seminar in Teaching (Fall semester) [1]	3 or 6
EDUC 901A	Internship and Seminar in Teaching (Spring semester) [2]	3 or 6

[1]
- In addition to the 12 credit internship, three graduate level courses (9-12 credits) must in the subject area concentration. The remaining credits can in Education or another department.
- The number of credits for EDUC 900A and EDUC 901A will be determined by the advisor based on professional goals

[2] A Master's Inquiry Project is required during the internship year.

Code	Title	Credits
Methods Courses Required for Secondary Licensure		
Recommended methods courses be completed before the internship.		
Art K-12		
ARTS 791	Art Education (Elementary)	4
ARTS 792	Art Education (Secondary)	4
Biology		
EDUC 703F	Teaching Elementary School Science	4
Chemistry		
EDUC 703F	Teaching Elementary School Science	4
Dance		
THDA 786	Dance Pedagogy	4
Earth Science		
EDUC 703F	Teaching Elementary School Science	4
English		
ENGL 892 & ENGL 810	Teaching Literature and Literacy and Teaching Writing	5-10
or ENGL 726 & ENGL 725	Seminar in English Teaching and Seminar in English Teaching	
English as a Second Language		
ENGL 815/715	Teaching English as a Second Language: Theory and Methods	4
French		
LLC 791	Methods of Foreign Language Teaching	4
Health Education		
KIN 848	Skill Development and Assessment in Health Education	4
KIN 871	Health Education Pedagogy	4
or KIN 910	Curricular Issues in Health Pedagogy	
Middle Level Science		
EDUC 703F	Teaching Elementary School Science	4
German		
LLC 791	Methods of Foreign Language Teaching	4
Latin		
LLC 791	Methods of Foreign Language Teaching	4
Mathematics High School		
MATH 709	Teaching of Mathematics in Grades 6-12	4
Mathematics Middle School		
MATH 703	Teaching of Mathematics in Grades K-5	4
or MATH 709	Teaching of Mathematics in Grades 6-12	
Music Requirements - A course in teaching methods for elementary grades and a course in teaching methods for secondary grades.		
One course in teaching music in elementary grades, to be selected in consultation with an advisor.		
MUED 891	Teaching Secondary School Music	3
Physical Education		
HPE 610	Elementary Physical Education Pedagogy	4
HPE 655	Middle School and Secondary Physical Education Pedagogy	4
Physics		
EDUC 703F	Teaching Elementary School Science	4
Russian		
LLC 791	Methods of Foreign Language Teaching	4
Social Studies		
EDUC 803D/703D	Social Studies Methods for Middle and High School Teachers	4
Spanish		
LLC 791	Methods of Foreign Language Teaching	4
Theatre		
THDA 727	Methods of Teaching Theatre	4

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

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- treat students equitably and work diligently to help each student reach his or her potential.
- create and maintain an atmosphere conducive to learning.
- recognize diversity among their students and adjust their practice accordingly.
- create and maintain an atmosphere fostering mutual respect and caring.
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- involve students in thoughtful inquiry and reflection.
- ensure that students understand the purpose of activities within and across lessons and units.

GOAL FOUR. OUR GRADUATES EFFECTIVELY MONITOR STUDENT LEARNING. Our graduates:

- use multiple strategies to assess students.
- regularly assess student progress using appropriate measures.
- demonstrate the ability to make informed decisions about students and their learning based on classroom, district, and state assessments.

GOAL FIVE. OUR GRADUATES ARE THOUGHTFUL AND REFLECTIVE PRACTITIONERS WHO LEARN FROM EXPERIENCE. Our graduates:

- make well-reasoned choices and decisions within the complex and demanding conditions of teaching.
- analyze the effects of their actions and make appropriate changes.
- take into account the moral and philosophical implications of educational decisions.
- improve their practice by reflecting on their own experience, observing others, seeking advice, and drawing upon educational research and scholarship.

GOAL SIX. OUR GRADUATES UNDERSTAND THE NATURE OF SCHOOL REFORM AND THEIR ROLES AS AGENTS OF CHANGE. Our graduates:

- 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.
- develop and articulate their own conceptual and philosophical perspective on teaching and learning based on professional experience and current theories and research in education.
- develop an understanding of how leadership is informed by varied perspectives on the structure of public education, the nature of educational change, and the teacher's role in the change process.
- are willing to take risks as advocates for the benefit of students, teachers, and the profession.

GOAL SEVEN. OUR GRADUATES ARE ACTIVE MEMBERS OF LEARNING AND PROFESSIONAL COMMUNITIES. Our graduates:

- work with colleagues to enhance their own teaching, learning, and professional development.
- work collaboratively with students, peers, and community members to create and contribute to effective learning environments.
- participate in professional organizations.
- continue to pursue avenues of inquiry into the teaching and learning process through study, research, and dialogue.

Secondary Education (M.Ed.)

https://cola.unh.edu/education/program/med/secondary-education

Description

The Secondary Education program provides certification and an M.Ed. degree for those who wish to teach in secondary schools.

What is the difference between an M.Ed. and the M.A.T in Secondary Education? The M.A.T. requires that at least three graduate-level courses be in an area of subject matter concentration rather than in education. The basic program to achieve these ends is the five-year program in which students begin preparation for teaching at the undergraduate level with a semester of field experience and professional course work in education. Students complete a baccalaureate degree outside of education and move into a fifth year of study and full-year internship which lead to either the M.Ed. or M.A.T. degree and licensure for teaching.

Admission Criteria

In determining admission of students to teacher education graduate programs, several criteria are used:

1. The undergraduate record. The undergraduate overall minimum grade point average for admission is 3.0. The undergraduate grade point average of students admitted to the graduate programs in teacher education is approximately 3.55 (based on 2020 admissions). For students pursuing the Accelerated Masters, a minimum GPA of 3.2 is required.
2. Positive recommendations from EDUC 500 Exploring Teaching, EDUC 935A Seminar and Practicum in Teaching or the equivalent, and from those able to relay information about a candidate's performance in teaching situations or related areas.
3. Praxis Core Academic Skills for Educators (Core) exam scores are required. Applicants must obtain, at a minimum, a qualifying score (as set by the state of New Hampshire at the time of testing) on all three (Reading, Writing, and Mathematics) Core exams in order to be considered for admission. Current NH qualifying scores may be found at the ETS Praxis Website under the “Tests required for all licensure areas” page.
4. Clearance on a criminal history records check through the NH Department of Safety.
5. Additional required application materials can be found at the Graduate School website under programs.

Requirements

Degree Requirements

The M.Ed. degree requires a minimum of **32** hours of graduate-level credits. The exact number of credit hours will depend on the student's academic background, competencies, and professional goals, and will be determined by the adviser.

Any Education course taken for a teacher licensure requirement must be completed with a grade of **B-** or better. This applies to any courses from other departments that have been designated as equivalent to an Education course.

Code	Title	Credits
Core Requirements (may be taken at the undergraduate or graduate level).		
EDUC 500	Exploring Teaching	4
or EDUC 935A	Seminar and Practicum in Teaching	
EDUC 801	Human Development & Learning: Cultural Perspectives	4

EDUC 807	Teaching Reading through the Content Areas (807 is required for licensure in Art, Biology, Chemistry, Earth Science, General Science, Physics, and Social Studies)	2
EDUC 851B	Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions	4
EDUC 605	Educational Perspectives in Critical Times	4
or EDUC 959	Issues in Education	
Methods Courses Required for Secondary Licensure (see below list)		
EDUC 900A	Internship and Seminar in Teaching (Fall semester) [1]	3 or 6
EDUC 901A	Internship and Seminar in Teaching (Spring semester) [2]	3 or 6
Degree (Minimum of 32 Graduate credits)		

1 In addition to the 12 credit internship, 10 graduate credits must be UNH Education courses. The remaining credits can in Education or another department.
The number of credits for EDUC 900A Internship and Seminar in Teaching and EDUC 901A Internship and Seminar in Teaching will be determined by the advisor based on professional goals.

2 A Master's Inquiry Project is required during the internship year.

Code	Title	Credits
Methods Courses Required for Secondary Licensure		
Recommended methods courses be completed before the internship.		
Art K-12		
ARTS 791	Art Education (Elementary)	4
ARTS 792	Art Education (Secondary)	4
Biology		
EDUC 703F	Teaching Elementary School Science	4
Chemistry		
EDUC 703F	Teaching Elementary School Science	4
Dance		
THDA 786	Dance Pedagogy	4
Earth Science		
EDUC 703F	Teaching Elementary School Science	4
English		
ENGL 892 & ENGL 810	Teaching Literature and Literacy and Teaching Writing	5-10
or ENGL 726 & ENGL 725	Seminar in English Teaching and Seminar in English Teaching	
English as a Second Language		
ENGL 815/715	Teaching English as a Second Language: Theory and Methods	4
French		
LLC 791	Methods of Foreign Language Teaching	4
Health Education		
KIN 848	Skill Development and Assessment in Health Education	4
KIN 871	Health Education Pedagogy	4
or KIN 910	Curricular Issues in Health Pedagogy	
Middle Level Science		
EDUC 703F	Teaching Elementary School Science	4
German		
LLC 791	Methods of Foreign Language Teaching	4
Latin		
LLC 791	Methods of Foreign Language Teaching	4
Mathematics High School		
MATH 709	Teaching of Mathematics in Grades 6-12	4
Mathematics Middle School		
MATH 703	Teaching of Mathematics in Grades K-5	4
or MATH 709	Teaching of Mathematics in Grades 6-12	
Music Requirements - A course in teaching methods for elementary grades and a course in teaching methods for secondary grades.		
One course in teaching music in elementary grades, to be selected in consultation with an advisor.		
MUED 891	Teaching Secondary School Music	3
Physical Education		
HPE 610	Elementary Physical Education Pedagogy	4
HPE 655	Middle School and Secondary Physical Education Pedagogy	4
Physics		
EDUC 703F	Teaching Elementary School Science	4
Russian		
LLC 791	Methods of Foreign Language Teaching	4
Social Studies		
EDUC 803D/703D	Social Studies Methods for Middle and High School Teachers	4
Spanish		
LLC 791	Methods of Foreign Language Teaching	4
Theatre		
THDA 727	Methods of Teaching Theatre	4

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

GOAL ONE. OUR GRADUATES ARE KNOWLEDGEABLE IN THE SUBJECTS THEY TEACH. Our graduates:

- 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.
- identify associated content necessary for students to understand these themes and concepts.

GOAL TWO. OUR GRADUATES ARE COMMITTED TO KNOWING THEIR STUDENTS AND CULTIVATING A COMMUNITY OF LEARNERS. Our graduates:

- understand how students develop and learn.
- treat students equitably and work diligently to help each student reach his or her potential.
- create and maintain an atmosphere conducive to learning.
- recognize diversity among their students and adjust their practice accordingly.
- create and maintain an atmosphere fostering mutual respect and caring.
- cultivate within their own students a recognition and valuing of diversity.

GOAL THREE. OUR GRADUATES KNOW HOW TO TEACH SUBJECT MATTER TO STUDENTS. Our graduates:

- demonstrate specialized knowledge of how to teach subject matter to their students.
- use multiple approaches to facilitate student learning. create lessons that are engaging and motivating for students.
- create learning experiences that are appropriately challenging for all students.
- involve students in thoughtful inquiry and reflection.
- ensure that students understand the purpose of activities within and across lessons and units.

GOAL FOUR. OUR GRADUATES EFFECTIVELY MONITOR STUDENT LEARNING. Our graduates:

- use multiple strategies to assess students.
- regularly assess student progress using appropriate measures.
- demonstrate the ability to make informed decisions about students and their learning based on classroom, district, and state assessments.

GOAL FIVE. OUR GRADUATES ARE THOUGHTFUL AND REFLECTIVE PRACTITIONERS WHO LEARN FROM EXPERIENCE. Our graduates:

- make well-reasoned choices and decisions within the complex and demanding conditions of teaching.
- analyze the effects of their actions and make appropriate changes.
- take into account the moral and philosophical implications of educational decisions.
- improve their practice by reflecting on their own experience, observing others, seeking advice, and drawing upon educational research and scholarship.

GOAL SIX. OUR GRADUATES UNDERSTAND THE NATURE OF SCHOOL REFORM AND THEIR ROLES AS AGENTS OF CHANGE. Our graduates:

- 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.
- develop and articulate their own conceptual and philosophical perspective on teaching and learning based on professional experience and current theories and research in education.
- develop an understanding of how leadership is informed by varied perspectives on the structure of public education, the nature of educational change, and the teacher's role in the change process.
- are willing to take risks as advocates for the benefit of students, teachers, and the profession.

GOAL SEVEN. OUR GRADUATES ARE ACTIVE MEMBERS OF LEARNING AND PROFESSIONAL COMMUNITIES. Our graduates:

- work with colleagues to enhance their own teaching, learning, and professional development.
- work collaboratively with students, peers, and community members to create and contribute to effective learning environments.
- participate in professional organizations.
- continue to pursue avenues of inquiry into the teaching and learning process through study, research, and dialogue.

Special Education (M.Ed.)

https://cola.unh.edu/education/program/med/special-education

Description

The special education program prepares highly qualified educators who possess the knowledge, disposition, and skills necessary to take the lead in establishing effective teaching and learning environments for a diverse population of learners, who are capable of collaborating with classroom teachers as team leaders or consultants, and who utilize these skills within their school communities, and within the profession itself. The program meets current certification requirements in the state of New Hampshire in General Special Education.

Admission Criteria

In determining admission of students to teacher education graduate programs, several criteria are used:

1. The undergraduate record. The undergraduate overall minimum grade point average for admission is 3.0. The undergraduate grade point average of students admitted to the graduate programs in teacher education is approximately 3.55 (based on 2020 admissions).
2. Praxis Core Academic Skills for Educators (Core) exam scores are required. Applicants must obtain, at a minimum, a qualifying score (as set by the state of New Hampshire at the time of testing) on all three (Reading, Writing, and Mathematics) Core exams in order to be considered for admission. Current NH qualifying scores may be found at the ETS Praxis Website under the "Tests required for all licensure areas" page.
3. Additional required application materials can be found at the Graduate School website under programs.

Requirements

Degree Requirements

Prerequisites for General Special Education Certification

1. All candidates are required to complete a course in mathematics teaching methods and a course in reading teaching methods. At UNH, courses that meet the requirements are EDUC 806 Teaching & Learning Literacy in the Elementary Classroom . Courses that meet the mathematics requirement are MATH 601 Exploring Mathematics for Teachers I and MATH 703 Teaching of Mathematics in Grades K-5. Equivalent courses taken at another college or university may be substituted.
2. All students are required to complete EDUC 850 Introduction to Disability in Inclusive Schools and Communities, and EDUC 851A Inclusive Elementary Education: Literacies and Learning for Diverse Learners,or EDUC 851B Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions. Equivalent courses taken at another college or university may be substituted.
3. Credits for prerequisite courses will not count toward those needed for the M.Ed. degree.

Required Courses for All Students

The M.Ed. degree requires a minimum of **36** hours of graduate--level credits. The exact number of credit hours will depend on the student's background, competencies, and professional goals, and will be determined by the advisor.

Code	Title	Credits
Core Courses (12 credits)		
EDUC 856	Advocating for Diverse and Inclusive Family-School-Community Partnerships	4
EDUC 882	Introduction to Research Methods (or equivalent)	4
EDUC 959	Issues in Education (or equivalent)	4
Elective Courses (12 credits)		
	Students will elect a minimum of 12 graduate credits in consultation with their academic advisor. Required courses for GSE certification, below, can be used as electives.	
Concluding Experience		
	All students will have the option of one of two concluding experiences:	
1. Inquiry research project with presentation.		

2. A research thesis (EDUC #899) that meets the requirements of the Graduate School and the Education Department (6-10 credits). [1]

Required courses for GSC certification		
EDUC 839	Equitable Assessment and Individualized Educational Planning: Building Access and Agency	4
EDUC 840	Advanced Methods for Inclusive Curricular Design and Teaching: Building Access and Agency, Part II	4
EDUC 900C	Internship and Seminar in Special Education	3 or 6
EDUC 901C	Internship and Seminar in Special Education	3 or 6

[1] The research thesis meets the requirements of the Graduate School and the Education Department. Requirements for the thesis are explained in the Graduate School publication entitled Thesis and Dissertation Manual, which can be found at www.gradschool.unh.edu. Requirements for the project may be obtained from the adviser or on the program website.

Grades

Graduate credit is granted only for coursework completed with a grade of **B-** or higher. Any grade below B- will not count for graduate credit and will count toward the accumulation of nine (9) failing credits which may require the student to withdraw from the program.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

The Special Education program at the University of New Hampshire seeks to prepare highly qualified educators who possess the knowledge, dispositions, and skills necessary to establish rich, inclusive, and effective teaching and learning environments for diverse populations of learners.

- Graduates will be knowledgeable in the subjects they teach and how to teach those subjects to all students.
- Graduates will be committed to students and their learning.
- Graduates will be responsible for managing and monitoring student learning.
- Graduates will be effective organizers of the learning environment.
- Our graduates will be thoughtful and reflective practitioners who learn from experience.
- Our graduates will be committed to collaboration which facilitates student growth and learning.
- Our graduates will be informed decision-makers and agents of change.
- Our graduates will be active members of learning and professional communities.

Autism Spectrum Disorder (Graduate Certificate)

https://cola.unh.edu/education/program/certificate/autism-spectrum-disorder

Description

Beginning in the 2020-2021 academic year (Spring 2021), the Autism Spectrum Disorder Graduate Certificate program 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 program will serve the professional development needs of a wide variety of individuals, including:

1. parents of children with ASD;
2. special and general education teachers and administrators; speech-language pathologists, occupational therapists, behavioral consultants, recreation therapists; and
3. graduate students in other University majors such as sociology or psychology.

For more information please visit the Autism Spectrum Disorder website.

Applying

Please visit the Graduate School website for detailed instructions about applying to the certificate program.

Requirements

The coursework for the graduate certificate consists of 12-15 credits from the following required and elective course offerings. Highly qualified individuals may petition for permission to waive a required course. Applicants are urged to schedule an appointment with the program coordinators to develop their individualized course of study. Applications for graduate certificates are available through the Graduate School website.

Code	Title	Credits
Required Courses		
Contemporary Issues in Autism Spectrum Disorders		4
COMM 842	Autism Spectrum Disorders	2
Electives		**6-8**
Select two of the following based on individual advising:		
EDUC 956	Developing Positive Behavior Supports to Ensure Success for All Learners	4
COMM 843	Augmentative and Alternative Communication	3
OT courses in Assistive Technology including:		
OT 835	Assistive Technology for Communication and Cognition	2
OT 889	Using iPads to Support Children with Disabilities	2
OT 890	Occupational Therapy and Sensory Integration	4

Curriculum and Instructional Leadership (Graduate Certificate)

https://cola.unh.edu/education/program/certificate/curriculum-instructional-leadership

Description

This program provides the skills and knowledge for educators to understand curriculum and instruction and to lead educational programs at the school and district office level. It is comprised of curriculum, supervision, instruction, and data analysis components.

Applying

Applicants must have a minimum of five years of successful teaching experience or administrative experience. Please visit the Graduate School website for detailed instructions about applying to the certificate program.

Requirements

Required Courses

A minimum of five courses (**20 credits**) is required for this Graduate Certificate; at least 16 credits must be completed after admission to the program.

Code	Title	Credits
EDUC 959	Issues in Education	4
Select one course from each of the following four strands		16
Curriculum:		
EDUC 960	Curriculum Development	
EDUC 991	Curriculum Theory I	
Supervision of Instruction:		
EDUC #957	Collaborative Models of Teaching, Learning, and Leading	
EDUC 965	Educational Supervision and Evaluation	
Instruction:		
EDUC 958	Analysis of Teaching and Learning	
Data Analysis:		
EDUC 881	Introduction to Statistics: Inquiry, Analysis, and Decision Making	
EDUC 885	Introduction to Assessment	
EDUC 972	Introduction to Educational Evaluation	
Total Credits		**20**

With the approval of their advisor and the Division Director of Educational Studies, students may make modifications to the Graduate Certificate's course of study.

Special Education Administration (Graduate Certificate)

https://cola.unh.edu/education/program/certificate/special-education-administration

Description

The Education Department offers a Graduate Certificate in Special Education Administration. This program allows educators to administer and lead special education programs. Students who pursue this Graduate Certificate must concurrently pursue the certification for a New Hampshire Special Education Administrator. In other words, the Graduate Certificate is coterminous with the credential. When a student completes the Graduate Certificate they also complete the certification as a special education administrator. These two cannot be uncoupled.

Admission Requirements

- Master's Degree in special education.
- Possess a current credential/certification in special education area.
- A minimum of three years of successful teaching experience in special education (must have five years' experience for credential eligibility).

Requirements

In order to receive the Graduate Certificate in Special Education Administration, the matriculated student must complete all requirements for New Hampshire state certification as a Special Education Administrator. **At least 16 credits must be passed after admission to the Graduate Certificate program.**

UNH courses used to meet the requirements for New Hampshire state certification as a Special Education Administrator are listed below. Since an M.Ed. in Special Education is required for admission, it is expected that matriculated students will have previously completed most of the Special Education courses at UNH or equivalent courses at other schools. Admitted students will work with their academic advisor to determine an appropriate plan of study based on prior coursework. Students typically need to complete between **16** and **24 credits** to receive the certificate.

Code	Title	Credits
Special Education Courses: [1]		
EDUC 839	Equitable Assessment and Individualized Educational Planning: Building Access and Agency	4
EDUC 840	Advanced Methods for Inclusive Curricular Design and Teaching: Building Access and Agency, Part II	4
EDUC 850	Introduction to Disability in Inclusive Schools and Communities	4
EDUC 856	Advocating for Diverse and Inclusive Family-School-Community Partnerships	4
EDUC 956	Developing Positive Behavior Supports to Ensure Success for All Learners	4
EDUC 959	Issues in Education (or equivalent) [2]	4
Administration Courses:		
EDUC 962	Educational Finance and Business Management	4
EDUC 964	Human Resources in Education	4
EDUC 974	Educational Administrative Internship	4
EDUC 977	Leadership: The District Level Administrator	4

1 To meet requirements for New Hampshire state certification as a Special Education Administrator, students must also complete or have completed a course in Special Education Laws and Regulations.

2 Equivalent courses are determined in consultation with an academic advisor.

Trauma Informed Policy and Practice (Graduate Certificate)

https://cola.unh.edu/education/program/graduate-certificate/trauma-informed-policy-practice

Description

The UNH Trauma-Informed Policy and Practice (TIPP) Graduate Certificate Program prepares scholars enrolled in social work and/or education graduate programs, or current professionals in the field, in research-based practices and systems change strategies to improve outcomes for all students including children and youth with significant support needs, emotional and behavioral disabilities, developmental and intellectual disabilities, autism, sensory, and other learning disabilities.

The NH DOE identified school-based personnel shortages in school social workers and educators trained in emotional and behavioral disabilities, intellectual disabilities, and other learning disabilities. The TIPP Program responds to these challenges as the only graduate certificate in the country addressing the need for trauma-informed professionals supporting the needs of school-age children, youth, and their families in equity-based inclusive education.

Requirements

The certificate requires completion of 3 core courses and 2 electives.

Code	Title	Credits
Required Courses		
EDUC 998	Special Topics (Special Topics in Trauma Informed Policy and Practice) [1]	1-4
EDUC 850	Introduction to Disability in Inclusive Schools and Communities	4
SW 871	Trauma-Informed Practice in School Settings	3
Electives - select two courses from the following:		
SW 804	Adolescents with Emotional and Behavioral Challenges	3
SW 805	Child and Adolescent Risks and Resiliency: Program, Policy and Practice	3
SW 813	School Social Work	3
SW 850	Human Behavior and the Social Environment I	3
EDUC 801	Human Development & Learning: Cultural Perspectives	4
EDUC 803C	Classroom Management: Creating Positive Learning Environments	4
EDUC 851A	Inclusive Elementary Education: Literacies and Learning for Diverse Learners	4
EDUC 851B	Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions	4
EDUC 861	Designing Curriculum for Inclusive, Equitable Settings for Young Children (birth-8)	4
EDUC 818	Critical Social Justice in and Beyond Education	4
EDUC 956	Developing Positive Behavior Supports to Ensure Success for All Learners	4

[1] EDUC 998 is a year-long two-credit seminar for students in the TIPP program.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Electrical and Computer Engineering (ECE)

Degrees Offered: Ph.D., M.Eng., M.S.

This program is offered in Durham.

The Department of Electrical and Computer Engineering offers a doctor of philosophy (Ph.D.) degree, a master of science degree (M.S.) and a master of engineering degree (M.Eng.).

Opportunities

Advanced degrees in electrical and computer engineering open the door to a wider variety of job opportunities, particularly with regard to consulting, research and development, and positions in academia. Within the department, opportunities for formal study, research, and individual or team projects are available in the following areas: biomedical engineering; communication systems; digital signal processing; computer engineering, computer networks, digital systems, and logical synthesis; robotics and neural networks; image processing and pattern analysis; control systems; electromagnetics; pervasive computing; human-computer interaction; ocean engineering; cyber-physical security and systems; flexible and wearable electronics; bioelectronic sensors; instrumentation; Internet-of-Things; machine learning; and artificial intelligence.

Admission Requirements

An applicant should have completed a baccalaureate degree in electrical or computer engineering or have comparable training, which includes courses and laboratory experiences in mathematics and physical science as well as in topics such as network theory, digital systems, fields and waves, electronics, and electrical circuits. Students must submit current (within five years) general scores from the Graduate Record Examination (GRE). Student with BS or MS degrees from non-US university must also submit current scores from the Test of English as a Foreign Language Exam (TOEFL).

https://ceps.unh.edu/ece

Programs

- Electrical and Computer Engineering (Ph.D.) (p. 126)
- Electrical and Computer Engineering (M.Eng.) (p. 127)
- Electrical and Computer Engineering (M.S.) (p. 128)
- Electrical and Computer Engineering: Biomedical Engineering (M.S.) (p. 129)

Faculty

See https://ceps.unh.edu/electrical-computer-engineering/faculty-staff-directory for faculty.

Electrical and Computer Engineering (Ph.D.)

https://ceps.unh.edu/electrical-computer-engineering/program/phd/electrical-computer-engineering

Description

Our graduate programs are flexible allowing the student a wide choice of courses as well as research topics. We will prepare students for professional skills such as working collaboratively, scholarly writing, and technical presentation and publications. Our programs will provide the students the training needed to pursue a career both in industry and academia. The programs will increase the breadth and depth of the students' electrical and computer engineering knowledge and help them develop the specialized skills in areas including but not limited to biomedical engineering, human-computer interaction, wireless communication, integrated circuit design, cybersecurity, control system and robotics, sensor design, wearable electronics, image processing, Internet-of-Things, computer architecture, and medical instrumentation. Students have internship opportunities such as UNH Interoperability

Laboratory (IOL), Center of Coastal Mapping (CCOM), Institute for the study of Earth, Ocean, and Space (EOS), etc.

Requirements

Degree Requirements

The degree of Doctor of Philosophy (Ph.D.) in Electrical and Computer Engineering (ECE) is conferred on qualified candidates who have passed the qualifying examination and candidacy examination in their field of study, who have completed an original investigation in this field and have embodied the results in an acceptable dissertation, and who have passed an oral examination in defense of the dissertation. The degree of Ph.D. is a research degree, and it is not given merely for the completion of course credits.

Students entering the Ph.D. program with a B.S. degree must successfully complete the following minimum program requirements:

- 4 credits of ECE 900 Research and Development From Concept to Communication
- 1 credit of ECE 910 Graduate Seminar
- At least 9 credits of 900 level ECE coursework determined through consultation with advisor and dissertation committee, excluding ECE 900: Research and Development from Concept to Communication, graduate seminar and independent study.
- Qualifying Examination
- Dissertation Research

Students with master's degrees in ECE or related fields may petition for full or partial waiver of the ECE coursework requirement. Students with M.S. degrees in ECE from UNH may also petition to waive the ECE 900 requirement. Dissertation research requirements include the nomination of the dissertation committee to supervise the student's dissertation research, successful defense of the dissertation proposal, and successful completion of the dissertation defense. Detailed information about the Ph.D. program guidelines, and rules governing the qualifying examination and dissertation requirements, can be found on the ECE departmental website.

Student Learning Outcomes

- Students will master the theoretical concepts or/and practical implementation in advanced aspects of biomedical engineering, human-computer interaction, wireless communication, integrated circuit design, cybersecurity, control system and robotics, sensor design, wearable electronics, image processing, Internet-of-Things, computer architecture, and medical instrumentation.
- Students will have an advanced understanding of the mathematical methods, both analytical and computational, required to solve complex problems in the general field of electrical and computer engineering.
- Students will be proficient in collecting and analyzing data using contemporary laboratory equipment.
- As a result of our two-semester ECE900 courses, students will develop and demonstrate proficiency in the use of library searches along with interpreting and presenting technical information found in those searches.
- Students will have a specialized knowledge of their chosen field of advanced research relating to electrical and computer engineering.
- Students will be able to present advanced scientific ideas effectively in both written and oral form.
- Students will be well prepared for postgraduate study in electrical and computer engineering and related disciplines, as well as advanced careers in a multitude of fields ranging from scientific and technical to financial.

Electrical and Computer Engineering (M.Eng.)

https://ceps.unh.edu/electrical-computer-engineering/program/meng/electrical-computer-engineering

Description

Our MEng program will prepare students for a professional career in industry by offering both cutting-edge engineering courses and its applications to solving practical problems. The training offered from our program will increase the breadth and depth of the students' electrical and computer engineering knowledge and help them develop the specialized skills in areas including, but not limited to, biomedical engineering, human-computer interaction, wireless communication, integrated circuit design, cybersecurity, control system and robotics, sensor design, wearable electronics, image processing, Internet-of-Things, computer architecture, and medical instrumentation.

Requirements

Degree Requirements

The graduation requirement for the ECE M.Eng. degree is based on course credits and concluding experiences. Specifically, students must complete at least **30 credit hours** of coursework, with at least 24 credits being earned in the ECE department or related technical disciplines (those disciplines will be determined by the student in conjunction with his/her adviser); of those 24 credit hours in the ECE department, at least 12 must be at the 900 level. Courses outside the ECE department must be approved by the academic advisor. Students must attend 50% of the seminar presentations. The academic advisor will coordinate and keep track of the student's attendance. The concluding experiences will be in the form of a technical paper suitable for conference publication and two oral technical presentations.

TA and RA positions, scholarships, and tuition waivers are typically not available to M.Eng. students, unless there are special circumstances. All transfers into the ECE M.Eng. program from any of the other three ECE graduate programs will require approval by the ECE Graduate Committee through the existing petition process. If a student holding a TA or RA position in the ECE department transfers into the ECE M.Eng program, they are required to relinquish that position.

Technical Presentation and Paper Requirement

Students in the M.Eng. program are required to submit a technical paper and to deliver two technical presentations as part of their program. Many of the courses in the ECE graduate program require technical reports and presentations, and some of these may be appropriate for satisfying the

technical requirement for students in the M.Eng. program. However, there are other approaches for satisfying this requirement as indicated below.

The objective in requiring a technical paper is to ensure that the student has some facility in documenting technical information. The evaluation of that paper is to be performed by the ECE Graduate Committee, and the evaluation will result in either acceptance or rejection of the work submitted. The criterion for technical papers to be considered acceptable is that they describe a contemporary technical concept or development with a high degree of depth and clarity. The student must be the sole author on the technical paper, and it is to be submitted to the chair of the ECE Graduate Committee electronically before the last day of classes. As noted above, technical papers associated with regular ECE graduate courses or independent studies may be used to satisfy the requirement, as are papers prepared for technical conferences or publications. Papers accepted for presentation at refereed conferences or for publication in refereed journals will automatically satisfy the technical paper requirement. For these papers, students can petition to have the sole authorship requirement waived.

The objective in requiring the two oral technical presentations is primarily to ensure that students have the opportunity to present in front of a group. For the technical presentations requirement, presentations need to that fulfill one of the criteria below:

1. Presentation of a technical lecture (20 minutes or longer) as part of the requirements for a course in which the student is enrolled.
2. Presentation of a technical lecture in a course as a "stand in" for the faculty member in charge.
3. Presentation of a technical seminar at UNH or to a public group or industry.
4. Presentation of a technical paper as part of a professional job function.
5. Presentation of a paper at a professional technical conference.

It is the responsibility of the student to satisfy this requirement before graduation. Students must get approval from their advisor for any activity that is intended to be used as a technical presentation experience. The two presentations required must be different; giving the same seminar twice does not count as two presentations. If the activity does not fall into one of the five categories listed, prior approval of the ECE Graduate Committee must also be obtained.

The student should submit documentation for the two experiences using the forms found on the ECE website in electronic form to the chair of the ECE Graduate Committee. This should be completed by the last day of classes during the semester of graduation.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Students will have a basic understanding of the advanced electrical and computer engineering topics related with biomedical engineering, human-computer interaction, wireless communication, integrated circuit design, cybersecurity, control system and robotics, sensor design, wearable electronics, image processing, Internet-of-Things, computer architecture, and medical instrumentation.
- Students will be trained to solve practical problems and produce a technical report.
- Students will be well prepared for a professional career in industry.

Electrical and Computer Engineering (M.S.)

https://ceps.unh.edu/electrical-computer-engineering/program/ms/electrical-computer-engineering

Description

Our graduate programs are flexible allowing the student a wide choice of courses as well as research topics. We will prepare students for professional skills such as working collaboratively, scholarly writing, and technical presentation and publications.

Our programs will provide the students the training needed to pursue a career both in industry and academia. The programs will increase the breadth and depth of the students' electrical and computer engineering knowledge and help them develop the specialized skills in areas including but not limited to biomedical engineering, human-computer interaction, wireless communication, integrated circuit design, cybersecurity, control system and robotics, sensor design, wearable electronics, image processing, Internet-of-Things, computer architecture, and medical instrumentation.

Students have internship opportunities such as UNH Interoperability Laboratory (IOL), Center of Coastal Mapping (CCOM), Institute for the study of Earth, Ocean, and Space (EOS), etc.

Requirements

Degree Requirements

Master of science in electrical and computer engineering (M.S. ECE) degree students must take a minimum of **31 graduate credits** including:

- 20 credit hours of graduate coursework, with at least 9 of those credit hours earned in 900-level courses
- 4 credits of ECE 900 Research and Development From Concept to Communication
- 6 credits of thesis work (ECE 899 Master's Thesis)
- 1 credit of ECE 910 Graduate Seminar

Up to 12 credits earned in 800 level non-ECE courses may be taken for graduate credit by ECE M.S. degree students provided the courses are petitioned and approved by the ECE Graduate Committee.

A student may petition that a maximum of 12 UNH graduate credits or a maximum of 8 non-UNH graduate credits taken prior to admission into

the ECE master of science degree program be applied to fulfill the degree requirements.

Once the student has been admitted into the program, under certain circumstances it may be desirable to take courses outside the ECE department to attain the goals outlined in the student's program of study. In these cases, up to two non-ECE 900-level courses are allowed without petition, but you need to have your thesis advisor's approval. Students need to take at least two 900-level courses (neither of which may be independent studies) within the department. Students must petition to the ECE Graduate Committee before course registration. To take more than 2 non-ECE courses (either 800 or 900 level) students must submit a petition to the ECE Graduate Committee.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Students will master the theoretical concepts or/and practical implementation in advanced aspects of biomedical engineering, human-computer interaction, wireless communication, integrated circuit design, cybersecurity, control system and robotics, sensor design, wearable electronics, image processing, Internet-of-Things, computer architecture, and medical instrumentation.
- Students will be proficient in collecting and analyzing data using contemporary laboratory equipment.
- As a result of our two-semester ECE900 courses, students will develop and demonstrate proficiency in the use of library searches along with interpreting and presenting technical information found in those searches.
- Students will have the professional skills such as working collaboratively, scholarly writing, and technical publications.
- Students will be well trained to pursue a career both in industry and academia.

Electrical and Computer Engineering: Biomedical Engineering (M.S.)

https://ceps.unh.edu/electrical-computer-engineering/program/ms/electrical-computer-engineering-biomedical-engineering

Description

Our graduate programs are flexible allowing the student a wide choice of courses as well as research topics. We will prepare students for professional skills such as working collaboratively, scholarly writing, and technical presentation and publications. Our programs will provide the students the training needed to pursue a career both in industry and academia.

The programs will increase the breadth and depth of the students' electrical and computer engineering knowledge and help them develop the specialized skills in areas including but not limited to biomedical engineering, human-computer interaction, wireless communication, integrated circuit design, cybersecurity, control system and robotics, sensor design, wearable electronics, image processing, Internet-of-Things, computer architecture, and medical instrumentation.

Students have internship opportunities such as UNH Interoperability Laboratory (IOL), Center of Coastal Mapping (CCOM), Institute for the study of Earth, Ocean, and Space (EOS), etc.

Requirements

Degree Requirements

The M.S. ECE Biomedical Engineering option is intended for students with interests in medical image processing, biomedical instrumentation, and biosensors.

Master of science in electrical and computer engineering (M.S. ECE) with an option in biomedical engineering degree students must take a minimum of 31 graduate credits.

Code	Title	Credits
Required Courses		
ECE 817	Introduction to Digital Image Processing	4
ECE 884	Biomedical Instrumentation	4
ECE 925	Biosensors: Fundamentals and Applications	3
ECE 910	Graduate Seminar	1
ECE 992	Advanced Topics in Electrical Engineering	4
ECE 899	Master's Thesis	6
Elective Courses		*9*
9 credits of graduate coursework, with at least 6 credit hours earned in 900-level courses		
Total Credits		**31**

Up to 12 credits earned in non-ECE courses numbered 800-899 may be taken for graduate credit by ECE M.S. degree students provided the courses are petitioned and approved by the ECE Graduate Committee.

A student may petition that a maximum of 12 UNH graduate credits or a maximum of 8 non-UNH graduate credits taken prior to admission into the ECE Master of Science degree program be applied to fulfill the degree requirements.

Once the student has been admitted into the program, under certain circumstances it may be desirable to take courses outside the ECE department to attain the goals outlined in the student's program of study. In these cases, up to two non-ECE 900-level courses are allowed without petition, but students need to have their thesis advisor's approval. Students need to take at least two 900-level courses (neither of which may be independent studies) within the department. Students must petition to the ECE Graduate Committee before course registration. To take more than 2 non ECE courses (either 800 or 900 level) students must submit a petition to the ECE Graduate Committee.

Student Learning Outcomes

- Students will master the theoretical concepts or/and practical implementation in advanced aspects of biomedical engineering,

human-computer interaction, wireless communication, integrated circuit design, cybersecurity, control system and robotics, sensor design, wearable electronics, image processing, Internet-of-Things, computer architecture, and medical instrumentation.
- Students will be proficient in collecting and analyzing data using contemporary laboratory equipment.
- As a result of our two-semester ECE900 courses, students will develop and demonstrate proficiency in the use of library searches along with interpreting and presenting technical information found in those searches.
- Students will have the professional skills such as working collaboratively, scholarly writing, and technical publications.
- Students will be well trained to pursue a career both in industry and academia.

English (ENGL)

Degrees Offered: Ph.D., M.A., M.F.A., M.S.T.

This program is offered in Durham.

The Department of English offers four advanced degrees: master of arts with options in English studies or English language and linguistics# master of science for teachers# master of fine arts in writing# and doctor of philosophy.

Admission Requirements

- All applicants must submit writing samples in accordance with guidelines available from the English department graduate office.
- All applicants (except those for the M.F.A. and M.S.T.) must submit current scores (within five years) from the general test of the GRE.
- All applicants who wish to be considered for teaching assistantships or tuition scholarships must complete an application form, available from the website listed above, or from the graduate school forms page (see the Graduate Aid section).
- Master of Science for Teachers (M.S.T.) applicants must have completed education courses sufficient for certification, or have three years of teaching experience, or currently hold a full--time teaching position.
- Ph.D. Rhetoric, Literacy, and Composition Studies track applicants must hold an M.A. degree or be in the final stage of completing requirements for the degree.
- Ph.D. Literature track applicants may hold either a B.A. or M.A. or be in the final stage of completing requirements for the degree.

https://cola.unh.edu/english

Programs

Faculty

See https://cola.unh.edu/english/faculty-staff-directory for faculty.

English (Ph.D.)

https://cola.unh.edu/english/program/phd/english

Description

The English program offers a Ph.D. in English which allows students to specialize in one of two tracks:

Literature

Our graduate program offers you the opportunity to explore the formal, historical, cultural, and theoretical dimensions of diverse forms of the written word. As a student in our program, you will develop a deeper understanding of canonical and innovative approaches to literature in English, including both such nationally-defined traditions as British and American literatures, and traditions organized around other principles, such as Postcolonial or African American literatures. Organized to reflect the changing profession of literary study--its history, its methodologies, and its production of new knowledge--the program includes the study of literature in cultural and historical contexts, the study of representations of identity, comparative approaches to literature, theoretical perspectives, gender studies, and cultural studies. The program offers you both broad-based and specialized courses on a variety of literary topics, and students may supplement their course of literary study with graduate offerings in related subjects and departments, including courses in composition, creative writing, languages and linguistics, history, and sociology, among others.

Rhetoric, Literacy, and Composition Studies

Created in 1985, our program is designed to prepare experts in composition theory, research and pedagogy who can contribute to the evolving knowledge in the field through rigorous research and scholarship. In addition to a specialization in composition studies, students will develop a secondary area of specialization such as applied linguistics, critical theory, English as a second language, English teaching, linguistics or literature.

One of the major strengths of the program is the opportunity to work closely with nationally-known faculty in composition studies in developing research and teaching expertise. We hold high expectations for students but work to create a supportive atmosphere where exams and coursework are matched to individual needs and interests.

Ph.D. students in English normally hold graduate assistantships with the teaching load of one course per semester. Teaching opportunities include First-Year Writing, ESL Composition, Creative Nonfiction, Technical Writing, and Persuasive Writing, as well as Critical Analysis and Literature Courses. Some students also work in Robert J. Connors Writing Center and the Writing Across the Curriculum program.

Requirements

The Ph.D. program combines the essential guidance and discipline of coursework with the equally essential freedom of independent study and

research. Students choose between two areas: **literature** or **rhetoric, literacy, and composition studies**.

Ph.D. students normally hold assistantships and teach under supervision; such teaching is considered a vital part of the student's professional training.

Students must demonstrate basic proficiency in two languages or advanced proficiency in one. Basic proficiency may be demonstrated by passing a departmental examination or by receiving a grade of B or better in a fourth--semester college-level language course. Advanced proficiency is demonstrated by passing a rigorous departmental examination.

Literature

The doctoral program in literature is designed to train students to be teachers and scholars. All students must pass a general examination in English and American literature, a more specialized qualifying examination, an oral defense of their dissertation.

Students who enter this program with a B.A. degree will complete thirteen courses, of which eight must be seminars. The other courses must be at the 800 or 900 levels and must include ENGL 925 Graduate Study of Literature , ENGL 910 Practicum in Teaching College Composition, a seminar in theory, and ENGL 924 Professional Preparation.

Code	Title	Credits
ENGL 925	Graduate Study of Literature	4
ENGL 910	Practicum in Teaching College Composition	6
ENGL 924	Professional Preparation	2
Eight 900-Level Seminars: [1]		**32**
ENGL 935	Seminar: Studies in American Literature (Eight 900-Level Literature Seminars:) [1]	
ENGL 937	Seminar: Studies in 19th Century American Literature	
ENGL 938	Seminar: Studies in 20th Century American Literature	
ENGL 958	Seminar: Studies in Shakespeare	
ENGL 959	Seminar: Studies in Milton	
ENGL #968	Seminar: Studies in 18th Century Literature	
ENGL #971	Seminar: Studies in the Victorian Period	
ENGL 974	Seminar: Studies in 20th Century British Literature	
ENGL 981	Seminar: Studies in Post-Colonial Literatures in English	
Two 800-900 Level Electives [2]		**8**
ENGL 999	Doctoral Research	0
Total Credits		**52**

Students who enter this program with an M.A. degree will complete nine graduate courses, of which three must be seminars. The other courses must be at the 800 or 900 level and must include ENGL 925 Graduate Study of Literature, ENGL 910 Practicum in Teaching College Composition, a seminar in theory, and ENGL 924 Professional Preparation.

Code	Title	Credits
ENGL 925	Graduate Study of Literature	4
ENGL 910	Practicum in Teaching College Composition	6
ENGL 924	Professional Preparation	2
Three 900-level Seminars: [1]		**12**
ENGL 935	Seminar: Studies in American Literature	
ENGL 937	Seminar: Studies in 19th Century American Literature	
ENGL 938	Seminar: Studies in 20th Century American Literature	
ENGL 958	Seminar: Studies in Shakespeare	
ENGL 959	Seminar: Studies in Milton	
ENGL #968	Seminar: Studies in 18th Century Literature	
ENGL #971	Seminar: Studies in the Victorian Period	
ENGL 974	Seminar: Studies in 20th Century British Literature	
ENGL 981	Seminar: Studies in Post-Colonial Literatures in English	
Three 800-900 Level Electives [2]		**12**
ENGL 999	Doctoral Research	0
Total Credits		**36**

1. One seminar must satisfy the theory requirement with permission from the instructor and Graduate Director.
2. Electives can include any of the 900-level seminars listed above or any 800-900 level course offered by the English Department.
   Up to two electives may be taken outside the English Department with the Graduate Director's approval.

RHETORIC, LITERACY, AND COMPOSITION STUDIES

The program in composition studies is designed to train experts who are qualified to teach general courses in literature or linguistics in the teaching of composition. Students in composition studies will complete 10 graduate--level courses of which four must be seminars. The other courses must be at the 800 or 900 levels and include ENGL 910 Practicum in Teaching College Composition and ENGL 918 Research Methods in Composition. Students will take a combined general and qualifying examination that focuses both on the theory of composition and rhetoric, and on a secondary area of specialization. Their dissertation work will be on a topic in composition.

Code	Title	Credits
ENGL 910	Practicum in Teaching College Composition	6
ENGL 918	Research Methods in Composition	4
ENGL 912	Historical and Theoretical Studies in Rhetoric [1]	4
ENGL 916	History of Composition [1]	4
Two Composition Electives:		**8**
ENGL 829	Spec Top/Composition Studies	
ENGL 889	Special Topics in English Teaching	
ENGL 892	Teaching Literature and Literacy	
ENGL 913	Theory and Practice of Composition	
ENGL 914	Special Topics in Composition and Rhetoric	
Two Electives in a Related Field [2]		**8**
Two Electives [3]		**8**
ENGL 999	Doctoral Research	0
Total Credits		**42**

1. For these two seminars, other seminars might serve as substitutes, such as ENGL 914 Special Topics in Composition and Rhetoric or ENGL 995 Independent Study if they deal with these subjects.
2. Students must take at least two courses in a related or cognate field (such as literature, the essay, linguistics, ESL, or English teaching).
3.
   - Electives can be in Composition, a related field, another subject, or another department with the approval of the adviser.
   - No more than two courses may be "slashed" (700/800), unless the related field is linguistics, as linguistics graduate courses are generally slashed; in that case, a third such course may be counted.
   - In normal circumstances, no more than two courses may be Independent Studies.

Student Learning Outcomes

- Broad understanding of texts, theoretical paradigms, intellectual traditions, and the methodologies of their field.
- Expertise in critical writing and speaking that adheres to the conventions of the field.
- Expertise in a specific area of literary or composition studies developed through original research and writing the dissertation.

- Pedagogical skills for effective college teaching as both an expert and a generalist.
- Professionalization in the professorate.

English: English Studies Option (M.A.)

https://cola.unh.edu/english/program/ma/english-studies-option

Description

Our M.A. program offers you the opportunity to explore the formal, historical, cultural, and theoretical dimensions of diverse forms of the written word.

Requirements

Degree Requirements

M.A. candidates must complete **36** credit hours at the 800 or 900 level, including three seminar courses and a fourth seminar in literature or ENGL 998 Master's Paper .

At least six courses must be literature courses offered by the English department (as distinct from courses in critical theory, linguistics, writing, or teaching methods). If a student chooses the Master's Paper option, the six-course requirement is reduced to five literature courses.

M.A. candidates must pass a reading examination in a foreign language or demonstrate that they have passed a fourth-semester college-level language course with a grade of B or better. Students whose native language is not English may be exempt from this requirement.

Code	Title	Credits
Required Courses		
ENGL 925	Graduate Study of Literature	4
ENGL #814	Critical Skills	4
Select three courses from the following:		**12**
ENGL 935	Seminar: Studies in American Literature	
ENGL 937	Seminar: Studies in 19th Century American Literature	
ENGL 938	Seminar: Studies in 20th Century American Literature	
ENGL 958	Seminar: Studies in Shakespeare	
ENGL 959	Seminar: Studies in Milton	
ENGL #968	Seminar: Studies in 18th Century Literature	
ENGL #971	Seminar: Studies in the Victorian Period	
ENGL 974	Seminar: Studies in 20th Century British Literature	
ENGL 981	Seminar: Studies in Post-Colonial Literatures in English	
Select three electives (examples)		**12**
ENGL 810	Teaching Writing	
ENGL 829	Spec Top/Composition Studies	
ENGL 852	History of the English Language	
ENGL 889	Special Topics in English Teaching	
ENGL 912	Historical and Theoretical Studies in Rhetoric	
ENGL 913	Theory and Practice of Composition	
ENGL 914	Special Topics in Composition and Rhetoric	
ENGL 916	History of Composition	
ENGL 918	Research Methods in Composition	
ENGL 910	Practicum in Teaching College Composition [1]	
Concluding Experience		
ENGL 998	Master's Paper [2]	4
Total Credits		**36**

1 ENGL 910 Practicum in Teaching College Composition is reserved for graduate teaching assistants.

2 The alternative to this requirement is a 4 credit 900 level literature seminar in which students, with the consultation of the course instructor and/or the program advisor, produce a substantial (30 page) paper

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Demonstrate expertise in a variety of theoretical approaches, such as gender theory, deconstruction, psychoanalysis, postcolonial theory, intersectionality, and so on.
- Engage in the close reading of complex texts across a range of national traditions.
- Perform literary critical writing and speaking that adheres to the conventions of the field.
- Undertake original research using primary and secondary sources, and responding to existing knowledge in the field.

English: Language and Linguistics Option (M.A.)

https://cola.unh.edu/english/program/ma/english-language-linguistics-option

Description

Students who wish to specialize in any of the various areas of English language and linguistics may design an M.A. program to meet their interests. Specialties include applied linguistics and the teaching of English as a second language as well as the traditional subfields of linguistics. Psycholinguistics courses are offered through the psychology department.

Requirements

Degree Requirements

M.A. candidates must complete at least **32** credit hours at the 800 or 900 level, including 4 credit hours of a research experience.

Reading knowledge of one foreign language is required. This may be demonstrated by passing a departmental examination or by receiving a grade of B or better in a fourth--semester college-level language course.

Students whose native language is not English may be exempt from this requirement.

The student's course of study must be approved by the program adviser.

Code	Title	Credits
Required Courses		
ENGL 893	Phonetics and Phonology	4
ENGL 894	Syntax	4
Five Electives		**20**
ENGL 815	Teaching English as a Second Language: Theory and Methods	
ENGL 816	Curriculum, Materials and Assessment in English as a Second Language	
ENGL 817	Languages in Contact	
ENGL 818	Morphology	
ENGL 819	Sociolinguistics Survey	
ENGL 852	History of the English Language	
ENGL 879	Linguistic Field Methods	
ENGL 890	Special Topics in Linguistics	
ENGL 891	English Grammar	
ENGL 910	Practicum in Teaching College Composition [1]	
Concluding Research Experience		
ENGL 998	Master's Paper [2]	4
Total Credits		**32**

1 ENGL 910 Practicum in Teaching College Composition is reserved for graduate teaching assistants.

2 The alternative to this requirement is a 4 credit course at the 800 or 900 level in which students, with the consultation of the course instructor and/or the program advisor, produce a substantial (30 page) paper

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Demonstrate competence in the major areas of linguistic theory including phonetics, phonology, morphology, and syntax
- Understand processes of language variation and change
- Be able to deploy the analytical tools, modes of critical thinking, and types of writing that are used in studying languages and linguistics
- Understand practical application of linguistic knowledge to daily life
- Develop expertise in theories of second language acquisition and teaching English as a second/foreign language

English (M.S.T.)

https://cola.unh.edu/english/program/mst/english

Description

The Master of Science for Teachers is a degree designed specifically for practicing English teachers who want to deepen their knowledge of literature and develop their own skills in reading and writing. This program is based on the belief that pedagogy emerges out of firsthand experience in the processes of reading and writing.

The master of science for teachers is designed for practicing elementary, middle, and high school teachers. It is not appropriate for individuals seeking state certification. No foreign language is required, and the GRE is not required in the application.

Requirements

The M.S.T program requires the completion of **32 credit hours** at the 800 or 900 level. At least 24 of these credits must be in the Department of English. Courses taken outside the department must be approved by the student's adviser. Students must complete a capstone experience (creative writing option, teacher inquiry option, or curricular option).

The department offers special summer programs, which can be taken to fulfill some or all of the course requirements for the M.S.T. degree. The New Hampshire Literacy Institutes offer summer courses that focus on the teaching of writing and reading in grades K-12. Summer institutes emphasize writing workshops in fiction, nonfiction, and poetry and may include courses in literature and composition theory and research.

Student Learning Outcomes

- Compare philosophies of English teaching and learning, and to develop approaches to coaching greater literacy, including both enjoyment of texts and critical reading of them.
- Discuss theoretical and pedagogical ideas centered on student reading, engage in reading and writing exercises.
- Evaluate approaches to teaching literature and literacy, and review state-level standards and tests.
- Reflect and write on the theoretical bases for pedagogical decisions, evaluating professional literature and using appropriate academic conventions.
- Design activities, lessons, and units to meet established standards and objectives in reading, speaking, and media literacy.
- Identify teaching resources among mentors, professional literature, conferences, organizations (e.g., National Council of Teachers of English [NCTE]), technology, and websites.
- Deliver engaging, on-point reading and media literacy instruction appropriate to audience and content; practice a variety of presentation and discussion strategies.

Writing (M.F.A)

https://cola.unh.edu/english/program/mfa/writing

Description

The MFA Program in Writing at the University of New Hampshire has a clear and abiding focus: to help you shape your gifts and passion for the art, and to prepare you for the opportunities and demands that all writers will experience in a long professional career. Over the years, the graduate writing program has launched the careers of hundreds of poets, novelists, storywriters, essayists and memoirists. This is a small, highly-ranked, and selective program. We emphasize one-on-one contact between a

nationally recognized faculty and talented students. Students typically complete the program in two to three years.

We are most proud of the supportive community we have created here, one in which cross-genre exploration is strongly encouraged. Six out of ten of our MFA students receive direct financial aid, with most funding taking the form of teaching assistantships, tuition scholarships, and grant awards. Other opportunities include paid internships in local arts organizations, and editorial positions at our on-line journal *Barnstorm*.

We also run an exciting visiting writers' series, so that students have a chance to connect with some of the finest contemporary poets, novelists and essayists currently at work. Add to all this the fact that we're located in a stunningly beautiful spot, close to mountains and sea coast, but within an hour of Boston and other cosmopolitan areas. We can't imagine that there is a more energizing and congenial place to pursue your talents and dreams anywhere in the country.

Fiction

The fiction program centers on your fiction. The one goal of our two years together is to make your fiction stronger, more aesthetically powerful, and yes, more publishable. The small 10-person workshop, intense conferencing with multiple award-winning faculty such as Ann Joslin Williams and Tom Paine, craft seminars that range from "Joyce and Chekhov" to Novellas and Contemporary Short Story Collections", special topics classes on "American Short Fiction by Women" and "Sentence Experiments in Literary Fiction", an esteemed reading series that brings authors such as Dan Chaon and Elissa Schappell to class and campus, our nationally known literary magazine Barnstorm: all of this is here simply to advance your fiction. Maybe it is because we are in the Granite State, but what is notable in our program is not just how hard students work on their own fiction, but how much effort goes into their response to the work of their peers. Writers here care deeply about each other as people, and the production of honest work that captures life on the page.

Nonfiction

Our narrative nonfiction program embraces a wide variety of forms, from memoir to travel writing, literary journalism to the personal essay and all of its permutations. Our focus, however, is not on labels but on nurturing your talent and developing your skills with the goal of helping you craft rich, compelling and publishable essays, stories and books. In short, we toil together to make facts dance. In our workshops and seminars we ask our students to read broadly and push themselves beyond their comfort zone, to experiment and exercise an array of literary muscles, to employ the imagery of a poet, the drama of a novelist and the content drive of a journalist. Our classes are small (average size is ten) and students meet frequently with instructors in individual conferences. As practical as the state of New Hampshire, our program emphasizes not only the art of writing narrative nonfiction, but also how to sell it. In one course students will learn how to write a book proposal and in others how to pitch travel stories and personal essays. The UNH nonfiction faculty is diverse in its expertise but united in its passion for reading and writing the literature of fact, and for sharing that passion.

Poetry

We offer poetry workshops limited to 10 students and small seminars in craft and poetics in a dynamic, individual-oriented system that emphasizes intensive conferencing. Students have the chance to work with master teachers like the award-winning poets Mekeel McBride and David Rivard. We believe in grounding our students in the widest possible range of poetic technique and approach—with seminars offered in areas such as translation, 20th-century poetic movements, and ecstatic poetry—and no preconceived notions as to how anyone should write (other than well!). The poetic tradition of New England—one of the richest and most expansive in the world—serves as a backdrop for all our efforts. This is an area teeming with great poets, with numerous weekly opportunities for students to attend readings and lectures in the art.

Requirements

Degree Requirements

Students are required to take four workshops in their major genre. In addition, students take one form and theory course in their major genre, five elective courses that may include additional writing courses or courses from the English department's offerings in other fields (such as literature, linguistics, or composition studies), and **8 credit hours** of the M.F.A. thesis (ENGL 899 Master of Fine Arts in Writing Thesis). Teaching assistants are required to take ENGL 910 Practicum in Teaching College Composition as one of their electives. There is no foreign language requirement.

Fiction

Code	Title	Credits
Four Fiction Workshops		**16**
ENGL 901	Advanced Writing of Fiction [1]	
Form and Theory		
ENGL 807	Fiction: Form and Technique	4
Electives		**20**
Select five courses from the following:		
ENGL #803T	Travel Writing	
ENGL 804	Advanced Nonfiction Writing	
ENGL 805	Advanced Poetry Workshop	
ENGL 806	The Art of Research for Creative Writers	
ENGL 808	Nonfiction: Form and Technique	
ENGL 809	Poetry: Form and Technique	
ENGL 812	Writing the Creative Nonfiction Book	
ENGL 898	Special Studies in Creative Writing	
ENGL 910	Practicum in Teaching College Composition [1]	
Thesis		
ENGL 899	Master of Fine Arts in Writing Thesis	8
Total Credits		**48**

Nonfiction

Code	Title	Credits
Four Nonfiction Workshops		**16**
ENGL 804	Advanced Nonfiction Writing [1]	
ENGL 812	Writing the Creative Nonfiction Book [1]	
Form and Theory		
ENGL 808	Nonfiction: Form and Technique	4
Electives		**20**
Select five courses from the following:		
ENGL #803T	Travel Writing	
ENGL 805	Advanced Poetry Workshop	
ENGL 806	The Art of Research for Creative Writers	
ENGL 807	Fiction: Form and Technique	
ENGL 809	Poetry: Form and Technique	
ENGL 898	Special Studies in Creative Writing	
ENGL 901	Advanced Writing of Fiction	
ENGL 910	Practicum in Teaching College Composition [1]	
Thesis		
ENGL 899	Master of Fine Arts in Writing Thesis	8
Total Credits		**48**

Poetry

Code	Title	Credits
Four Poetry Workshops		**16**
ENGL 805	Advanced Poetry Workshop [1]	
Form and Theory		
ENGL 809	Poetry: Form and Technique	4
Electives		**20**
Select five courses from the following:		
ENGL #803T	Travel Writing	
ENGL 804	Advanced Nonfiction Writing	
ENGL 806	The Art of Research for Creative Writers	
ENGL 807	Fiction: Form and Technique	
ENGL 808	Nonfiction: Form and Technique	
ENGL 812	Writing the Creative Nonfiction Book	
ENGL 898	Special Studies in Creative Writing	
ENGL 901	Advanced Writing of Fiction	
ENGL 910	Practicum in Teaching College Composition [2]	
Thesis		
ENGL 899	Master of Fine Arts in Writing Thesis	8
Total Credits		**48**

1 May be repeated.
2 ENGL 910 Practicum in Teaching College Composition is reserved for graduate teaching assistants.

The M.F.A. thesis is a book-length, publishable manuscript. For fiction writers, the thesis could be a collection of short stories, a story cycle (linked stories), or a novel. For nonfiction writers, the thesis could be a collection of themed essays and/or magazine articles or a book of creative nonfiction. For poets, the thesis would be a book-length collection of poems. The minimum length of the thesis is 150 pages for fiction and nonfiction writers and 45 pages for poets. Students will work closely with a thesis adviser as they write and pass an oral defense of the thesis, a defense conducted by a three-member thesis committee of writing faculty. Students will also conduct a public reading of their thesis in an event organized by the writing faculty.

In addition, the M.F.A. program offers students opportunities to publish in an online journal called *Barnstorm*, as well as intern at arts/cultural organizations and the university research department, as well as teach in community schools. A select number of students are chosen to teach UNH undergraduate writing courses and to work in the University's Writing Center.

The program admits an average of 15 new students a year, which creates a writing community of 45 student writers.

Student Learning Outcomes

- Have a firm grasp of all the elements of craft whether fiction, poetry or nonfiction, including narrative structure, imagery, dramatic tension, efficient dialogue, and believable character.
- Demonstrate expertise in the stylistic functions of language, including the use of simile and metaphor, unique language as opposed to clichés, resonating images or details, using all points of view, whether first, third or omniscient.
- Understand the role of research and external content to provide context, layers, and credibility.
- Be able to significantly revise work.
- Have experience reading out loud and presenting to an audience.
- Be able to flourish in the workplace for jobs in publishing, editing, communication, public relations, television, screenwriting, social media, news, advertising or any job where a writer is needed.

Genetics (GEN)

Degrees Offered: Ph.D., M.S.

This program is offered in Durham.

The Department of Molecular, Cellular, and Biomedical Sciences offers a Doctor of Philosophy (Ph.D.) degree, a Master of Science (M.S.), and an accelerated master's program (B.S./M.S.) in Genetics, providing outstanding and diverse research opportunities in genetics and genomics. Graduate students (Ph.D. and M.S.) in genetics are typically supported by teaching or research assistantships, as well as by competitive internal and external fellowship programs. For more information about the program, including admission and degree requirements, please contact the Department of Molecular, Cellular, and Biomedical Sciences at mcbs.dept@unh.edu.

Distinctive Features of the Program

As an interdisciplinary program made up of faculty from multiple departments, and from the Hubbard Center for Genome Studies, the Genetics graduate program integrates disciplines ranging from molecular and cellular biology to environmental and evolutionary genetics and genomics. The faculty conduct research on living systems spanning microbes, plants, and animals. Incoming students have the opportunity for laboratory rotations to explore the various areas of genetics and genomics in those cases where a thesis advisor has not been identified or where exposure to a variety of experimental approaches is advantageous.

The Graduate Program in Genetics offers:

- Outstanding research training in many cutting-edge research areas in molecular and evolutionary genetics, genomics, and bioinformatics.
- Weekly seminar series that includes both distinguished invited speakers and graduate student research presentations.
- Opportunities to gain experience teaching and mentoring undergraduate students in the biological sciences.
- Strong track record for graduates attaining successful careers in academia, biomedical research institutes, biotechnology and pharmaceutical companies, and state and federal governmental agencies.

Admission Requirements

An applicant is expected to have completed basic courses in chemistry, biological sciences, mathematics, and physics. Otherwise well-qualified applicants will be permitted to correct deficiencies in undergraduate education by enrollment in the appropriate courses or by independent study during the first year. Applicants must submit a personal statement and three letters of recommendation. If possible, the personal statement should specify the applicant's research interests and names of potential faculty mentors. Applicants from non–English–speaking countries must submit current TOEFL scores in addition to the items listed above.

Accelerated Master's Degree Requirements

This accelerated program leading to a combined Bachelor and Master's degree in Genetics is designed for highly motivated and qualified

students seeking additional training to further their career goals as a researcher in the life sciences.

Admission to the combined degree program is highly competitive. Students wishing to pursue this option must have a grade point average greater than 3.2 at the time of application. A thesis advisor must be identified during the junior year, and the approval of the advisor must be obtained. Prior to the first semester of the senior year, the student must formally apply through the Graduate School and receive early admission to the Genetics Graduate Program. The requirement for the Graduate Record Examination is waived for combined degree applicants.

https://colsa.unh.edu/molecular-cellular-biomedical-sciences

Programs

- Genetics (Ph.D.) (p. 136)
- Genetics (M.S.) (p. 137)

Faculty

See https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/phd/genetics#collapse_1784.

Genetics (Ph.D.)

https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/phd/genetics

Description

The Ph.D. in Genetics is an interdisciplinary program made up of faculty from multiple departments and from the Hubbard Center for Genome Studies. The Genetics doctoral program integrates disciplines ranging from molecular and cellular biology to environmental and evolutionary genetics and genomics in microbial, plant, and animal systems. Graduates of the program are equipped for leadership positions in biotechnology and pharmaceutical companies, academic and government research laboratories, and successful careers in teaching and research at the college and university level.

Distinctive Features of the Program

- Outstanding research training in many cutting-edge research areas in molecular and evolutionary genetics, genomics, and bioinformatics
- Emphasis on interdisciplinary research training
- Well-equipped research laboratories and core facilities on the UNH campus
- Laboratory rotations upon entry to the program to become familiar with different research laboratories
- Weekly graduate student seminar presentations, as well as a departmental seminar series of invited speakers
- Opportunities to gain teaching experience as a Graduate Teaching Assistant

Research Opportunities

- Genomics and bioinformatics
- Evolutionary genomics
- Epigenetics
- Microbial ecology and genomics
- Plant genomics
- Signal transduction pathways
- Biodiversity and molecular ecology
- Molecular parasitology
- Cancer genetics

Financial Support

- Students admitted to the Ph.D. Program are typically supported by Research Assistantships or Teaching Assistantships
- Intramural summer and academic year fellowships are available on a competitive basis.

Career Prospects

- Research Directors in biotechnology and pharmaceutical industries
- Principle investigators in academic research labs and research institutes, or state and federal government agencies
- Academic preparation for future teaching and research roles in a college or university environment

Admission Requirements

- Completion of foundational courses in biology, chemistry (including organic chemistry), physics, and mathematics
  - Otherwise well-qualified applicants can correct academic deficiencies with enrollment in appropriate courses or independent study during the first year of graduate studies
- Applicants from non-English speaking countries must provide Test of English as a Foreign Language (TOEFL) scores
- Three letters of recommendation
- Personal statement, including research interests and names of two or three potential Genetics faculty thesis advisors.

Requirements

Degree Requirements

The coordinator of the genetics graduate program, with the concurrence of the student's thesis adviser, nominates the student's guidance and doctoral committees, which administer the qualifying and final examinations, respectively. Doctoral students are expected to have a broad exposure to genetics courses, exceeding that required of master's degree students. Specific course requirements are developed by the student and the guidance committee. Each semester students must attend MCBS 997 Seminar and present one seminar per year. Upon completion of coursework, the student must pass written and oral qualifying examinations conducted by the guidance committee in order to advance to candidacy. Doctoral students must complete a dissertation on original research in genetics, give a public seminar, and orally defend their dissertation before the doctoral committee.

Student Learning Outcomes

All MCBS graduates will be able to:

- Critically apply theories, methodologies, and knowledge to address fundamental questions in their primary area of study.

- Pursue research of significance in the discipline (or an interdisciplinary or creative project). Students plan and conduct this research (or implement their project) under the guidance of an advisor, while developing intellectual independence that typifies true scholarship.
- Demonstrate skills in oral and written communication sufficient to present and publish work in their field, and to prepare grant proposals.
- Follow the principles of ethics in their field, and in academia.
- Demonstrate, through service, the value of their discipline to the academy and community at large.
- Demonstrate a mastery of skills and knowledge at a level required for college and university undergraduate teaching in their discipline and assessment of student learning.
- Interact productively with individuals from diverse backgrounds in the roles of team members, leaders and mentors with integrity and professionalism.

Graduates of the Genetics Ph. D program will be able to:

- Describe general concepts of genetics.
- Demonstrate the ability to design, execute, and analyze research in their area of specialization within genetics.
- Critically evaluate and form conclusions based on genetic or genomic data.

Genetics (M.S.)

https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/ms/genetics

Description

The M.S. in Genetics is an interdisciplinary program made up of faculty from multiple departments and from the Hubbard Center for Genome Studies. The Genetics Program integrates disciplines ranging from molecular and cellular biology to environmental and evolutionary genetics and genomics in microbial, plant, and animal systems. Graduates of the program are equipped for successful careers in biotechnology and pharmaceutical companies, academic and government research laboratories, and are prepared for doctoral programs, medical school, and health-related professional programs.

Distinctive Features of the Program

- Outstanding research training in many cutting-edge research areas in molecular and evolutionary genetics, genomics, and bioinformatics
- Emphasis on interdisciplinary research training
- Well-equipped research laboratories and core facilities on the UNH campus
- Laboratory rotations upon entry to the program to become familiar with different research laboratories
- Weekly graduate student seminar presentations, as well as a departmental seminar series of invited speakers
- Opportunities to gain teaching experiences as a Graduate Teaching Assistant
- Accelerated M.S. program available to UNH students enrolled in the B.S. program in Genetics

Research Opportunities

- Genomics and bioinformatics
- Evolutionary genomics
- Microbial ecology and genomics
- Plant genomics
- Biodiversity and molecular ecology
- Cancer genetics

Financial Support

- Students admitted to the M.S. Program are typically supported by Research Assistantships or Teaching Assistantships
- Intramural summer and academic year fellowships are available to students on a competitive basis.
- Teaching Assistantships are not available for students enrolled in the Accelerated M.S. program

Career Prospects

- Research scientists in biotechnology and pharmaceutical industries
- Lab managers in academic research labs and research institutes or state and federal government agencies
- Academic preparation for doctoral programs and professional health programs (e.g., medical school)

Admission Requirements

- Completion of foundational courses in biology, chemistry (including organic chemistry), physics, and mathematics
  - Otherwise well-qualified applicants can correct academic deficiencies with enrollment in appropriate courses or independent study during the first year of graduate studies
- Applicants from non-English speaking countries must provide Test of English as a Foreign Language (TOEFL) scores
- Three letters of recommendation
- Personal statement, including research interests and names of two or three potential Genetics faculty thesis advisors.

Requirements

Degree Requirements

The coursework for the Master of Science degree is formulated with input from the student's guidance committee. Students admitted to the M.S. program are required to conduct a research project under the guidance of a faculty adviser, write and submit a thesis based on this research, and pass an oral examination covering graduate courses and thesis.

Students must take a minimum of **30 credits**, including at least three genetics courses (minimum of 10 credits), preferably covering the breadth of genetics, attend MCBS 997 Seminar each semester, present one seminar per year, and write and defend a 6–10 credit thesis (MCBS 899 Master's Thesis) before their guidance committee.

Student Learning Outcomes

All MCBS graduates will be able to:

- Critically apply theories, methodologies, and knowledge to address fundamental questions in their primary area of study.

- Pursue research of significance in the discipline (or an interdisciplinary or creative project). Students plan and conduct this research (or implement their project) under the guidance of an advisor, while developing intellectual independence that typifies true scholarship.
- Demonstrate skills in oral and written communication sufficient to present and publish work in their field, and to prepare grant proposals.
- Follow the principles of ethics in their field, and in academia.
- Demonstrate, through service, the value of their discipline to the academy and community at large.
- Demonstrate a mastery of skills and knowledge at a level required for college and university undergraduate teaching in their discipline and assessment of student learning.
- Interact productively with individuals from diverse backgrounds in the roles of team members, leaders and mentors with integrity and professionalism.

Graduates of the Genetics M.S. program will be able to:

- Describe general concepts of genetics.
- Demonstrate the ability to design, execute, and analyze research in their area of specialization within genetics.
- Critically evaluate and form conclusions based on genetic or genomic data.

Geospatial Science (GSS)

Degree Offered: Graduate Certificate

This program is offered in Durham.

The Graduate Certificate in Geospatial Science (GSS) at the University of New Hampshire is a multidisciplinary program designed to provide graduate level education in the applied and theoretical technology and applications of geospatial science. Students within the program are afforded the opportunity to build their five course certificate from a variety of required and elective classes from different disciplines to best fit their academic, research, or professional interests. The flexibility of this program makes it ideal for a student looking to complement their degree or a professional looking to build knowledge, skill and credentials within the Geospatial Sciences.

Admission Requirements

Students must hold a baccalaureate degree from an accredited college or university. Five courses as chosen from the categories listed below are required. Courses taken at other institutions are not eligible to be transferred into the program.

Applying

Please visit the UNH Graduate School site for detailed instructions about applying to the certificate program.

http://gss.unh.edu/

Programs

- Geospatial Science (Graduate Certificate) (p. 138)

Geospatial Science (Graduate Certificate)

https://gradschool.unh.edu/program/certificate/geospatial-science

Description

The Graduate Certificate in Geospatial Science (GSS) at the University of New Hampshire is a multidisciplinary program designed to provide graduate level education in the applied and theoretical technology and applications of geospatial science. Students within the program are afforded the opportunity to build their five course requirement certificate from a variety of required and elective classes from different disciplines to best fit their academic, research, or professional interests. The flexibility of this program makes the program ideal for a student looking to complement their degree or a professional looking to build knowledge, skill and credentials within the Geospatial Sciences.

Requirements

Certificate Requirements

The program of study required for the certificate consists of five courses and a total of **16 credit hours**.

Course offerings and requirements are as follows:

Code	Title	Credits
Elements of Geospatial Science (Core requirement)		
GSS 800	Elements of Geospatial Science	4
Geographic Information Systems		
Select one of the following:		
GSS 805	Applied Geographic Information Systems for Research	4
GSS 807/ESCI 895	GIS for Earth and Environmental Science	4
NR 860	Geographic Information Systems in Natural Resources [1]	4
CEE 896	Special Topics (GIS for Water Resources)	4
Data Analysis		
Select one of the following:		
BIOL 811	Experimental Design & Analysis	4
ESCI 896	Topics (Time Series Analysis)	1-4
MATH 836	Advanced Statistical Modeling	3
MATH 839	Applied Regression Analysis	3
MATH 944	Spatial Statistics [2]	3
SOC 901	Sociological Methods I: Intermediate Social Statistics	4
Electives		
Select two of the following:		
GSS 817/ESCI 896	Remote Sensing for Earth and Environmental Science	4
MATH 831	Mathematics for Geodesy	3
NR 857	Remote Sensing of the Environment	4
NR 859	Digital Image Processing for Natural Resources [1]	4
NR 882	Forest Health	4
OE/ESCI 871	Geodesy and Positioning for Ocean Mapping	4
SOC 897	Special Topics (Sociological Methods -Survey Research)	4

1 Prerequisite needed.

2 MATH 944 Spatial Statistics may be taken as an elective if not used to fulfill the Data Analysis Core requirement.

Global Conflict and Human Security (GCHS)

- Global Conflict and Human Security (M.S.) (p. 139)

Global Conflict and Human Security (M.S.)

https://online.unh.edu/program/ms/global-conflict-human-security

Description

The non-thesis MS degree in Global Conflict & Human Security is a ten course, thirty-credit program that can be completed in one year of full-time participation.

The United Nations delineates seven issues related to human welfare that fall under its human security framework: economic security, food security, health security, environmental security, personal security, community security, and political security. Violent conflict threatens all of these.

This unique program reflects global discussions about the UN Sustainable Development Goals and a humanitarian-development-peace nexus as an approach for creating holistic programs that address chronic threats to human security, such as poverty and disease, and contribute to social harmony and peace.

You will acquire skills in international development policy and practice to build resilient societies in countries affected by state fragility, humanitarian crises and conflict. Choose a track focused on Program Management to learn best practices in project design, monitoring and evaluation OR a track focused on Policy and Administration to hone your skills in public policy analysis and public administration.

Program Delivery & Location: GCHS courses are offered entirely online.

Start in the fall or spring and graduate in as little as 12 months.

Requirements

The non-thesis MS degree in Global Conflict & Human Security can be completed in one year of fulltime participation. Students must complete ten courses totaling thirty credits to graduate. All courses are offered online. Students must choose ONE of the following tracks in Project Management or Policy & Administration.

GCHS Project Management Track (*new*)

Code	Title	Credits
BASIC Core Curriculum Courses		
GCHS 810	Conflict & Human Security	3
GCHS 820	Global Governance	3
ADVANCED Core Curriculum Courses		
GCHS 830	International Development & Human Security	3
GCHS 840	Sustainable Development: Gender-Environment Nexus	3
GCHS 850	Peace and Human Security in the Post-Atrocity State	3
Elective		3
Experiential Learning Courses		
DPP 980	Introduction to Community Development Projects	3
DPP 981	Project Design and Planning	3
DPP 982	Project Implementation and Monitoring	3
DPP 983	Project Evaluation	3
Total Credits		**30**

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GCHS Policy & Administration Track (*new*)

Code	Title	Credits
BASIC Core Curriculum Courses		
GCHS 810	Conflict & Human Security	3
GCHS 820	Global Governance	3
PA 908A	Capstone in Public Administration	3
ADVANCED Core Curriculum Courses		
GCHS 830	International Development & Human Security	3
GCHS 840	Sustainable Development: Gender-Environment Nexus	3
GCHS 850	Peace and Human Security in the Post-Atrocity State	3
Elective		3
Experiential Learning Courses		
DPP 980	Introduction to Community Development Projects	3
DPP 981	Project Design and Planning	3
PA 804	Policy and Program Evaluation	3
Total Credits		**30**

Degree Plan

Master of Science in Global Conflict & Human Security: Project Management Track (Full Time)

Course	Title	Credits
First Year		
Fall		
Term 1		
GCHS 810	Conflict & Human Security	3
DPP 980	Introduction to Community Development Projects	3
Term 2		
GCHS 830	International Development & Human Security	3
DPP 981	Project Design and Planning	3
	Credits	**12**
Spring		
Term 3		
GCHS 850	Peace and Human Security in the Post-Atrocity State	3
DPP 982	Project Implementation and Monitoring	3
Term 4		
GCHS 820	Global Governance	3
DPP 983	Project Evaluation	3
	Credits	**12**
Summer		
Term 5		
GCHS 840	Sustainable Development: Gender-Environment Nexus	3
Elective		3
	Credits	**6**
	Total Credits	**30**

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Master of Science in Global Conflict & Human Security: Policy & Administration Track (Full Time)

Course	Title	Credits
First Year		
Fall		
Term 1		
GCHS 810	Conflict & Human Security	3
DPP 980	Introduction to Community Development Projects	3
Term 2		
GCHS 830	International Development & Human Security	3
DPP 981	Project Design and Planning	3
	Credits	**12**
Spring		
Term 3		
GCHS 850	Peace and Human Security in the Post-Atrocity State	3
PA 804	Policy and Program Evaluation	3
Term 4		
GCHS 820	Global Governance	3
PA 908A	Capstone in Public Administration	3
	Credits	**12**
Summer		
Term 5		
GCHS 840	Sustainable Development: Gender-Environment Nexus	3
Elective		3
	Credits	**6**
	Total Credits	**30**

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs via two different minors, **Global Studies** or **Terrorism Studies**. Please see the General Accelerated Master's policy, the Graduate School website and/or contact the department directly for more information.

Global Studies Minor – Accelerated Master's (AM)

Students should apply to the AM program in their junior or senior year.

GCHS application deadlines are typically July 15 (fall cohort) and December 15 (spring cohort).

If accepted, students may enroll in up to 12 credits of approved 800-level courses in their senior year. Students may not take more than one 800-level course per 8-week term. Accordingly, students may enroll in two approved 800-level courses per semester.

Graduation with undergraduate degree: The accelerated path should not require extra time toward the undergraduate degree.

Graduation with master's degree: The GCHS degree takes 12-24 months to complete. Time saved to M.S. completion depends on how many 800-level courses are taken in AM status and how the student chooses to progress as a master's student. For instance, if a student takes 12 credits of graduate credit in their senior year, they could complete the remaining 18 credits and graduate the following year, saving one term. If a student takes 12 GCHS credits during their senior year and takes a GCHS course during the summer, they will have completed half the required courses and could follow the part-time track which requires only one course per term and typically takes 24 months. This path would enable the student to complete the master's degree the following summer term and save five terms.

Courses Approved for Global Studies Minor – Accelerated Master's (AM):

Code	Title	Credits
GCHS 810	Conflict & Human Security	3
GCHS 820	Global Governance	3
GCHS 830	International Development & Human Security	3
GCHS 840	Sustainable Development: Gender-Environment Nexus	3

Terrorism Studies Minor – Accelerated Master's (AM)

Students should apply to the AM program in their junior year or senior year.

GCHS application deadlines are typically July 15 (fall cohort) and December 15 (spring cohort)

If accepted, students may enroll in up to 6 credits of approved 800-level courses in their senior year. Students may not take more than one 800-level course per 8-week term. Accordingly, students may enroll in two approved 800-level courses per semester.

Graduation with undergraduate degree: The accelerated path should not require extra time toward the undergraduate degree.

Graduation with master's degree: The GCHS degree takes 12-24 months to complete. Time saved to M.S. completion depends on how many 800-level courses are taken in AM status and how the student chooses to progress as a master's student. For example, if a student takes 6 credits of graduate courses in their senior year, they could save money on tuition and complete the remaining credits for the master's degree by the next spring semester, therefore saving one term if they follow the fulltime track.

Courses Approved for Terrorism Studies Minor – Accelerated Master's (AM)

Code	Title	Credits
GCHS 810	Conflict & Human Security	3
GCHS 830	International Development & Human Security	3

Student Learning Outcomes

Upon completion of the MS in Global Conflict and Human Security, students will be able to:

- Explain competing schools of thought on relevant issues in two key disciplines: a) peace and conflict studies b) international development studies (strategies to achieve the United Nations Sustainable Development Goals).
- Conduct conflict analyses and develop policy recommendations.
- Conduct human security needs assessments and analyze the interrelatedness of distinct human security domains (economic

security, food security, health security environmental security, personal security, community security, and political security).
- Apply theory to practice by designing humanitarian, development, and/or peacebuilding programs.
- Collect data and perform data analysis using qualitative and quantitative methodologies.
- Implement a development program (if applicable).
- Evaluate the impact and effectiveness of humanitarian, development and/or peacebuilding programs.
- Communicate professionally and effectively across different cultures and social groups.

Health Care (CPSO)

Programs: M.S., Graduate Certificate

Offered Online

The College of Professional Studies-Online, Health Care, Human Services, and Behavioral Sciences Academic Center offers a Master of Science in Health Care Management, Master of Science in Nursing Health Care Leadership and a Graduate Certificate in Health Care Management.

Admission Requirements

Graduate Certificates

Admission requirements include a bachelor's degree, and official transcripts.

Master's Degrees

Admission requirements include:

- Bachelor's degree with a 3.0 GPA average in the last 60 credit hours, or Graduate Degree completed from a regionally accredited college or university with a 3.0 GPA minimum overall.
- Official transcripts for all previous college work.
- Transcripts from other countries will need to be translated and evaluated prior to full acceptance.
- 500-1000 word statement which includes professional goals and aspirations, motivation for applying for the degree, and relevant formal or informal experiences. The statement is evaluated on applicant's writing and its content alignment with the program's purpose and outcomes.
- Two (2) Professional or academic references.
- Contact information for references is submitted via the admissions application. This will generate an email inviting references to complete a short questionnaire to assess candidacy. A formal letter of recommendation is not required; however, references are welcome to upload one within the questionnaire.
- Current résumé.

Programs

- Health Care Management (Graduate Certificate) (p. 142)
- Health Care Management (M.S.) (p. 142)
- Nursing Health Care Leadership (M.S.) (p. 142)

Learning Outcomes

Outcomes-Based Learning

Our greatest concern is that our graduates develop a specific set of skills and abilities.

The College's outcome-based degree programs and curriculum:

- Provide standards to be met in demonstrating competence
- Form a base from which to design and pursue learning activities
- Foster the ability to demonstrate self-directed learning

In addition to individual student assessment and grading, learning outcomes assessment is conducted in all programs to ensure the quality of our programs and to prompt ongoing improvements in teaching and learning.

Graduate Degree Learning Outcomes

Based in our commitment to our students through our mission, vision and values, every graduate degree program at the College of Professional Studies - Online provides students with opportunities to learn and demonstrate their abilities to do the following:

Communicate, particularly

- Communicate effectively—orally and written—with respect to theories, arguments, methods, and concepts, using supplemental materials and technology as appropriate.
- Disaggregate, reformulate and adapt principle ideas, techniques or methods when completing a paper or project.
- Contribute to, expand, evaluate or refine the scholarship within the field of study.
- Collaborate with diverse people and teams using elements of effective team dynamics to effectively and appropriately structure team work.

Think critically and comprehensively, particularly

- Demonstrate analytical skills needed to gather and assess information to influence data-driven decision making.
- Exhibit a conceptual understanding of the most widely applicable methodologies of decision-making; for example, employ creative problem solving for strategic planning.
- Demonstrate critical thinking, appropriate analytical models, and critical reasoning processes to evaluate evidence, select among alternatives, and generate creative options in furtherance of effective decision making.

Apply knowledge to workplace and community, particularly

- Display competency and appropriate skills for working effectively with people from diverse backgrounds and orientations.
- Effectively engage in one's broader community through various forms of outreach.
- Design and implement a project that requires the application of advanced knowledge to a practical challenge and articulate the insights gained from the experience.[1]

Gain specialized knowledge, particularly

- Demonstrate proficiency in specialized skills and technologies needed to participate in the intellectual and organizational aspects of one's profession.

[1] *Not applicable to Graduate Certificate programs.*

Health Care Management (Graduate Certificate)

https://cps.unh.edu/online/program/graduate-certificate/health-care-management

Description

The Graduate Certificate in Health Care Management is designed for individuals seeking professional development or specialized knowledge in healthcare management.

Students will have the opportunity to:

1. Develop new skill sets in the area of their specialization;
2. Acquire a credential and specialized knowledge in health care management;
3. Grow as a leader in the health care management field.

Requirements

Certificate Requirements

Graduate credit is only granted for courses completed with a grade of B-- or higher.
Minimum GPA Requirement: 3.0

Code	Title	Credits
Healthcare Management-Graduate Certificate		
Select four of the following:		*12*
HLTC 800	Health Care Delivery and Innovations (3 Credits)	
HLTC 801	Health Care Financial Management (3 Credits)	
HLTC 802	Advocacy and Health Policy (3 Credits)	
HLTC 810	Health Care Quality and Safety (3 Credits)	
HLTC 811	Health Care Technology and Informatics (3 Credits)	

Health Care Management (M.S.)

https://cps.unh.edu/online/program/ms/health-care-management

Description

The Master of Science in Health Care Management (MSHM) is designed to prepare individuals to make a career change or seek promotion to a mid#level or upper#level management position in the private or public sector of the health care industry, including hospitals, health system management, position practices, and government and non# government agencies. The MSHM program emphasizes strategic and analytical skills required to understand and manage in today's health care organizations. Students will have the opportunity to understand and master the organizational, legal, financial, political and managerial aspects of health systems management.

Requirements

Degree Requirements

Minimum Credit Requirement: 30 credits
Minimum Residency Requirement: 30 credits must be taken at UNH

Minimum GPA: 3.0

Code	Title	Credits
Major in Health Care Management [1]		
LD 821	Ethical Decision-Making	3
PM 800	Project Management Seminar	3
MGMT 805	Organizational Behavior	3
HLTC 800	Health Care Delivery and Innovations	3
HLTC 802	Advocacy and Health Policy	3
HLTC 810	Health Care Quality and Safety	3
HLTC 811	Health Care Technology and Informatics	3
HLTC 801	Health Care Financial Management	3
Complete three credits from the following:		*3*
HDS 800	Mathematics and Statistics for Health Data Science	
HDS 803	Translation of Health Data	
HDS 804	Health Data Systems	
LD 810	Change Management and Communication	
LD 831	Conflict Management & Negotiation	
IDIS 805	Evidence-Based Decision-Making	
PHP 901	Epidemiology	
Integrative Capstone:		
HLTC 850	Health Care Management Integrative Capstone	3
Total Credits		**30**

[1] Graduate credit is only granted for courses completed with a grade of B- or higher

Student Learning Outcomes

Students will have the opportunity to:

- Identify and analyze the organizational, economic, political and legal components of health care delivery systems in the United States;
- Evaluate ethical issues relevant to the policies, practices, and management of health care ethics;
- Acquire functional knowledge of current health care management policies, practices and theory and develop, and communicate design solutions that guide health care organizations to change and adapt to future challenges;
- Conduct financial analysis, explain financial and accounting information for a health care organization;
- Synthesize and assimilate an understanding of the environmental factors and management skills required to be innovative and successful in the health care field;
- Apply project management and quality improvement tools to evaluate and improve health care delivery.

Nursing Health Care Leadership (M.S.)

https://cps.unh.edu/online/program/ms/nursing-health-care-leadership

Description

The Master of Science in Nursing Health Care Leadership provides opportunities to the registered nurses in New Hampshire and across the nation to earn a meaningful degree that will provide a clear pathway to work collaboratively with other professionals to improve health outcomes across diverse populations. The program is designed specifically from the

American Association of Colleges of Nursing (AACN) Essentials Series and is accredited by the Commission on Collegiate Nursing Education.

Health, Character, and Technical Standards

Technical standards have been established to inform the student of minimum standards needed to satisfactorily function in the program and ultimately succeed in the profession. Applicants who feel they may not be able to meet one or more of the technical standards listed should contact the Director to discuss individual cases. All academically qualified candidates will be considered for admission provided the technical standards for classroom and practice experiences can be met with reasonable accommodations. Subsequent evidence that a matriculated student is unable/unwilling to meet one or more of the standards, and thus unable to meet course objectives, may result in dismissal from the program.

The College must ensure that patients/clients of clinical affiliates are not placed in jeopardy by students during practice experiences. Therefore, students in practice experiences must demonstrate sufficient emotional stability to withstand the stresses, uncertainties, and rapidly-changing circumstances that characterize the responsibilities of patient/client care. Furthermore, the student is expected to have the emotional stability required to exercise sound judgment, accept direction and guidance from a supervisor, staff nurse, or faculty member, establish rapport, and maintain sensitive interpersonal relationships with patients, their families, agency staff, faculty, and classmates. Applicants must also be in good physical and mental health to meet program objectives. Participation in classes and clinical experiences is expected. Technical standards are listed below:

1. Sufficient hearing to assess patients' health, understand instructions, identify emergency signals, and engage in telephone conversation;
2. Sufficient visual acuity to observe patients, interpret data, ensure a safe environment, and read fine print;
3. Sufficient speech and language ability to read, express, comprehend, and exchange information and ideas in English verbally, non-verbally, and in writing, and to interact clearly and logically with patients, health care professionals, family members, faculty, and peers;
4. Ability to work with frequent interruptions, to respond appropriately in emergencies or unexpected situations, and to cope with variations in workload and stress levels;
5. Sufficient emotional intelligence to exhibit empathy and compassion, to maintain productive relationships in online, classroom, and clinical settings, and to integrate direction, instruction, and criticism into behavior;
6. Sufficient strength, endurance, and motor coordination to participate in course requirements;
7. Sufficient information technology skills to complete assignments according to program standards;
8. Personal transportation to and from clinical experiences;
9. Compliance with health and immunization requirements and criminal background check verification process.

Requirements

Degree Requirements

Minimum Credit Requirement: 30 credits

Minimum Residency Requirement: 30 credits must be taken at Granite State College
Minimum GPA Requirement: 3.0

Code	Title	Credits
Major in Nursing Health Care Leadership [1]		
NUR 802	Translating and Integrating Research into Nursing Practice	3
LD 820	Cultivating Your Leadership Capabilities	3
HLTC 802	Advocacy and Health Policy	3
HLTC 801	Health Care Financial Management	3
HLTC 810	Health Care Quality and Safety	3
HLTC 811	Health Care Technology and Informatics	3
NUR 812	Interprofessional Collaboration for Population Health	3
Elective Course		
Select one of the following:		3
LD 804	Leading Teams	
LD 832	Building Diverse & Multicultural Organizations	
Integrative Capstone:		
NUR 850	Integrated Clinical Capstone for Nursing Leaders	6
Total Credits		**30**

[1] Graduate credit is only granted for courses completed with a grade of B- or higher

Student Learning Outcomes

Students will have the opportunity to:

- Integrate the practice of nursing with sciences and humanities to assess the unique needs of a diverse population and design, implement and evaluate a plan to impact the outcomes of nursing care within the population;
- Apply leadership competencies in the provision of safe, high quality and cost effective care to individuals, populations, or communities within the health care system;
- Analyze information from health care information systems related to quality initiatives that promote improved quality, cost, safety and health care outcomes;
- Communicate research and practice outcomes to advance clinical practice;
- Demonstrate competence in the analysis of current and emerging technologies that impact health care outcomes;
- Advocate for policies that lead to improved population health outcomes or the improvement of the quality of the health care system;
- Demonstrate caring, culturally responsive leadership communication both written and verbally, capable of effectively leading interprofessional teams;
- Advocate for ethical health care practice through effective communication with interprofessional teams and stakeholders;
- Demonstrate competence in the advanced practice as a nursing leader to promote improvement in health care outcomes for individuals, systems, or populations.
- Nurse Leadership Concentration Expected Student Learning Outcomes
- Demonstrate ability to lead initiatives that promote culturally competent and ethical care that promotes health and improvement of health among individuals, populations, or communities;
- Implement and evaluate practice change based on innovative evidence-based nursing practice;

- Demonstrate competency in financial management, human resource management, and strategic and operational planning within the health care setting.

Health Management & Policy (HMP)

The Department of Health Management and Policy prepares students for a wide range of professional careers within the healthcare and public health fields, such as the Master of Science in Health Data Science, the Graduate Certificate in Health Data Science, the Master of Public Health and the Graduate Certificate in Public Health. Students have up to three years to complete their degree. Through rich classroom experience, hands-on learning and opportunities to engage in research and community outreach, our graduates go on to work in settings that include complex health systems, government, non-profit, finance, public health and health data science.

https://chhs.unh.edu/health-management-policy

Programs

- Health Data Science (M.S.) (p. 144)
- Health Data Science (Graduate Certificate) (p. 145)

Faculty

https://chhs.unh.edu/health-management-policy/faculty-staff-directory

Health Data Science (M.S.)

https://chhs.unh.edu/health-management-policy/program/ms/health-data-science

Description

Beginning in the 2023-2024 academic year, the Master or Science in Health Data Science program is pausing admissions to the program. Current students will continue to have access to the same high-quality education and resources until they graduate.

The Master of Science in Health Data Science (MSHDS) is offered by the Department of Health Management and Policy within the College of Health and Human Services. The program is fully online starting in either the Fall semester. It can be completed full-time or part-time in as few as five semesters or up to three years. The interdisciplinary curriculum is comprised of core health data analytics and data science courses and elective courses, which may include courses in health care informatics or health systems research. Additionally, the MS in Health Data Science requires one virtual symposiums to network, learn current content and skills necessary to be an effective health data science practitioner.

The core courses develop deep quantitative tools, applications and reasoning, critical thinking and translational skills such as visualization, communication and interactive design. Students receive training in a multitude of quantitative tools and algorithms such as machine learning and deep learning, as well as how they are utilized and applied within the health care industry. Primarily using coding languages of R and Python, and SQL, students are exposed to computational and analytic environments such as enterprise systems, streaming, and distributed cloud systems.

The content is practicum driven, with each student applying core tools to address, and complete an industry real-world analytic project, while also having exposure to the processes and professional development of health data science and analytics professionals. Throughout the project, students will develop skills in project scoping, background, data transfer, and understanding policies and procedures in place via the host or by the type of data being used. Students will also engage in data mining, modelling and storytelling with outcomes for ultimate presentation back to the host site. Students will have exposure to methodologies such as LEAN and Agile project management. There will also be exposure to conceptual mapping for health data practitioners, such as design thinking. For the two required elective courses, students can choose an elective track (Health Care Informatics or Health Systems Research), or singular courses.

Graduates will have the skills necessary to function as health data science practitioners in a wide-range of roles, with the ability to adapt as needed in the dynamic, rapidly changing industry. The skills acquired in the HDS Program include health data acquisition, management, tools in cleansing tools, analytics, and techniques relative to both large and small data types and sources to interpret and present data individually and within teams.

FLOW OF THE MS IN HEALTH DATA SCIENCE PROGRAM

The Master of Science in Health Data Science begins each Fall (August). The Fall and Spring semesters consist of two terms, (each 8-weeks in length), with electives offered Fall and Spring semesters.

Foundation of Health Systems, Health Data Stats, Programming and Translation

The initial semester brings together both the Graduate Certificate in Health Data Science (GCHDS) students and the MS students, to learn side by side. Students learn the foundations and function of the US Health System, the basics of statistical and mathematical thinking relative to health data, programming in three languages, and the foundations of data cleaning, visualization, and presentation. In addition, a number of "soft" skills are introduced such as LEAN project management and Agile training.

Key Program Highlights

- Gain expertise in advanced machine learning, text analytics, programming, visual analytics, and big data framework within the health care industry.
- Curriculum stays relevant to the ever-changing technology with an ability for the students to choose their specialization (i.e. Health Care Informatics or Health Systems Research)
- Students from diverse backgrounds – not just technical fields
- Work hands-on, team-based learning

Requirements

The MSHDS requires the completion of **36** credits.

Code	Title	Credits
Required Courses:		
HDS 800	Mathematics and Statistics for Health Data Science	3
HDS 801	The U.S. Healthcare System	3
HDS 802	Programming in Healthcare Environments	3
HDS 803	Translation of Health Data	3
HDS 804	Health Data Systems	3

HDS 805	Applied Machine Learning in Healthcare	3
HDS 806	Outcomes Research	3
HDS 807	Unstructured Health Data	3
HDS 808	The Successful Healthcare Project	3
HDS 811	Health Data Science Practice	3
Choose two electives:		6
Healthcare Informatics Electives		
HDS 820	Health Systems Informatics	
or HDS 821	Big Data Algorithms in Biological Sciences	
or HDS 890	HDS Independent Study	
Health Systems Research Electives		
HDS 822	AI and Deep Learning in Healthcare	
or HDS 823	Advanced Statistics in Healthcare	
or HDS 890	HDS Independent Study	
Total Credits		**36**

Student Learning Outcomes

To prepare students to professionally interpret health care data and present findings to the appropriate audiences using appropriate tools and design with the following:

- Use of ethics, probability, Inference, Data Exploration and Imputation, as well as the ability to design experiments.
- Use of Databases and storage, including SQL and NoSQL, Mongo DB, AWS.
- Application programs and to address large and small data with programs such as Python, R, SAS, JMP, Tableau, Power BI, GIS/QGIS, Hadoop, Spark, Hive, Pig.
- Introductory and advanced Algorithms for text and data mining.
- Use of cleansing tools, such as Natural Language and use of Neural Networks Natural Language for translation of and processing of data for storytelling.
- Foundations and advanced of Predictive Modelling using Time Series, Forecasting, Multivariate Techniques,
- Propensity Score Matching and Clustering using Bayesian, Survival, Survey and psychometry analysis.
- Cost effectiveness using Econometrics, QALY measurement, Pharmaco-economics, Reimbursement and their relation to structure and operations and strategic decision-making.
- Policy, Population Health, Epidemiologic Methods, Governance.
- Project Management approaches with LEAN, Agile.
- Communication in all forms such as presentations, interviewing, to work in groups and individually.

Health Data Science (Graduate Certificate)

https://chhs.unh.edu/health-management-policy/program/graduate-certificate/health-data-science

Description

The Graduate Certificate in Health Data Science (GCHDS), offered by the Department of Health Management and Policy within the College of Health and Human Services, prepares students interested in the field of health data science who want to improve their analytic skills in healthcare. The certificate can be completed in one semester or up to three years.

Students in the GCHDS program can expect to gain exposure to the role of analytics in healthcare, statistical and programming foundations, and the visualization and translation of healthcare data.

Successful completion of the certificate will provide students an opportunity to apply and continue on with the Master of Science in Health Data Science. All credits from the certificate will be applied to the MS degree, leaving only eight remaining courses.

Requirements

Code	Title	Credits
Required Courses		
HDS 800	Mathematics and Statistics for Health Data Science	3
HDS 801	The U.S. Healthcare System	3
HDS 802	Programming in Healthcare Environments	3
HDS 803	Translation of Health Data	3
Total Credits		**12**

History (HIST)

Degrees Offered: Ph.D., M.A.

This program is offered in Durham.

Welcome to the History Department Graduate Program at the University of New Hampshire. We offer comprehensive programs for graduate students and a faculty who have won numerous prizes for teaching and scholarship. Our courses cover a wide range of times, places, and subjects, with a particular strength in cultural history, women's history, the history of religion, Atlantic history, and African American history. In addition, M.A. students can focus on Museum Studies.

The Department of History offers the master of arts and doctor of philosophy degrees. The master of arts is offered in many subfields. A formal option in museum studies is also available. Doctoral dissertations may be written on the history of colonial America / the United States or on topics comparing the United States with other societies or areas.

Admission Requirements

The department usually requires evidence of substantial preparation in history at the undergraduate level, together with some preparation in other areas of humanities and social sciences.

Applicants for admission to any graduate program in history should have a minimum of a B average in history, allied humanities, and social sciences. In addition, applicants must submit current scores (within five years) from the general test of the Graduate Record Examination (GRE). The department assesses the student's entire application, including letters of recommendation and writing sample, in making its decision on admission. Deficiencies in an undergraduate program may be rectified by coursework as a special student, but such coursework cannot be used to satisfy requirements for an advanced degree. The department also recommends that a beginning graduate student have some training in a foreign language. Students in seminar or reading courses in other than American history may be required to have a reading knowledge of at least one foreign language appropriate to the particular course. Applicants should include with their applications a personal statement indicating their reason for undertaking graduate study at the University of New Hampshire. Normally, an entering student intending to be a candidate for the doctorate will complete an M.A. program as a prerequisite. However, students with the M.A. from another institution, or with exceptionally strong preparation at the undergraduate level, can begin the doctoral

program immediately. In addition, a student in residence can, with the consent of the department, omit the M.A. and proceed directly toward the Ph.D.

https://cola.unh.edu/history

Programs

- History (Ph.D.) (p. 146)
- History (M.A.) (p. 146)
- History: Museum Studies (M.A.) (p. 147)

Faculty

See https://cola.unh.edu/history/faculty-staff-directory for faculty.

History (Ph.D.)

https://cola.unh.edu/history/program/phd/history

Description

The Ph.D. is intended to prepare students for professional careers in historical research. In this department, all Ph.D. students specialize in U.S. history / colonial America. Students with a particularly strong secondary field outside of U.S. history may write dissertations that involve comparative studies of U.S. history / colonial America.

Before writing any dissertation, Ph.D. students must demonstrate competence in reading a foreign language, then pass a set of written and oral comprehensive examinations.

Requirements

Degree Requirements

A doctoral student's program, which must be approved by the graduate committee of the department, shall include each of the following requirements: two research seminars HIST 981 Doctoral Research Seminar in American History (taken twice), in which students will write a research paper in early U.S. History and a research paper in modern U.S. History; two reading seminars, HIST 939 Readings in Early American History and HIST 940 Readings in Modern American History; a course in historical methods; correction of any deficiencies in the student's previous program; proficiency in one foreign language; HIST 970 Graduate Seminar in Teaching History(applies to all doctoral candidates awarded teaching assistantships); HIST 971 Professionalization for Historians; preparation through reading and coursework in the entirety of U.S. history, with emphasis upon either early or modern U.S.; preparation through reading and coursework of two subfields outside of U.S. history, one of which may be a cognate field outside of history entirely; qualifying exams; dissertation proposal; and dissertation and successful defense.

Candidacy is reached after successful completion of the following:

1. required coursework listed above and courses to prepare fields or correct any deficiencies in the student's previous preparation;
2. demonstrate proficiency in a foreign language;
3. pass written and oral qualifying exams.

Note: In the definition of fields above, United States and U.S. are understood to mean the United States and its colonial antecedents.

Please consult the History Department's Graduate Student Handbook for additional details.

Apprenticeship and Degree Regulations

The department considers that graduate work in history, and particularly doctoral work, is professional training. The department recognizes the dual concerns of the historian's life: teaching and research. When feasible, all doctoral students are expected to undertake teaching in the department during a part of their residence. Participation in proseminar and in teaching constitutes an apprenticeship in conjunction with formal study. Doctoral students may choose to pursue the Cognate in College Teaching offered through the Graduate School. All graduate students are reviewed annually by the faculty of the department. A student accumulating two course failures is automatically barred from continuing in any degree program in history, but the department reserves the right to exclude others whose overall performance does not give reasonable assurance of a successful program completion. Students are allowed no more than three attempts to meet any language requirement.

Student Learning Outcomes

- Students will be able to demonstrate broad knowledge of historical events and periods and their significance
- Students will be able to explain and critique the historical schools of thought that have shaped scholarly understanding of their fields of study
- Students will be able to deploy skills of critical analysis: 1) Formulating persuasive arguments; 2) Evaluating evidence and critiquing claims in the literature; 3) Interpreting a variety of primary sources.
- Students will be able to design and conduct major research projects, deploying these essential skills:)1 Reviewing the state of the field to identify a new topic and locate their work within larger scholarly conversations; 2) Identifying and accessing a sufficient base of primary sources; 3) Producing a high-quality research paper, well-written and meeting professional standards, suitable as the basis for conference presentation or academic publication; 4) Designing and writing a dissertation based on extensive research that makes an original contribution to knowledge
- The skills listed above can lead to positions outside academia, such as in museums, archives, and government service. They also apply to students who seek faculty positions. For the latter group, students will additionally develop teaching skills, such as course design, classroom management, lecturing, leading discussions, and crafting assignments and evaluation methods
- Students will be able to engage in professional dissemination of their work by presenting their research at conferences or submitting manuscripts to academic journals.

History (M.A.)

https://cola.unh.edu/history/program/ma/history

Description

Our Master of Arts degree programs are highly flexible, so students can design programs tailored to individual needs. All MA students will work with a three-member faculty committee for their final capstone experience. The three-member faculty committee will take the form either of a thesis committee, an oral exam committee, or (for museum studies students) a project committee.

Requirements

Degree Requirements

Completion of the MA degree requires at least **30 credits** of coursework. A master's student designs a specific program to meet one of three plans. **Plan A** allows substantial training and research in a single subfield of history but within a foundation of broader coursework. **Plan B** allows substantial breadth over at least two subfields. The subfields in history include the following: the ancient world, medieval Europe, early modern Europe, modern Europe, European intellectual history, medieval England, early modern England, modern England, early modern France, modern France, early modern Germany, modern Germany, Iberia, Russia, early U.S., modern U.S., colonial Latin America, modern Latin America, the Far East, the Near East, sub-Saharan Africa, and the history of science. **Plan C** allows students who enter the doctoral program without an M.A. to pursue the M.A. and Ph.D. degrees simultaneously.

Plan A requires at least eight courses in history numbered 800 or above, including at least one research seminar, and a 6--credit thesis (HIST 899 Master's Thesis) in a single subfield (equivalent to two courses).

Plan B requires at least 10 courses in history numbered 800 or above, including at least one research seminar, and an oral examination demonstrating competence in two subfields of history.

Plan C requires at least 30 credits of coursework during preparation for the Ph.D. qualifying examinations; submission of a seminar or other research paper as a demonstration of competence in basic research techniques; and passing Ph.D. qualifying examinations. An MA will be awarded when the qualifying examinations are passed.

Please consult the History Department's Graduate Student Handbook for additional details.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Students will be able to demonstrate broad knowledge of historical events and periods and their significance.
- Students will be able to explain and critique the historical schools of thought that have shaped scholarly understanding of their fields of study.
- Students will be able to deploy skills of critical analysis: 1) Formulating persuasive arguments; 2) Evaluating evidence and critiquing claims in the literature; 3)Interpreting a variety of primary sources.
- Students will be able to conduct research that makes an original contribution to knowledge, deploying these essential skills: 1) Reviewing the state of the field to identify a new topic and locate their work within larger scholarly conversations; 2) Identifying and accessing a sufficient base of primary sources; 3) Producing a high-quality research paper, well-written and meeting professional standards typical for conference presentation or academic publication.

History: Museum Studies (M.A.)

https://cola.unh.edu/history/program/ma/history-museum-studies

Description

The Department of History at the University of New Hampshire offers an option in Museum Studies for students pursuing the Master of Arts degree in history. The Museum Studies program combines practical museum experience with solid academic training to prepare students for a variety of positions in museums and other forums for public history. Located near the seacoast of New Hampshire and southern Maine, within easy driving distance of Boston as well as much of central and northern New England, the University of New Hampshire is ideally situated to take advantage of its close proximity to numerous historical sites and museums.

Requirements

The MA in History: Museum Studies requires the completion of at least **30 graduate credits**. Students pursuing the option in museum studies will be required to take ten courses in the History Department, including HIST 871 Museum Studies, either HIST 872 Studies in Regional Material Culture or HIST 880 Special Topics in Museum Studies/Material Culture, and two internships at museums or other historic sites. In developing academic concentrations, students work with a nationally recognized faculty with a broad range of expertise.

The final requirement is either a one-hour oral examination demonstrating competence in museum studies and another field of history (e.g. Early American History, the Atlantic World, Women's History, etc.) chosen by the student in consultation with the Graduate Director OR completion of a major project related to the student's interest in Museum Studies. Both require a three member supervisory committee of UNH History faculty.

Internships

As part of the Museum Studies program, students enhance their academic training through internships offered at local historical sites. In the past, interns have worked side by side with museum staff on a variety of singular projects as well as regular museum work, including:

- researching and designing exhibits
- cataloging and interpreting collections

- developing and implementing education programs for elementary and secondary school students
- conducting oral histories
- public programming

The internships allow students to put their academic knowledge to work in specific settings while introducing them to the network of museum professionals. The internship coordinator for the department will help place students in suitable sites.

Please consult the History Department's Graduate Student Handbook for additional details.

Professional Opportunities

Many of our students earning masters and doctorate degrees have gone on to careers in museums and other public history venues. In recent years, one student completing his doctorate took a position as assistant director of the Margaret Chase Smith Library; several graduates of the masters program work in local museums, including the American Independence Museum, Canterbury Shaker Village, the Currier Museum of Art, Strawbery Banke Museum, and the Wright Museum. One doctoral student has been hired as a Program Officer with the New Hampshire Humanities Council, and several others have participated in public lecture series. Given the past success in placement and the continued interest in public history, the Museum Studies option provides exciting professional opportunities for graduate students at the University of New Hampshire.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

N.B. MA students with a concentration in Museum Studies/Public History are reviewed twice, since they are members of the regular MA program and are assessed there, as well as being evaluated under the following assessment:

In addition to demonstrating mastery of the requirements for the MA in History--historical content knowledge, familiarity with historiography in US, European, or a field of their choice, critical inquiry, research and writing skills—museum studies/public history students will be able to do the following:

- understand and adhere to the highest and best practices of the field.
- demonstrate knowledge of the sub-discipline of museum studies, its history, its historiography and the current, overarching paradigms, theories, and ethics that define professional practice.
- master current methods and skills in historical documentation and interpretation to make history accessible and useful to the public, including basic technology skills and/or use of experiential archaeology.
- embody a set of professional dispositions and abilities critical to the success of museum professionals, including: flexibility, empathy, leadership, and diplomacy. They will be able to work collaboratively, organize and manage projects, and communicate effectively both orally and in writing.
- understand the institutional landscape of public history, including a familiarity with the governance and organizational structures and funding support for non-profits and the federal sector.
- become active members of their professional communities by undertaking two formal, professional internships.

Human Development and Family Studies (HDFS)

Degrees Offered: M.S., Graduate Certificate

This program is offered in Durham.

The Department of Human Development and Family Studies offers two programs of study leading to a master of science degree in human development and family studies: Core Areas of Study Program (Human Development and Family Studies M.S.) and the Marriage and Family Therapy M.S. Program.

The goal of both programs is to provide students with an understanding of theory and methods relevant to human development and family studies and to prepare them to work with individuals and families in therapeutic, educational, community or corporate settings. The Core Areas of Study program has two foci: Adolescent Development and Child Development, and students may elect to complete a thesis or comprehensive exam. The Marriage and Family Therapy Program is accredited by the Commission on Accreditation for Marriage and Family Therapy Education and requires a minimum of two years of full--time study, including two summers.

The Department of Human Development and Family Studies also offers a one-year, 14-- to 15--credit, multidisciplinary program of study leading to a graduate certificate in Adolescent Development. The certificate program is intended for individuals who are working in the field but who lack specific knowledge about adolescence, as well as those who are changing careers or who are already working in related fields and need to meet continuing education requirements or desire additional academic preparation.

GRADE POLICY

A graduate student who fails a course must immediately attend a mandatory meeting with the instructor of the course, the Human Development and Family Studies Graduate Coordinator, and, if desired, the student's adviser. If a graduate student receives grades below "B--" in **two or more courses**, the Human Development and Family Studies Graduate Coordinator will make a recommendation to the Graduate School that the student be dismissed from the human development and family studies graduate program.

Admission Requirements

Students in good standing with undergraduate degrees in any field and a specific interest in working with individuals and families are encouraged to apply. Candidates for the master's degree program must have completed an introductory statistics course or the equivalent as part of their undergraduate program. If their undergraduate program did not include such a course, students who are accepted into the M.S.

program must successfully complete an introductory statistics course before they graduate.

Applicants in the Core Area of Study program must also complete a graduate statistics course, see "Program Requirements" for the Core Area of Study. Individuals applying to the Core Areas of Study and Certificate programs must submit a standard personal statement with their applications.

Applicants to the MFT program must answer the 5 questions listed on the department's MFT admissions website. Responses to the MFT questions should be submitted in numbered format, and must address each question separately and explicitly. Individuals applying to the MFT program must submit their five answers with their applications.

https://chhs.unh.edu/human-development-family-studies

Programs

- Human Development and Family Studies (M.S.) (p. 149)
- Human Development and Family Studies: Marriage and Family Therapy (M.S.) (p. 150)
- Adolescent Development (Graduate Certificate) (p. 151)

Faculty

See https://chhs.unh.edu/directory/all for faculty.

Human Development and Family Studies (M.S.)

https://chhs.unh.edu/human-development-family-studies/program/ms/human-development-family-studies

Description

Beginning in the 2023-2024 academic year, the M.S. Human Development and Family Studies (Child/Adolescent Development) program is pausing admissions to the program. Current students will continue to have access to the same high-quality education and resources until they graduate.

M.S. Degree: Core Areas of Study

The Core Areas of Study has two foci: Child Development and Adolescent Development. Students in the Core Areas of Study Program may elect one of two options to complete their master's degree: Thesis or Comprehensive Examination. Both programs prepare students to work in a variety of human service positions and enter doctoral programs. Please visit the Career Opportunities section of our website for more information.

Child Development: This core area of study is designed to develop an understanding of theory and research regarding children from infancy through the early school years and to prepare students to work in a variety of positions focused on children's family and school experiences. Students are expected to complete a practicum in a child-focused setting.

Adolescent Development: This core area of study is designed to develop general competence in understanding and applying theory and research regarding adolescence through early adulthood within the context of families and communities. Students are expected to complete a practicum in a program that serves adolescents.

Program Distinctions

- Collegial and supportive Culture
- Department scholarship opportunities available
- Award-winning mentorship from nationally-recognized faculty
- Many career options
- Individualized M.S. plan of study
- Option to work and conduct research at the department's Child Study and Development Center
- Exceptional placement rate post-graduation
- Opportunities to conduct research, publish, and present at conferences
- Practical experience gained through practicum
- Small class size

Why Core Area of Studies?

Graduates of Human Development and Family Studies, M.S. are positioned to:

- Innovative outreach efforts that extend knowledge to policymakers, employers, and professionals.
- Contribute to the well-being of individuals and families through knowledge, teaching, leadership, and professional practice.
- Apply to doctoral programs.
- Assume leadership positions in human service agencies, corporations and school.

Requirements

CORE AREAS OF STUDY REQUIREMENTS

CHILD DEVELOPMENT

Code	Title	Credits
Required Child Development Courses:		
HDFS 911	Graduate Internship	4 - 8
HDFS 930	Child Development in Context	4
HDFS 991	Professional Issues for Family Specialists	4
HDFS 993	Theoretical Approaches to Human Development and Family Studies	4
HDFS 994	Research Seminar	4
Graduate-level stats class, options include:		
EDUC 881	Introduction to Statistics: Inquiry, Analysis, and Decision Making	4
or MATH 835	Statistical Methods for Research	
or SOC 901	Sociological Methods I: Intermediate Social Statistics	
or SW 962	Data Analysis and Statistics	
Additional 10 elective credits selected with advisor from the following departmental courses or approved graduate courses in other departments [1]		
HDFS 857	Race, Class, Gender, and Families	4
HDFS 895	Advanced Independent Study	1-6
HDFS 846	Human Sexuality	4
HDFS 876	Children, Adolescents and the Law	4
HDFS 894	Families and the Law	4
Thesis or Comprehensive Examination:		
Thesis Option [2]		
HDFS 899	Master's Thesis (Successful completion)	6-10
or		
Comprehensive Examination		
Additional 8 credits of approved electives		
Total credits required to graduate		40-44

1 Students will design a program of study from HDFS and other departments graduate courses
2 Students electing to complete a research thesis must write and defend a thesis based on original research. Students must earn a minimum of 6 credits of HDFS 899 Master's Thesis.

ADOLESCENT DEVELOPMENT

Code	Title	Credits
Required Adolescent Development Courses		
HDFS 876	Children, Adolescents and the Law	4
Graduate-level stats class, options include:		
EDUC 881	Introduction to Statistics: Inquiry, Analysis, and Decision Making	4
or MATH 835	Statistical Methods for Research	
or SOC 901	Sociological Methods I: Intermediate Social Statistics	
or SW 962	Data Analysis and Statistics	
HDFS 911	Graduate Internship	4 - 8
HDFS #950	Contemporary Issues in Adolescent Development	4
HDFS 991	Professional Issues for Family Specialists	4
HDFS 993	Theoretical Approaches to Human Development and Family Studies	4
HDFS 994	Research Seminar	4
Additional 6 elective credits selected with advisor from the following departmental courses or approved graduate courses in other departments [1]		
HDFS 857	Race, Class, Gender, and Families	4
HDFS 895	Advanced Independent Study	1-6
HDFS 846	Human Sexuality	4
HDFS 876	Children, Adolescents and the Law	4
HDFS 894	Families and the Law	4
SW #814	Introduction to Addiction: Assessment and Intervention	3
SOC 897	Special Topics	4
Thesis or Comprehensive Examination		
Thesis Option [2]		
HDFS 899	Master's Thesis (Successful completion)	6-10
or		
Comprehensive Examination		
8 Additional credits of approved electives		
Total credits required to graduate		40-44

1 Students will design a program of study from HDFS and other departments graduate courses
2 Students electing to complete a research thesis must write and defend a thesis based on original research. Students must earn a minimum of 6 credits of HDFS 899 Master's Thesis.

Grade Policy

A graduate student who fails a course must immediately attend a mandatory meeting with the instructor of the course, the Human Development and Family Studies Graduate Coordinator, and, if desired, the student's adviser. If a graduate student receives grades below "B--" in two or more courses, the Human Development and Family Studies Graduate Coordinator will make a recommendation to the Graduate School that the student be dismissed from the program.

Student Learning Outcomes

- Students demonstrate a knowledge of the major models of marriage and family therapy and other systems related theories that support the MFT field students will acquire the clinical skills to assess and treat a wide range of problems from a systems paradigm demonstrate an understanding of multicultural diversity, larger systems and family/individual development across the lifespan develop ethical principles and practices in the field of marriage and family therapy develop systemic knowledge of marriage and family therapy research, striving toward a theoretically driven and research informed clinical practice.

Human Development and Family Studies: Marriage and Family Therapy (M.S.)

https://chhs.unh.edu/human-development-family-studies/program/ms/human-development-family-studies-marriage-family-therapy

Description

The Marriage and Family Therapy Program prepares students to work in mental health, family service, medical, and human service settings. The program is fully accredited by the Commission on Accreditation for Marriage and Family Therapy Education and meets the academic requirements for clinical membership in the AAMFT. The Program generally takes two years including two summers and requires five hundred (500) hours of clinical practice in order to graduate. Additional hours of clinical practice under supervision are required after graduation to meet state licensure standards and qualify for clinical membership in AAMFT.

The Marriage and Family Therapy Program contributes to the well-being of individuals and families through knowledge, teaching leadership and professional practice. The program is fully accredited by COAMFTE and meets the academic regulations for clinical membership in the American Association for MFT. Through connecting research, practice and policy our faculty conducts significant research on a range of issues facing individuals, couples and families in today's society.

Clinical training offered within the MFT Program emphasizes treating individuals, couples, and families in relationship to larger systems that influence them. Supervised practica are continuous throughout the program. MFT program graduates learn to function as competent and ethical marriage and family therapy professionals and have a solid knowledge base of marriage and family therapy theory and research as well as clinical practice principles. The MFT Program successfully prepares graduates for employment as marriage and family therapists in community agencies and private practice.

Part-time MFT students will be admitted for the fall semester only. Part-time admission to the MFT is available on a case-by-case basis until January 15th to begin matriculation in the fall semester. Interested applicants should contact Dr. Tyler Jamison, Graduate Coordinator, for information. An interview may be required. Part-time MFT students are not accepted for the spring semester.

What makes our program special?

- Competitive Stipends, Travel Stipends, and Scholarship opportunities.
- Award-winning mentorship from nationally-recognized faculty.
- Collegial and supportive culture.
- On-campus clinical facilities.
- Access to UNH's Career and Professional Development .
- Opportunities to conduct research, publish and present at conferences.
- 97% of students who have enrolled in the UNH Marriage and Family Therapy Program have graduated.

- 100% of graduates who have taken the national exam have passed.
- Exceptional placement rate post-graduation.

All applications for admission must be submitted electronically using the Graduate School Website.

Requirements

M.S. Degree Requirements: Marriage and Family Therapy Program

All students are expected to:

- Minimum of two years of full-time study, including two summers.
- Students must complete 72 credits of required coursework, which includes 24 successfully completed credits of practicum.
- 500 hours of supervised clinical practice.
- Satisfactorily complete an integrative paper and presentation.

Requirements

Code	Title	Credits
Successful completion of a 12-credit core curriculum		
HDFS 991	Professional Issues for Family Specialists	4
HDFS 993	Theoretical Approaches to Human Development and Family Studies	4
HDFS 994	Research Seminar	4
Successful completion of approved coursework (35 - 36 credits)		
HDFS 841	Marital and Family Therapy	4
HDFS 930	Child Development in Context	4
HDFS 942	Advanced Systems of Marital and Family Therapy	4
HDFS 945	Family Therapy Practice I	4
HDFS 946	Critical Problems in Family Life	4
HDFS 947	Family Therapy Practice II	4
HDFS 952	Clinical Interventions in Couples Therapy	4
HDFS 954	Sex Therapy	4
Elective		3-4
Successful completion of 24 practicum credits (500 hours)		
HDFS 898	Marriage and Family Therapy Practicum	4/ semester
Successful completion and presentation of an integrative paper and video representing student's theory of change.		

Grade Policy

A graduate student who fails a course must immediately attend a mandatory meeting with the instructor of the course, the Human Development and Family Studies Graduate Coordinator, and, if desired, the student's adviser. If a graduate student receives grades below "B--" in two or more courses, the Human Development and Family Studies Graduate Coordinator will make a recommendation to the Graduate School that the student be dismissed from the Human Development and Family Studies Graduate program.

Student Learning Outcomes

- Students will demonstrate a knowledge of the major models of marriage and family therapy and other systems related theories.
- Students and graduates will demonstrate competencies in assessing and treating varied populations and problems through a systemic lens.
- Students and graduates will demonstrate an understanding, sensitivity and respect for multicultural populations.
- Students and graduates will develop an awareness for larger systems and family/individual developmental perspectives.
- Students and graduates will demonstrate competency in understanding and practicing the ethical principles of the AAMFT/ Code of Ethics and ethical decision making.
- Students and graduates will demonstrate knowledge of MFT research.
- Students and graduates will demonstrate understanding of the relationship between theory, research and practice.

Adolescent Development (Graduate Certificate)

https://chhs.unh.edu/human-development-family-studies/program/certificate/adolescent-development

Description

Beginning in the 2023-2024 academic year, the Graduate Certificate in Adolescent Development 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.

The Department of Human Development and Family Studies at the University of New Hampshire offers a one-year, minimum 15-credit, multidisciplinary program of study leading to a graduate certificate in adolescent development.

The certificate program is intended for individuals who may be working in the field but lack specific knowledge about adolescent development such as professionals employed by social-service agencies, juvenille justice facilities and child welfare programs, educational institutions, and independent programs that provide pogramming and services to adolescents. A certificate in Adolescent Development is ideal for professionals in a variety of youth-related fields.

The certificate program builds general competence in understanding and applying theory and research regarding adolescent development with particular emphasis on the influences of family and communities. The program is grounded in an ecological approach that focuses on supporting the health and well-being of all adolescents, with special attention to using a developmental perspective to develop programs, policies, and other interventions that address contemporary risk and protective factors.

Requirements

A certificate in adolescent development is awarded upon successful completion of **14-15 credits**.

Code	Title	Credits
Core Required Courses		
HDFS #950	Contemporary Issues in Adolescent Development	4
HDFS 995	Seminar and Special Problems	4
Electives [1]		
HDFS Electives (select at least one)		
HDFS 846	Human Sexuality	
HDFS 857	Race, Class, Gender, and Families	
HDFS 876	Children, Adolescents and the Law	
HDFS 897	Special Topics	
HDFS 991	Professional Issues for Family Specialists	

HDFS 993	Theoretical Approaches to Human Development and Family Studies
Multidisciplinary Electives	
SOC 815	Criminological Theory
SOC 820	Sociology of Drug Use
SOC 840	Sociology of Mental Health
SOC 975	Sociology of the Family
SW 805	Child and Adolescent Risks and Resiliency: Program, Policy and Practice
SW 815	Affirming Practice with Lesbian, Gay, Bisexual, Transgender, Queer+ People
RMP 805	Management and Policy in Therapeutic Recreation

[1] One elective must be fulfilled with a Human Development and Family Studies course.

Other human development and family studies or multidisciplinary electives may be selected with advisor approval.

Grade Policy

A graduate student who fails a course must immediately attend a mandatory meeting with the instructor of the course, the Human Development and Family Studies Graduate Coordinator, and, if desired, the student's adviser. If a graduate student receives grades below "B--" in two or more courses, the Human Development and Family Studies Graduate Coordinator will make a recommendation to the Graduate School that the student be dismissed from the Human Development and Family Studies Graduate program.

Human Services (CPSO)

Programs: M.S., Graduate Certificate

Offered Online

The College of Professional Studies-Online, Health Care, Human Services, and Behavioral Sciences Academic Center offers a Master of Science and Graduate Certificate in Human Services Administration.

Admission Requirements

Graduate Certificates

Admission requirements include a bachelor's degree, and official transcripts.

Master's Degrees

Admission requirements include:

- Bachelor's degree with a 3.0 GPA average in the last 60 credit hours, or Graduate Degree completed from a regionally accredited college or university with a 3.0 GPA minimum overall.
- Official transcripts for all previous college work.
- Transcripts from other countries will need to be translated and evaluated prior to full acceptance.
- 500-1000 word statement which includes professional goals and aspirations, motivation for applying for the degree, and relevant formal or informal experiences. The statement is evaluated on applicant's writing and its content alignment with the program's purpose and outcomes.
- Two (2) Professional or academic references.
- Contact information for references is submitted via the admissions application. This will generate an email inviting references to complete a short questionnaire to assess candidacy. A formal letter of recommendation is not required; however, references are welcome to upload one within the questionnaire.
- Current résumé.

Programs

- Human Services Administration (Graduate Certificate) (p. 153)
- Human Services Administration (M.S.) (p. 153)

Learning Outcomes

Outcomes-Based Learning

Our greatest concern is that our graduates develop a specific set of skills and abilities.

The College's outcome-based degree programs and curriculum:

- Provide standards to be met in demonstrating competence
- Form a base from which to design and pursue learning activities
- Foster the ability to demonstrate self-directed learning

In addition to individual student assessment and grading, learning outcomes assessment is conducted in all programs to ensure the quality of our programs and to prompt ongoing improvements in teaching and learning.

Graduate Degree Learning Outcomes

Based in our commitment to our students through our mission, vision and values, every graduate degree program at the College of Professional Studies - Online provides students with opportunities to learn and demonstrate their abilities to do the following:

Communicate, particularly

- Communicate effectively—orally and written—with respect to theories, arguments, methods, and concepts, using supplemental materials and technology as appropriate.
- Disaggregate, reformulate and adapt principle ideas, techniques or methods when completing a paper or project.
- Contribute to, expand, evaluate or refine the scholarship within the field of study.
- Collaborate with diverse people and teams using elements of effective team dynamics to effectively and appropriately structure team work.

Think critically and comprehensively, particularly

- Demonstrate analytical skills needed to gather and assess information to influence data-driven decision making.
- Exhibit a conceptual understanding of the most widely applicable methodologies of decision-making; for example, employ creative problem solving for strategic planning.
- Demonstrate critical thinking, appropriate analytical models, and critical reasoning processes to evaluate evidence, select among alternatives, and generate creative options in furtherance of effective decision making.

Apply knowledge to workplace and community, particularly

- Display competency and appropriate skills for working effectively with people from diverse backgrounds and orientations.

- Effectively engage in one's broader community through various forms of outreach.
- Design and implement a project that requires the application of advanced knowledge to a practical challenge and articulate the insights gained from the experience.[1]

Gain specialized knowledge, particularly

- Demonstrate proficiency in specialized skills and technologies needed to participate in the intellectual and organizational aspects of one's profession.

[1] *Not applicable to Graduate Certificate programs.*

Human Services Administration (Graduate Certificate)

https://cps.unh.edu/online/program/graduate-certificate/human-services-administration

Description

The Graduate Certificate in Human Services Administration is designed to prepare individuals seeking management or administrative positions at human service agencies within the communities they serve. Whether seeking professional development or interested in transitioning to a leadership role in a human services field, this certificate provides students the opportunity to develop additional knowledge and skills tailored to their interests and career goals.

Students will have the opportunity to:

1. Develop new skills in a human services administration specialization;
2. Acquire a credential and specialized knowledge in the human services field;
3. Grow as a leader in the human services field.

Requirements

Certificate Requirements

Graduate credit is only granted for courses completed with a grade of B-- or higher
Minimum GPA Requirement: 3.0

Code	Title	Credits
Human Services Administration-Graduate Certificate		
HMSV 800	Principles of Human Service Management (3 Credits)	3
HMSV 803	Administration of Human Service Organizations (3 Credits)	3
HMSV 805	Ethical and Legal Practices in Human Services (3 Credits)	3
Complete three credits from the following:		*3*
APST 805	Grant Writing (3 Credits)	
COM 800	Foundations of Organizational Communication (3 Credits)	
INST 803	Foundations of Program Planning and Evaluation (1 Credit)	
INST 823	Program Planning and Evaluation: Project (2 Credits)	
LD 810	Change Management and Communication (3 Credits)	
LD 827	Leading and Governing Nonprofit Organizations (3 Credits)	
LD 831	Conflict Management & Negotiation (3 Credits)	
LD 832	Building Diverse & Multicultural Organizations (3 Credits)	
MGMT 815	Financial Management for Nonprofit Organizations (3 Credits)	
Total Credits		**12**

Human Services Administration (M.S.)

https://cps.unh.edu/online/program/ms/human-services-administration

Description

The Master of Science in Human Services Administration (MSHSA) prepares graduates with the knowledge, skills, and values needed to lead in human services agencies or organizations. Students will integrate methods of leadership, management and administration, ethical decision making, and program planning and evaluation in an interprofessional learning environment. The MSHSA provides graduates with the education needed to assume roles as administrators, managers, or leaders within the human service industry.

Requirements

Degree Requirements

Minimum Credit Requirement: 30 credits
Minimum Residency Requirement: 30 credits must be taken at UNH
Minimum GPA: 3.0

Code	Title	Credits
Major in Human Services Administration [1]		
HMSV 800	Principles of Human Service Management	3
HMSV 803	Administration of Human Service Organizations	3
HMSV 805	Ethical and Legal Practices in Human Services	3
LD 827	Leading and Governing Nonprofit Organizations	3
LD 832	Building Diverse & Multicultural Organizations	3
PM 800	Project Management Seminar	3
Select three from the following:		*9*
MGMT 815	Financial Management for Nonprofit Organizations	
HLTC 800	Health Care Delivery and Innovations	
HLTC 802	Advocacy and Health Policy	
COM 800	Foundations of Organizational Communication	
Integrative Capstone:		
HMSV 850	Human Services Administration Integrative Capstone	3
Total Credits		**30**

[1] Graduate credit is only granted for courses completed with a grade of B- or higher.

Student Learning Outcomes

Students will have the opportunity to:

- Integrate historical perspectives and emerging trends related to human services;
- Evaluate the interaction of human systems including individual, interpersonal, group, family, organizational, community, and societal.
- Compare and contrast human services delivery systems and organizations;
- Develop knowledge and skill in disciplined inquiry and information literacy;
- Develop program planning and evaluation that assist individuals and groups in promoting optimal functioning, growth, and goal attainment;

- Integrate knowledge, theory, and skills in administrative aspects of human services;
- Apply legal and ethical standards relevant to human service delivery;
- Synthesize the knowledge, theory, skills, and professional behaviors that are congruent with the human services profession.

Integrated Applied Mathematics (IAM)

Degrees Offered: Ph.D.

This program is offered in Durham.

Applied mathematics is the study of mathematical and computational methods for solving problems in science and engineering. Over the last several decades, the tools of applied mathematics have dramatically expanded the boundaries of scientific inquiry. It is becoming increasingly important to exploit the full power of mathematical and computational analysis to address the grand challenge problems facing society in areas including energy, climate, environmental sustainability, materials, finance and economics, biophysics and healthcare, and beyond.

The **Integrated Applied Mathematics (IAM) Program** at the University of New Hampshire (UNH) is a unique inter-departmental graduate program designed to facilitate interdisciplinary research by preparing highly motivated and capable students to become experts in mathematical and computational problem solving. The IAM Program draws its faculty from the nine departments within the UNH College of Engineering and Physical Sciences (CEPS), the Center for Coastal and Ocean Mapping (CCOM), and the College of Life Sciences and Agriculture (COLSA), and thus is inherently interdisciplinary. The Program gives students the opportunity to explore the frontier where the sciences meet cutting-edge mathematical analysis and high-performance computing. Current areas of mathematical and scientific focus include (but are not limited to): applied nonlinear (asymptotic, variational) analysis of ODEs and PDEs; high-dimensional dynamical systems and bifurcation theory; numerical algorithms for PDEs; machine learning and optimization theory; fluid dynamics; biophysics; materials and solid mechanics; space and plasma physics; and mathematical geo- and environmental science. Graduates of the program acquire the skills and training needed to enter numerous professions, including careers in research, education, and industry.

Curriculum

The IAM Program offers a unique curriculum emphasizing advanced applied mathematical methods and high-performance computing. A Ph.D. candidate in IAM is expected to develop expertise in both applied and computational mathematics as well as one area of specialization (e.g., fluid dynamics, plasma physics and space physics, geoscience, dynamical systems, biophysics, etc.).

Facilities

UNH hosts a state-of-the-art CRAY CS500 supercomputer with over 3000 compute cores and over 12 terabytes of memory. This supercomputer supports multiple projects involving IAM students and faculty.

Admission and Financial Support

Graduate students are admitted to the IAM program with a variety of backgrounds. The expectation is that a student entering the program will have a B.S. or M.S. degree in a technical field such as a mathematics, science, or an engineering discipline. Students with a M.S. degree in a technical field are particularly well suited for admission to the IAM Program. Students have been supported through Teaching Assistantships, CEPS Fellowships, and Research Assistantships funded by federal grants.

https://ceps.unh.edu/integrated-applied-mathematics

Programs

- Applied Mathematics Ph.D. (p. 154)

Faculty

See https://ceps.unh.edu/directory/all for faculty.

Applied Mathematics Ph.D.

https://ceps.unh.edu/integrated-applied-mathematics/program/phd/integrated-applied-mathematics

Description

The IAM Program prepares students for research and teaching careers in the mathematical solution of critical problems in science and engineering. The emphasis of the IAM program is on the use of mathematics and computing to facilitate impactful interdisciplinary research. Accordingly, all students must achieve a high level of training through the required coursework. An IAM Ph.D. candidate is expected to achieve expertise in both applied and computational mathematics as well as one area of specialization including, but not limited to: Fluid Dynamics, Dynamical Systems, Plasma and Space Physics, Mathematical Geo- or Environmental Science, Materials and Solid Mechanics, or Biophysics.

Admission Requirements

Applicants to the IAM Ph.D. Program are expected to have a bachelor's degree or master's degree in mathematics or an appropriate science or engineering field.

Applying

Please visit the Graduate School website for detailed instructions about applying to the program.

Requirements

Code	Title	Credits
Required Courses		
PHYS 931	Mathematical Physics	3
IAM 830	Graduate Ordinary Differential Equations	3
IAM 851	Introduction to High-Performance Computing	3
IAM 932	Graduate Partial Differential Equations	3
IAM 933	Applied Functional Analysis	3
IAM 961	Numerical Analysis I: Numerical Linear Algebra	3
IAM 962	Numerical Partial Differential Equations	3
Select a 2-course specialization sequence:		6-7
MATH 847 & IAM #950	Introduction to Nonlinear Dynamics and Chaos and Spatiotemporal and Turbulent Dynamics	
PHYS 953 & PHYS 951	Magnetohydrodyamics of the Heliosphere and Plasma Physics	
ME 807 & ME 909	Analytical Fluid Dynamics and Viscous Flow	

Select a minimum of three technical electives: [1]		9
CS 830	Introduction to Artificial Intelligence	
CS 858	Algorithms	
IAM 940	Asymptotic and Perturbation Methods	
ME 812	Waves in Fluids	
ME 922	Continuum Mechanics	
PHYS 812	Introduction to Space Plasma Physics	
PHYS 818	Introduction to Solid-State Physics	
PHYS 941	Electromagnetic Theory I	
PHYS 965	Advanced Solid-State Physics	
Total Credits		**36-37**

[1] Additional elective as approved by your advisor and program.

Candidacy Requirements

Students must pass a three part Ph.D. qualifying exam:

- Comprehensive exam in mathematical methods
- Comprehensive exam in scientific computing
- Oral or written exam in a specialization area

Students must select a research adviser and have identified a research topic.

Dissertation

Students must submit a written thesis proposal and give a seminar presentation summarizing the proposal to a dissertation committee.

Upon completion of research, a student must give a seminar summarizing the research objectives, methods, findings, and significance.

Students must submit a dissertation that includes original research in applied mathematics. The dissertation must comply with all policies put forth by the Graduate School

Student Learning Outcomes

- Students are skilled at mathematical manipulations and analytic calculations broadly covering the field of applied mathematics.
- Students have developed sufficient mathematical background and understanding of key concepts to have a functional literacy in modern applied mathematics journals.
- Students can use numerical algorithms to approximate solutions to mathematical problems which are intractable by hand calculation and understand the impact of consistency, stability, and accuracy in the context of numerical computing.
- Students have made independent contributions to a significant mathematical research project and have clearly demonstrated the ability to conduct high-level, self-directed research in applied mathematics.
- Students are capable of disseminating the results of their research through written (e.g., journal) publications and oral presentations or seminars.

Justice Studies (JUST)

Degree Offered: M.A.

This program is offered in Durham.

The goal of the master of arts degree program in justice studies is to produce graduates who have a high level of knowledge about law and justice in American society and worldwide. Upon completion, graduates will be able to enhance their careers in the justice system, enter new careers in the justice system, or continue their graduate training in law, social sciences, or humanities.

The program addresses issues of justice that are not necessarily criminal in nature. It will familiarize students with legal and justice ideas, legal institutions, and the legal process. It will provide tools for a reasoned appraisal of how the law works and of the policies that underlie it. The courses address a wide variety of subjects, including philosophy of law, American legal history, psychological aspects of the law, social control, criminology, juvenile delinquency, law and literature, and family law. Courses are taught by faculty with backgrounds in both the social sciences and humanities.

Special Note on Tuition

The justice studies masters of arts degree program has a different pricing structure. You can find the most current pricing for this program on the Student Accounts website.

Admission Requirements

Three academic letters of recommendation, personal statement and college transcripts.

* Application fee waiver for the first 20 applicants. Contact the Justice Studies Office for an application fee waiver code.

Students are admitted in the summer term, with classes beginning the third week in July.

There is also an accelerated masters of arts (AM) option in Justice Studies. Students may start the AM program in the fall or spring of their senior year. Please contact the department for further details.

http://cola.unh.edu/justice-studies/graduate-programs

Programs

- Justice Studies (M.A.) (p. 155)

Faculty

See https://cola.unh.edu/justice-studies-program/faculty-staff-directory for faculty.

Justice Studies (M.A.)

https://cola.unh.edu/justice-studies/program/ma/justice-studies

Description

The Master of Arts degree program in Justice Studies (MAJS) provides a broad understanding of justice, crime, and law. It provides tools for reasoned appraisal of how the justice system works and what policies underlie it. The program familiarizes students with legal and justice ideas, justice institutions, and legal processes. It draws on a variety of disciplines, subjects, and research methodologies for its core knowledge.

Our students work closely with faculty with established reputations as scholars, teachers, and practitioners.

Requirements

Degree Requirements

The master of arts in justice studies requires that students complete a minimum of ten courses (**37 credit hours**) in justice studies from the following list:

Code	Title	Credits
Required Courses		
JUST 802	Law and Society	4
JUST 803	Professionalism in Justice Studies	1
JUST 805	Quantitative Research Methods	4
JUST 807	Applied Research Methods	4
JUST 830	Theories of Justice	4
JUST 850	Capstone Preparation: Internship/Thesis	4
Select one of the following:		4
SOC 815	Criminological Theory	
SOC 921	Crime and Conflict	
JUST 865	Special Topics	
Concluding Experience		
Select Option A or B from the below:		
Option A:		
JUST 897	Culminating Project	4
Option B:		
JUST 899	Masters Thesis	8
Electives		
Select two elective courses from our approved course list.		8

Electives

Code	Title	Credits
EDUC #867	Students, Teachers, and the Law	4
EDUC 897	Special Topics in Education (must be approved by Justice Studies)	1-4
EDUC 967	School Law	4
EDUC 968	Collective Bargaining in Public Education	4
HDFS 876	Children, Adolescents and the Law	4
HDFS 894	Families and the Law	4
HIST 809	United States Legal History Special Topics (must be approved by Justice Studies)	4
JUST 801	Graduate Seminar in Justice Studies	4
PA 818	Non-Profit Management	3
PSYC 954	Advanced Seminar in Social Psychology (must be approved by Justice Studies)	4
SW 897	Special Topics in Social Work and Social Welfare (must be approved by Justice Studies)	2 or 3
SW 979	Social Work and the Law	3
SOC 820	Sociology of Drug Use	4

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Demonstrate critical thinking and analysis of justice studies concepts and literature.
- Effectively communicate Justice Studies concepts and research.
- Present and interpret quantitative and qualitative data.
- Demonstrate the technical skills and ethical skills that are appropriate for a practitioner (internship/project option) or researcher (thesis option) working in the justice field.

Kinesiology (KIN)

Degree Offered: M.S., Graduate Certificate

This program is offered in Durham.

The Department of Kinesiology offers a master of science degree in Adapted Physical Education as well as a master of science in Kinesiology with the following areas of concentration: exercise science and sport studies.

Additionally, a graduate certificate in adapted physical education is offered.

Admission Requirements

Admission is based on undergraduate preparation, academic record, and letters of recommendation. Applicants must be above-average students and show adequate preparation in the basic support courses of the selected concentration area. Applicants who have not met specific course prerequisites should expect to take additional undergraduate work without receiving graduate credit.

https://chhs.unh.edu/kinesiology/academics

Programs

- Adapted Physical Education (Graduate Certificate) (p. 156)
- Kinesiology (M.S.) (p. 157)
- Kinesiology: Adapted Physical Education (M.S.) (p. 158)

Faculty

See https://chhs.unh.edu/directory/all for faculty.

Adapted Physical Education (Graduate Certificate)

https://chhs.unh.edu/kinesiology/program/certificate/adapted-physical-education

Description

The Department of Kinesiology at the University of New Hampshire now offers a graduate certificate in adapted physical education. The intent of this certificate is to better prepare teachers to enhance their

overall knowledge of students with disabilities in general and/or adapted physical education or physical activity settings.

Applying

Please visit the Graduate School website for information about applying to the certificate program.

Requirements

Certificate Requirements

Students must hold a baccalaureate degree from an accredited college or university and have a valid New Hampshire physical education teaching license or be enrolled in the master in education program at the University of New Hampshire and complete **15 credit hours** of specified coursework to receive the certificate.

Code	Title	Credits
Required Courses		
KIN 831	Inclusive Teaching Through Sport	4
KIN #842	Advanced Assessment in Adapted Physical Activity	4
KIN 895	Advanced Studies	2-4
Elective Courses (select at least one)		
EDUC 850	Introduction to Disability in Inclusive Schools and Communities	4
EDUC 956	Developing Positive Behavior Supports to Ensure Success for All Learners	4
KIN 881	Inclusion in Physical Education [1]	4

[1] With consent of their advisor, Kinesiology Health and Physical Education students who have taken HPE 781 Inclusion in Physical Education can satisfy the four course requirement through another 800-level elective relevant to the certificate program.

Kinesiology (M.S.)

https://chhs.unh.edu/kinesiology/program/ms/kinesiology

Description

The Department of Kinesiology offers a degree with the following areas of concentration: exercise science, and sport studies.

Exercise Science Concentration:

The MS in Kinesiology: Exercise Science prepares individuals for advanced 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 terminal degree programs in the health professions, basic biology fields, medicine, or other health-related fields.

Sport Studies Concentration:

The Kinesiology Sport Studies graduate program focuses on preparing professionals in youth, interscholastic, intercollegiate programs and elite sport agencies to provide extraordinary sport experiences. Providing an understanding of the theoretical and practical knowledge and skills within the context of sport is essential in developing sport professionals at UNH. Our curriculum provides a framework of coursework, and the flexibility to focus preparation on careers in coaching or administration or additional graduate study in sport psychology. In addition, students have opportunities for applied experience and research with faculty. The graduate program in Kinesiology: Sport Studies engages students in learning experiences in the classroom, in applied settings, and in research. The focus on a theory-to-practice approach is infused throughout the curriculum with the goal that our students will be well prepared professionals as they enter the workforce or further graduate study.

Requirements

Degree Requirements

All degree candidates will be required to complete courses listed in the Masters Degree Core, the designated concentration core, and electives as required in order to meet the **30-credit** minimum necessary for graduation. In addition to coursework, students follow either the thesis, the non-thesis, or the advanced research plan as described below.

Code	Title	Credits
Master's Degree Core Course		
Select one of the following graduate statistics courses or equivalent:		
EDUC 881	Introduction to Statistics: Inquiry, Analysis, and Decision Making	4
SW 962	Data Analysis and Statistics	3

Code	Title	Credits
Exercise Science Concentration		
KIN 896	Advanced Research in Exercise Science	6
KIN #901	Analysis of Professional Literature	4
KIN 902	Colloquium (may be repeated once for a total of 4 credits)	1-2
Elective Courses		
Additional elective courses are selected in consultation with academic advisor to meet the 30-credit minimum necessary for graduation.		
KIN 804	Electrocardiography	4
KIN 805	Topics in Applied Physiology	4
KIN 806	Neurology	4
KIN 820	Science and Practice of Strength Training	4
KIN 822	Applied Biomechanics	4
KIN 824	Exercise Metabolism: Acute and Chronic Adaptations	4
KIN 836	Fitness and Graded Exercise Test and Prescription	4
KIN 837	Exercise Prescription and Leadership in Healthy and Special Populations	4
KIN 894	Cardiopulmonary Pathologies	4

Code	Title	Credits
Sport Studies Concentration		
KIN #901	Analysis of Professional Literature	4
Select three courses from the following:		12
KIN 840	Athletic Administration	
KIN 841	Social Issues in Contemporary Sports	
KIN 864	Advanced Sport Marketing	
KIN 865	Advanced Topics in Coaching	
KIN 880	Psychological Factors in Sport	
Elective Courses		
Two additional elective courses are selected in consultation with academic advisor to meet the 30-credit minimum necessary for graduation.		

Thesis Plan

A minimum of 30 approved graduate credits, including a thesis (24 graduate course credits plus 6 credits of KIN 899 Master's Thesis), as well as an oral defense of the thesis, are required in the thesis plan.

Non-Thesis Plan

A minimum of eight approved graduate courses (with a minimum of 30 credits) are required in the non-thesis plan. Four credits of KIN 895 Advanced Studies are required. A student may begin taking KIN 895 Advanced Studies only after completing at least three approved graduate courses.

Advanced Research Plan

Exercise science students who elect this plan must take a total of 6 credits of KIN 896 Advanced Research in Exercise Science. In addition, exercise science students must orally present their research to faculty and peers.

Student Learning Outcomes

- Demonstrates mastery of major theories, approaches, concepts, and both current and classical theoretical findings within their selected field of study.
- Compiles and critiques current peer-reviewed research, practice of industry standards, and theoretical foundations to produce a paper or project of publishable quality that enhances existing knowledge or creates new knowledge in a specific area within the option.
- Demonstrates proficiency and mastery of specific skills within the profession, which is grounded in evidence-based practice.
- Displays professionally appropriate behaviors, ethical standards, sensitivity, compassion, tolerance of individual differences, and demonstrates the ability to work in a diverse and interprofessional work environment.

Kinesiology: Adapted Physical Education (M.S.)

https://chhs.unh.edu/kinesiology/program/ms/kinesiology-adapted-physical-education

Description

The Adapted Physical Education graduate program is an interdisciplinary program that aims to develop highly qualified adapted physical education teachers with a diverse skill set to allow graduates of this program to effectively instruct, assess, and develop meaningful relationships with students with disabilities to provide them a quality physical education experience. The coursework in this program promotes the practical applications of interdisciplinary collaboration between adapted physical educators, special educators, related service providers, and parents to improve service delivery and outcomes for students with disabilities. This program also includes numerous field work opportunities with individuals with disabilities to improve their health, psychomotor skills, and well-being. This program is a competency-based graduate program based within the Adapted Physical Education National Standards (APENS). The APENS outlines 15 standards to guide the professional preparation of APE teachers. Using these standards to guide the development of this graduate program option, students will be provided the information and experiences necessary for national certification.

Requirements

The APE option comprises of a minimum of **32 credits** of coursework and fieldwork, and a capstone experience in the form of a research thesis or an applied research project

Code	Title	Credits
Required Courses		
RMP 992	Research Methods in Recreation Management and Policy	3
or RMP 824	Research, Evaluation, and Data-Driven Decisions	
or KIN #901	Analysis of Professional Literature	
KIN 895	Advanced Studies (Adapted Physical Education)	2
EDUC 881	Introduction to Statistics: Inquiry, Analysis, and Decision Making	4
KIN 881	Inclusion in Physical Education	4
KIN #842	Advanced Assessment in Adapted Physical Activity	4
RMP 820	Adaptive Sport Facilitation for Recreation Therapy and Related Professions	3
or EDUC 850	Introduction to Disability in Inclusive Schools and Communities	
RMP 840	Therapeutic Recreation Service Delivery in Community Settings	3
Capstone		
KIN 899	Master's Thesis (Thesis Students)	6
or		
KIN 895	Advanced Studies (Non-Thesis Students)	4
Electives (Select 1-2 Courses)		
EDUC 856	Advocating for Diverse and Inclusive Family-School-Community Partnerships	4
EDUC 839	Equitable Assessment and Individualized Educational Planning: Building Access and Agency	4
EDUC 956	Developing Positive Behavior Supports to Ensure Success for All Learners	4
EDUC 818	Critical Social Justice in and Beyond Education	4
KIN 841	Social Issues in Contemporary Sports	4
KIN 831	Inclusive Teaching Through Sport	4
KIN 865	Advanced Topics in Coaching	4
OT 832	Introduction to Assistive Technology Practices	2

Student Learning Outcomes

Students attain the following outcomes upon completion of the program:

- Graduates will be able to use current APE literature and evidence-based practices to deliver high quality APE services.
- Graduates will be involved in a 100+ hours of practicum experiences during their program where they work with individuals with disabilities.
- Graduates will develop positive attitudes and dispositions towards individuals with disabilities.
- Graduate will be able to effectively collaborative with a multi-disciplinary team.
- Graduates will have the knowledge and skills to effectively implement the following: (a) Universal Design for Learning principles, (b) IEP development and process, (c) assistive technology, (d) behavior management, (e) formative and summative assessments, and (f) transition planning.
- Graduates will be able to read, synthesize, and apply APE research to their APE service delivery to students with disabilities.
- Graduates will be able to understand how special education legislation mandates impacts APE service delivery.
- Graduates will be able to understand the unique physical and learning attributes associated with specific disabilities and develop a physical education program tailored to the specific needs of that disability.

Leadership (CPSO)

Programs: M.S.

Offered Online

The College of Professional Studies-Online, Business and Technology Academic Center offers a Master of Science in Leadership.

Admission Requirements

Master's Degrees

Admission requirements include:

- Bachelor's degree with a 3.0 GPA average in the last 60 credit hours, or Graduate Degree completed from a regionally accredited college or university with a 3.0 GPA minimum overall.
- Official transcripts for all previous college work.
- Transcripts from other countries will need to be translated and evaluated prior to full acceptance.
- 500-1000 word statement which includes professional goals and aspirations, motivation for applying for the degree, and relevant formal or informal experiences. The statement is evaluated on applicant's writing and its content alignment with the program's purpose and outcomes.
- Two (2) Professional or academic references.
- Contact information for references is submitted via the admissions application. This will generate an email inviting references to complete a short questionnaire to assess candidacy. A formal letter of recommendation is not required; however, references are welcome to upload one within the questionnaire.
- Current résumé.

Programs

- Leadership (M.S.) (p. 159)

Learning Outcomes

Outcomes-Based Learning

Our greatest concern is that our graduates develop a specific set of skills and abilities.

The College's outcome-based degree programs and curriculum:

- Provide standards to be met in demonstrating competence
- Form a base from which to design and pursue learning activities
- Foster the ability to demonstrate self-directed learning

In addition to individual student assessment and grading, learning outcomes assessment is conducted in all programs to ensure the quality of our programs and to prompt ongoing improvements in teaching and learning.

Graduate Degree Learning Outcomes

Based in our commitment to our students through our mission, vision and values, every graduate degree program at the College of Professional Studies - Online provides students with opportunities to learn and demonstrate their abilities to do the following:

Communicate, particularly

- Communicate effectively—orally and written—with respect to theories, arguments, methods, and concepts, using supplemental materials and technology as appropriate.
- Disaggregate, reformulate and adapt principle ideas, techniques or methods when completing a paper or project.
- Contribute to, expand, evaluate or refine the scholarship within the field of study.
- Collaborate with diverse people and teams using elements of effective team dynamics to effectively and appropriately structure team work.

Think critically and comprehensively, particularly

- Demonstrate analytical skills needed to gather and assess information to influence data-driven decision making.
- Exhibit a conceptual understanding of the most widely applicable methodologies of decision-making; for example, employ creative problem solving for strategic planning.
- Demonstrate critical thinking, appropriate analytical models, and critical reasoning processes to evaluate evidence, select among alternatives, and generate creative options in furtherance of effective decision making.

Apply knowledge to workplace and community, particularly

- Display competency and appropriate skills for working effectively with people from diverse backgrounds and orientations.
- Effectively engage in one's broader community through various forms of outreach.
- Design and implement a project that requires the application of advanced knowledge to a practical challenge and articulate the insights gained from the experience.[1]

Gain specialized knowledge, particularly

- Demonstrate proficiency in specialized skills and technologies needed to participate in the intellectual and organizational aspects of one's profession.

[1] *Not applicable to Graduate Certificate programs.*

Leadership (M.S.)

https://cps.unh.edu/online/program/ms/leadership

Description

The Master of Science in Leadership (MSLD) is designed to meet the needs of professionals in every industry who want to enhance their leadership skills while also gaining a deeper perspective of organizational management.

Requirements

Degree Requirements

Minimum Credit Requirement: 30 credits
Minimum Residency Requirement: 30 credits must be taken at UNH
Minimum GPA: 3.0

Code	Title	Credits
Major in Leadership [1]		
LD 820	Cultivating Your Leadership Capabilities	3
LD 821	Ethical Decision-Making	3
COM 800	Foundations of Organizational Communication	3
LD 823	Emergence of a Strategic Leader	3
LD 804	Leading Teams	3
LD 810	Change Management and Communication	3
IDIS 805	Evidence-Based Decision-Making	3
Elective Options		
Complete six credits from the following:		6
APST 805	Grant Writing	
LD 806	Fundraising and Resource Development	
LD 825	Volunteer Leadership	
LD 827	Leading and Governing Nonprofit Organizations	
LD 831	Conflict Management & Negotiation	
LD 832	Building Diverse & Multicultural Organizations	

MGMT 805	Organizational Behavior	
PM 800	Project Management Seminar	
PM 811	Project Chartering and Planning	
Integrative Capstone:		
LD 850	Leadership Integrative Capstone	3
Total Credits		**30**

[1] Graduate credit is only granted for courses completed with a grade of B- or higher.

Student Learning Outcomes

Students will have the opportunity to:

- Assess and enrich their capacity to lead in today's environment;
- Identify the components of leadership practice and present ways to implement them;
- Evaluate organizational relationships and their ability to contribute to organizational effectiveness;
- Assess their ethical framework in the context of an effective leadership model;
- Augment their ability to lead people and teams to excellence in projects and organizational settings;
- Develop theoretically-grounded plans to manage change and actualize vision within organizations.

Liberal Studies (LS)

Degree Offered: M.A.L.S.

This program is offered in Durham.

The program offers a master of arts in liberal studies (M.A.L.S.) degree. The master of arts in liberal studies is an innovative, interdisciplinary graduate program. Housed within the College of Liberal Arts but drawing its courses and instructors from across the University, the program makes available a diverse spectrum of offerings and a wealth of faculty expertise and resources.

The liberal studies curriculum is intended to promote broad intellectual comprehension and enrichment rather than vocational or professional training within a single field or discipline. Designed to address the particular interests of students who seek to deepen their knowledge, the program offers a challenging but flexible program of cross-disciplinary learning.

https://cola.unh.edu/liberal-studies

Programs

- Liberal Studies (M.A.L.S.) (p. 160)

Faculty

See https://cola.unh.edu/liberal-studies/people for faculty.

Liberal Studies (M.A.L.S.)

https://cola.unh.edu/liberal-studies/program/mals/liberal-studies

Description

The master of arts in liberal studies (M.A.L.S.) is an innovative, interdisciplinary graduate program, intended to promote broad intellectual comprehension and enrichment rather than vocational or professional training within a single field or discipline. Housed within the College of Liberal Arts but drawing its courses and instructors from across the University, the program makes available a diverse spectrum of offerings and a wealth of faculty expertise and resources. The program addresses the particular interests of students who seek to deepen their knowledge by designing their own challenging but flexible program of cross-disciplinary learning.

Admission Requirements

Admission to the master of arts in liberal studies is selective. A bachelor's degree is required for admission. Students will be asked to provide relevant transcripts of their educational experience, a resume, and letters of recommendation. They will also be asked to submit a brief essay describing why they are particularly interested in this program and indicating the sort of interdisciplinary focus or area of learning in which they might like to concentrate their study. The Graduate Record Exam (GRE) is not required but is helpful.

Requirements

Degree Requirements

The program consists of **30 credits** divided into three parts: an interdisciplinary seminar selected by the MALS coordinator and required of every student, to be taken within one year of entrance to the program# a concentration made up of at least five elective courses chosen from various disciplines across the liberal arts that centers on an interdisciplinary theme or topic# and a 6 credit master's thesis LS 899 or a 6 credit project LS 898, which is intended to act as an integrating capstone experience for liberal studies students.

Code	Title	Credits
LS #800	Core Seminar [1]	4
Select a concentration [2]		20
LS 898	Master's Project [3]	6
or LS 899	Master's Thesis	
Total Credits		**30**

[1] Each liberal studies student is required to take an initial seminar with interdisciplinary elements as an introduction to the program as a whole. This seminar will be selected by the MALS coordinator. The seminar must be taken within the first year of a student's matriculation in the program, preferably in the first semester.

[2] Students will work with the director of the program and a concentration and thesis adviser to develop an interdisciplinary concentration program of study, which focuses on a significant topic, issue, perspective, or cultural development, and is made up of at least five graduate-level elective courses offered in various departments throughout the college and University. A concentration should constitute a sustained thematic exploration and may be selected from a menu of suggested concentrations or may be self-designed by each student with the help of his or her adviser. The five courses are to be selected from 700-900-level courses regularly offered within departments and colleges across the University, including up to three independent study courses carried out as a tutorial with particular

faculty members (with permission). It is expected that a student's concentration will culminate in a concluding final project or thesis. The following are typical examples of cross-disciplinary concentration programs of study: American studies, the humanities, ecology and values, justice studies, disability studies, labor studies, religious studies, urban studies, and women's studies.

3 With the support of their concentration and thesis adviser, students prepare a final project consistent with their concentration and interests. A capstone experience, the project can be a scholarly thesis or equivalent creative endeavor, which integrates the student's learning in a particular concentration. Students will work with a committee of three faculty members and are encouraged to schedule a formal defense of their work with their committee.

Student Learning Outcomes

- Demonstrate the ability to carry out graduate work in different disciplines in the College of Liberal Arts and possibly in other Colleges.
- Develop a concentration by pursuing a significant question across disciplinary lines.
- Develop an interdisciplinary M.A. Thesis (a scholarly thesis) or M.A. Project (a creative or applied project) that grows out of this concentration.
- Working with a committee of three faculty members from different disciplines, research, complete, and defend this capstone thesis or project.

Marine Science and Ocean Engineering (SMOE)

- Citizen and Community Science (Graduate Certificate) (p. 161)
- Coastal Policy (Graduate Certificate) (p. 161)

Citizen and Community Science (Graduate Certificate)

https://marine.unh.edu/program/graduate-certificate/citizen-community-science

Description

The UNH Graduate Certificate in Citizen and Community Science offers students the opportunity to develop competencies in both the theory and practice behind robust and authentic citizen and community science projects in a natural resource management setting. This certificate is appropriate for a wide range of students and professionals with interests in developing competencies related to project design and implementation, best practices for effective projects and teams, volunteer engagement, methods for data sharing, and issues of social justice in citizen science. The certificate can be pursued as a stand-alone credential or in concert with another degree at UNH. Part-time and hybrid pathways through the certificate are available.

Requirements

The Citizen and Community Science Certificate requires a minimum of **12 credits** made up of one required core class, a seminar requirement, at least six credits of electives, and one required practicum.

Code	Title	Credits
Required Courses		
GRAD 834	Fundamentals of Citizen and Community Science	3
MARI 801	Coastal Resource Management and Policy Seminar (to be taken twice)	1
MARI 901	Resource Management and Policy Practicum	1
Two Electives [1]		**6-8**
Select one natural science, social science, or engineering course from the following:		
CEE 822	Introduction to Marine Pollution and Control	
CEE 833	Public Infrastructure Asset Management	
CEE 858	Stormwater Management Designs	
ECON 908	Environmental Economics: Theory and Policy	
ECON 909	Environmental Valuation	
ESCI 871	Geodesy and Positioning for Ocean Mapping	
ME 817	Marine Robotics and Applications	
MEFB 825	Marine Ecology	
MEFB 872	Fisheries Biology: Conservation and Management	
NR 843	Addressing Arctic Challenges I	
OE 854	Ocean Waves and Tides	
OE 857	Coastal Engineering and Processes	
OE 858	Design of Ocean Structures	
PHP 902	Environmental Health	
PPOL 904	Economics for Public Policy	
PPOL 908	Quantitative Methods for Policy Research	
RAM 867	Social Impact Assessment	
RECO 808	Environmental Economics	
SOC 825	Social Demography	
SOC 830	Communities and the Environment	
SOC 901	Sociological Methods I: Intermediate Social Statistics	
SOC 904	Sociological Methods IV: Qualitative and Historical Research Methods	
Select one resource management course from the following:		
BIOL 950	Scientific Communication	
DPP #911	Environmental Factors in Development Practice	
GRAD 844	Fundamentals of Stakeholder and Community Engagement in Natural Resource Management	
MARI 805	Introduction to Coastal and Marine Policy: Understanding US Ocean, Coastal, and Great Lakes Policy	
MEFB 847	Aquatic Plants in Restoration/Management	
MEFB 872	Fisheries Biology: Conservation and Management	
NR 803	Watershed Water Quality Management	
NR 824	Resolving Environmental Conflicts	
NR 947	Ecosystem Science: Theory, Practice, and Management Applications for Sustainability	
PA 804	Policy and Program Evaluation	
PPOL 904	Economics for Public Policy	
RAM 867	Social Impact Assessment	
RAM 911	Natural and Environmental Resource Management	

[1] See advisor about additional course options.

Coastal Policy (Graduate Certificate)

https://marine.unh.edu/program/graduate-certificate/coastal-policy

Description

The UNH Graduate Certificate in Coastal Policy offers students the opportunity to develop competencies in the U.S. coastal policy process, the science-policy interface in coastal systems, and coastal institutions and governance. This certificate is appropriate for a wide range of

students and professionals with interests in applied science, policy, and/or management in coastal systems. The certificate can be pursued as a stand-alone credential or in concert with another degree at UNH. Part-time and hybrid pathways through the certificate are available.

Requirements

The Coastal Policy Certificate requires a minimum of **12 credits** made up of one required core class, a seminar requirement, at least six credits of electives, and one required practicum.

Code	Title	Credits
Required Courses		
MARI 805	Introduction to Coastal and Marine Policy: Understanding US Ocean, Coastal, and Great Lakes Policy	3
MARI 801	Coastal Resource Management and Policy Seminar (to be taken twice)	1
MARI 901	Resource Management and Policy Practicum	1
Two Electives [1]		**6-8**
Select one natural science, social science, or engineering elective course from the following:		
CEE 822	Introduction to Marine Pollution and Control	4
CEE 833	Public Infrastructure Asset Management	4
CEE 858	Stormwater Management Designs	3
CEE #907	Systems Analysis of the Environment	3
ECON 908	Environmental Economics: Theory and Policy	4
ECON 909	Environmental Valuation	4
ESCI 871	Geodesy and Positioning for Ocean Mapping	4
ME 817	Marine Robotics and Applications	3
MEFB 825	Marine Ecology	4
MEFB 847	Aquatic Plants in Restoration/Management	4
MEFB 872	Fisheries Biology: Conservation and Management	4
NR 803	Watershed Water Quality Management	4
NR 843	Addressing Arctic Challenges I	4
NR 947	Ecosystem Science: Theory, Practice, and Management Applications for Sustainability	4
OE 854	Ocean Waves and Tides	4
OE 857	Coastal Engineering and Processes	3
OE 858	Design of Ocean Structures	3
PHP 902	Environmental Health	3
PPOL 904	Economics for Public Policy	3
RAM 867	Social Impact Assessment	4
RECO 808	Environmental Economics	4
SOC 825	Social Demography	4
SOC 830	Communities and the Environment	4
SOC 901	Sociological Methods I: Intermediate Social Statistics	4
SOC 904	Sociological Methods IV: Qualitative and Historical Research Methods	4
Select one policy elective course from the following:		
BIOL 950	Scientific Communication	2
DPP 901	Integrative Approaches to Development Policy and Practice	3
DPP #911	Environmental Factors in Development Practice	1
GRAD 844	Fundamentals of Stakeholder and Community Engagement in Natural Resource Management	3
NR 820	International Environmental Politics and Policies for the 21st Century	4
NR 824	Resolving Environmental Conflicts	4
PA 800	Foundations and Theories of Public Administration	3
PA 804	Policy and Program Evaluation	3
POLT 851	Comparative Environmental Politics and Policy	4
PPOL 806	Fundamentals of Policy Analysis	3
PPOL 812	Strategies for Policy Impact	3
PPOL 904	Economics for Public Policy	3
PPOL 902	Strategy and Practice of Public Policy	3
RAM 911	Natural and Environmental Resource Management	4

[1] See advisor about additional course options.

Materials Science (MS)

Beginning in the 2023-2024 academic year, the Materials Science program 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.

Degrees Offered: Ph.D., M.S.

This program is offered in Durham.

The materials science program offers the master of science degree in materials science and doctor of philosophy degree in materials science and engineering. The program offers research opportunities over a broad range of areas including synthesis and characterization of thin films, fullerenes and nanotubes, molecular templates, self-organizing nanostructures, polymers and polymer nanoparticles, using scanning probe microscopy, physical and chemical vapor deposition methods, micromechanics, molecular beam mass spectrometry, and computational methods.

Admission Requirements

Admission to the Master of Science and Doctor of Philosophy degree programs is based upon a strong undergraduate record. A minimum GPA of 3.0 is required, but undergraduate students with exceptional experience or other mitigating factors will also be considered. Except under special circumstances, applicants must submit current scores (within five years) from the general test of the Graduate Record Examination (GRE). Since materials science is an interdisciplinary field, students from mechanical engineering, chemical engineering, electrical engineering, chemistry, mathematics, physics, and other engineering- and science-related disciplines will be considered, however, at least one undergraduate introductory course in materials science should be completed before entering the program. The applicant's undergraduate program should also include, as a minimum, two semesters of calculus and preferably an additional course in differential equations. Members of the faculty are available to evaluate each student's undergraduate curriculum. A series of appropriate courses will be required for those students with deficiencies in their undergraduate program.

Qualified physics students at the University of New Hampshire may be admitted to an accelerated program leading to a combined Bachelor of Science degree in physics and a Master of Science in Materials Science within a total of five years. Please consult the materials science website for details.

https://ceps.unh.edu/materials-science

Programs

- Materials Science and Engineering (Ph.D.) (p. 163)
- Materials Science (M.S.) (p. 163)

Faculty

See https://ceps.unh.edu/directory/all for faculty.

Materials Science and Engineering (Ph.D.)

https://ceps.unh.edu/materials-science/program/phd/materials-science-engineering

Description

Beginning in the 2023-2024 academic year, the Ph.D. in Materials Science and Engineering 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.

We offer degrees to qualified students interested in interdisciplinary research with an emphasis on the synthesis, characterization and utilization of nanoscale materials. All MSP students learn about the interplay of structure, processing, characterization, and properties of materials with useful applications. Our seventeen faculty members are active collaborators with research and development groups located around the world, and are experienced in managing research projects with practical results. Graduates of our program work in research, engineering and process development positions in a variety of fields.

Requirements

Ph.D. Degree Requirements

The Ph.D. in Materials Science requires 39 course credits beyond a baccalaureate degree, as well as a significant amount of research.

Code	Title	Credits
MS 960	Thermodynamics and Kinetics of Materials I	3
MS #961	Thermodynamics and Kinetics of Materials II	3
Select one course each satisfying the following areas		**9-12**
Synthesis and processing		
Characterization		
Structure-property relationships		
MS 900	Seminar (two semesters)	2
Select five additional courses with at least 12 total credits at the 900 level (including those courses taken at the master's level)		15-20

Other courses that may count as electives in the Materials Science Program are taught by faculty in chemistry, mechanical engineering, physics, and other departments. For a complete list of these courses, please see the Graduate Student Handbook on the materials science website.

Students who have done graduate work at other schools that included courses similar to those in the Materials Science Program may petition for waivers of UNH degree requirements.

The student will be advanced to candidacy after he or she has completed an M.S. degree or 24 credits of graduate coursework with at least 6 credits at the 900 level and the qualifying examination. The qualifying exam shall consist of two parts. The student must present a written proposal adhering to NSF guidelines, followed by an oral defense of that proposal. In addition, the student must submit a substantive review paper and an oral presentation on that paper. A materials science program faculty committee will determine the subject of the paper. A substantive record of publication in conjunction with an oral presentation at a conference may substitute for the review paper. A materials science program faculty committee will decide whether the previous publication record is substantive. The committee will evaluate the paper, the proposal, and the two oral presentations to determine whether the student is suitably prepared for graduate research at the Ph.D. level. The proposal and paper for the qualifying exam should normally be completed within six months of completing 24 credits of coursework.

Upon the successful completion of the qualifying examination, the student is advanced to candidacy and, upon the recommendation of the graduate coordinator, a doctoral committee is appointed by the dean of the Graduate School. The doctoral committee conducts an annual review of the student's progress, supervises and approves the doctoral dissertation, and administers the final dissertation defense.

Student Learning Outcomes

- Students will satisfy all of the learning outcomes from the Master's program.
- Students will be competent in designing and conducting and experimental or theoretical program.
- Students will be competent in reviewing the literature on a specialized topic and be able to prepare an insightful presentation on this topic.
- Students will be able to prepare archival-level journal publications and present their research at national conferences.
- Students will be well prepared for postgraduate study in materials science, as well as advanced careers at academic, government, and industrial laboratories.

Materials Science (M.S.)

https://ceps.unh.edu/materials-science/program/ms/materials-science

Description

Beginning in the 2023-2024 academic year, the Master or Science in Materials Science 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.

We offer degrees to qualified students interested in interdisciplinary research with an emphasis on the synthesis, characterization and utilization of nanoscale materials. All MSP students learn about the interplay of structure, processing, characterization, and properties of materials with useful applications. Our seventeen faculty members are active collaborators with research and development groups located around the world, and are experienced in managing research projects with practical results. Graduates of our program work in research, engineering and process development positions in a variety of fields.

Requirements

M.S. Degree Requirements

The Master's Thesis Option requires a total of **30 credits**, which include 24 course credits and 6 thesis credits (MS 899 Master's Thesis). At least 6 credits must be at the 900 level.

The Master's Project Option also requires a total of **30 credits**, which includes 27 course credits and 3 master's project credits . The project may be theoretically or experimentally based but will be significantly less intensive than a thesis. The project will be defined and evaluated by the

student's advisor. At least 6 credits of coursework must be at the 900 level. The remaining course requirements are the same as that of the Master's Thesis Option.

Code	Title	Credits
MS 960	Thermodynamics and Kinetics of Materials I	3
MS #961	Thermodynamics and Kinetics of Materials II	3
Select one course each satisfying the following areas:		**9-12**
Synthesis and processing		
Characterization		
Structure-property relationships		
MS 900	Seminar (two semesters)	2
Select one of the following options:		
Thesis Option:		
MS 899	Master's Thesis	
Select one additional elective		
Project Option:		
Master's Project		
Select two additional electives		

Students who have done graduate work at other schools that included courses similar to those in the Materials Science Program may petition for waivers of UNH degree requirements. Other courses that may count as electives in the Materials Science Program are taught by faculty in chemistry, mechanical engineering, physics, and other departments. For a complete list of these courses, please see the Graduate Student Handbook on the materials science website.

Student Learning Outcomes

- Students will understand the nature of the atomic-level structures found in metals, ceramics, polymers and semiconductors.
- Students will learn the principles of diffusion and be competent in solving non-steady state diffusion problems.
- Students will master the concepts of phase transformations and have an in-depth understanding the principles of nucleation and growth and continuous phase transitions.
- Students will be competent at analyzing and deriving phase diagrams.
- Students will obtain in-depth knowledge in the areas of materials characterization and materials processing.
- Students will develop specialized knowledge in structure-property relationships in materials in either metallic materials, polymers, composites or electronic materials.
- Students will be well prepared for further studies in Materials Science or careers in industry or government laboratories.
- Students will be able to present new scientific research findings effectively in both written and oral form.

Mathematics and Statistics (MATH)

Degrees Offered: Ph.D., M.S., M.S.T., Graduate Certificate

This program is offered in Durham.

The mission of the Mathematics and Statistics program is twofold: to prepare students for a variety of exciting and rewarding career opportunities in business, industry, government and the teaching professions; and to advance forefront knowledge in the areas of pure mathematics, applied mathematics, statistics, and mathematics education through world-class cutting-edge research.

The Department of Mathematics and Statistics offers programs leading to a master of science for teachers (M.S.T.) in mathematics, master of science in mathematics, master of science in mathematics with an option in applied mathematics, and a master of science in statistics. Students in the master of science in applied mathematics may choose approved courses in the doctoral program in Integrated Applied Mathematics as part of their MS program.

The department also offers doctor of philosophy programs in mathematics, integrated applied mathematics, statistics, and mathematics education.

In general, the master's degree programs offer the student a high level of preparation for professional employment as well as appropriate preparation for programs leading to the Ph.D. The Ph.D. programs prepare the student primarily for a career in university teaching and research.

The graduate programs have limited enrollment, allowing students to work closely with faculty members in their areas of expertise. Research within the department is currently being conducted in many areas of the mathematical sciences, including: operator theory, Hilbert spaces, geometric function theory, complex analysis, ring theory, commutative algebra, homological algebra, quantum groups, tensor categories, combinatorics, topology, algebraic topology, category theory, nonlinear dynamics and chaos, data compression, chaotic prediction and control, spectral analysis, asymptotic analysis, mathematical control theory, environmental statistics, spatial and spatio-temporal statistics, Bayesian and computational statistics, wavelets in statistics, teaching and learning of K-12 mathematics and statistics, teaching and learning of undergraduate mathematics and statistics, mathematical curriculum and teacher education, and calculus learning.

Additionally, a graduate certificate in industrial statistics is offered.

Admission Requirements

Applicants for the M.S. and Ph.D. degrees in pure mathematics must have completed significant undergraduate coursework in mathematics, preferably in algebra, analysis, and topology.

Applicants for the M.S. with applied mathematics option must have completed significant coursework in analysis or applied analysis.

Applicants for the M.S. in statistics will typically have an undergraduate degree in the mathematical, physical, biological, or social sciences or in engineering. Applicants must have completed mathematical coursework at least through multivariate calculus, and must have knowledge of basic statistics and basic linear algebra at the undergraduate level.

Applicants for the degree of master of science for teachers (M.S.T.) usually possess a background equivalent to at least a minor in mathematics and must have either: completed education courses sufficient for certification, have three years teaching experience, or currently hold a full-time teaching position.

https://ceps.unh.edu/mathematics-statistics

Programs

- Mathematics (Ph.D.) (p. 165)
- Mathematics Education (Ph.D.) (p. 165)

Faculty

See https://ceps.unh.edu/directory/all for faculty.

Mathematics (Ph.D.)

https://ceps.unh.edu/mathematics-statistics/program/phd/mathematics

Description

The Mathematics Ph.D. program provides research opportunities in core mathematics, including operator algebras, algebra, algebraic topology, analysis and complex analysis.

Admission Requirement

Applicants for the M.S. and Ph.D. degrees must have completed significant undergraduate coursework in mathematics, preferably in algebra, analysis, and topology.

Applying

Please visit the Graduate School website for detailed instructions about applying to the program.

Requirements

Students are advanced to candidacy after meeting the following requirements:

Code	Title	Credits
Required Courses		
MATH 951	Algebra I	3
MATH 952	Algebra II	3
MATH 953	Analysis I	3
MATH 954	Analysis II	3
MATH 955	Topology I	3
Total Credits		**15**

Mathematics Ph.D. students must pass written comprehensive examinations in algebra, analysis, topology and an elective subject. Elective subjects include functional analysis, algebraic topology, applied mathematics, statistics, advanced algebra, advanced complex analysis, advanced mathematics education, et al.

Advanced coursework in a minor field (usually within mathematics, but possibly in another area of the mathematical sciences), and a major field (that of the student's intended dissertation work) followed by successfully completion of oral examinations in their minor and major areas.

Experience in teaching equivalent to at least half-time for one year.

Dissertation

Students must complete and submit a dissertation that includes original results in mathematics.

Student Learning Outcomes

- Students possess doctoral-level competence in the three primary areas of topology, algebra and analysis.
- Students possess specific and specialized breadth, beyond basic doctoral-level competence and in addition to the area of their dissertation research.
- With appropriate guidance from faculty member, students produce a research plan and implement it to obtain original results in mathematics suitable for publication.
- Students possess experience in and instructor-of-record responsibility for university-level mathematics instruction through teaching carried out while in the program.

Mathematics Education (Ph.D.)

https://ceps.unh.edu/mathematics-statistics/program/phd/mathematics-education

Description

The program is designed to provide students with depth and breadth in the fields of both mathematics education and mathematics, preparing students for educational and research leadership. The program is designed to advance forefront knowledge in mathematics education.

Admission Requirement

Applicants to the Ph.D. in Mathematics Education degree must have BA or BS from an accredited college or university. Successful candidates typically have a bachelor's degree in mathematics or mathematics education and/or advanced coursework in mathematics.

Applying

Please visit the Graduate School website for detailed instructions about applying to the program.

Requirements

Students are advanced to candidacy after meeting the following requirements:

Code	Title	Credits
Required Courses		
Advanced Coursework in Mathematics		
MATH 951	Algebra I	3
MATH 952	Algebra II	3
MATH 953	Analysis I	3
MATH 954	Analysis II	3
MATH 955	Topology I	3
Advanced Coursework in the Major Field (Mathematics Education)		
MATH 958	Foundations of Math Education	1
MATH 959	Introduction to Research Design in STEM Education	3
MATH 968	Topics in Mathematics Education I (A)	3
MATH 968	Topics in Mathematics Education I (B)	3
MATH 978	Topics in Mathematics Education II (at least two semesters)	6

Two additional courses in research methods (one qualitative, one quantitative), typically:		
EDUC 904	Qualitative Inquiry in Research	4
MATH 835	Statistical Methods for Research	3

Successful completion of written comprehensive examinations in algebra, analysis, mathematics education and an elective subject.

Successful completion of a minor program of study (usually a related one, such as educational psychology or research methodology, but possibly in an area of mathematics) followed by the minor presentation.

Successful completion of a dissertation proposal defense in the major field of mathematics education.

Experience in teaching equivalent to at least half-time for one year typically through assistantship assignments.

Dissertation

Students must complete and submit a dissertation that involves original research in mathematics education.

Student Learning Outcomes

- Demonstrate deep knowledge of graduate level mathematics content: algebra, analysis, topology.
- Demonstrate competency in the minor field of study different from, but related to mathematics education (e.g., mathematics, statistics, linguistics, research methods, other sciences, STEM disciplines).
- Demonstrate the ability to conduct and communicate foundations of mathematics education research, theories of mathematics teaching and learning, and mathematics curriculum.

Statistics (Ph.D.)

https://nextcatalog.unh.edu/graduate/programs-study/mathematics-statistics/statistics-phd/

Description

The Ph.D. in statistics is a flexible program of coursework and research that meshes the faculty's expertise with the students' interests. Current faculty expertise are in Design of Experiments, Nonparametric Function Estimation, Model Selection, Time Series Analysis, Spatial Statistics, Bayesian Statistics, Data Mining and Large Data. Doctoral dissertations range from theoretical to applied. Interdisciplinary research is encouraged. Ph.D. students frequently work as research assistants in interdisciplinary studies, and also engage in statistical consulting.

Admission Requirement

Applicants must have completed significant undergraduate coursework in mathematics and Statistics, including basic Statistics (for example, design of experiments), the standard Calculus sequence, and Linear Algebra.

Applying

Please visit the Graduate School website for detailed instructions about applying to the doctoral program.

Requirements

Degree Requirements

Students are advanced to candidacy after meeting the following requirements:

Code	Title	Credits
Required Courses		
MATH 836	Advanced Statistical Modeling	3
MATH 839	Applied Regression Analysis	3
MATH 840	Design of Experiments I	3
MATH 855	Probability with Applications	3
MATH 856	Principles of Statistical Inference	3
Advanced Coursework in Statistics		
MATH 945	Advanced Theory of Statistics I	3
MATH 946	Advanced Theory of Statistics II	3
Select four courses from the following:		12
MATH 837	Statistical Methods for Quality Improvement and Design	
MATH 838	Data Mining and Predictive Analytics	
MATH 841	Survival Analysis	
MATH 843	Time Series Analysis	
MATH 844	Design of Experiments II	
MATH 941	Bayesian and Computational Statistics	
MATH 944	Spatial Statistics	
MATH 979	Research Topics in Statistics [1]	
Minor Coursework		
Select one of the following analysis courses:		3
MATH 867	One-Dimensional Real Analysis	
MATH 953	Analysis I	
Select two courses in a focused minor area, selected in consultation with the program advisor.		6
Total Credits		**42**

[1] MATH 979 Research Topics in Statistics is a topics course and may be repeated barring duplication of topic.

Successful completion of written qualifying examinations in theory of statistics and in applied statistics.

Successful completion of a comprehensive exam in advanced theory of statistics.

Successful completion of a dissertation proposal defense in the major field of statistics.

Dissertation

Doctor of Philosophy in Statistics: A dissertation that includes original research in statistics.

Student Learning Outcomes

- Demonstrate deep knowledge of the theoretical foundations of statistics at the advanced level.
- Conduct research that contributes to the development of statistical theory and methods.
- Demonstrate competency in a broad array of advanced statistical methodologies, including skill in statistical computing for analysis and simulation.
- Demonstrate familiarity with at least one scientific area of investigation that crucially depends on statistical methodology.

Mathematics (M.S.)

https://ceps.unh.edu/mathematics-statistics/program/ms/mathematics

Description

The mission of the Mathematics and Statistics program is twofold: to prepare students for a variety of exciting and rewarding career opportunities in business, industry, government and the teaching professions; and to provide deep and significant exposure to the mathematical sciences.

Admission Requirement

Applicants for the M.S. and Ph.D. degrees must have completed significant undergraduate coursework in mathematics, preferably in algebra, analysis, and topology.

Requirements

M.S. Degree Requirements

This program requires **30 credit hours**, consisting of at least 10 semester courses approved by the department and chosen from MATH courses numbered MATH 801- MATH #899, MATH 931-MATH 978 and IAM courses IAM 830-IAM 962. The following stipulations apply:

- At least five of the 10 courses must be chosen from MATH 931-MATH 978 or from 900-level IAM courses.
- At least three courses must be chosen from MATH 931-MATH 955.
- Courses in MATH 900 through MATH 929 may not be used to satisfy course requirements.
- With approval of the graduate committee, two non-MATH graduate--level courses taken at UNH may be used to satisfy course requirements.

As a concluding experience the student will take a two-hour oral examination in the three areas of analysis, algebra and topology. The student proposes the membership of the examining committee for the approval of the Graduate Program Committee.

Student Learning Outcomes

- Students possess advanced competence in three basic branches of mathematics, topology, algebra and analysis, comprising both content knowledge and the ability to reason with and communicate such knowledge.
- Students possess significant exposure to graduate level content in the broader mathematical sciences.
- Students possess significant depth of graduate-level knowledge in some area(s) of mathematics.

Mathematics: Applied Mathematics (M.S.)

https://ceps.unh.edu/mathematics-statistics/program/ms/applied-mathematics

Description

The MS in Applied Mathematics provides a broad introduction to modern applied mathematics and the opportunity to apply the curriculum in a wide range of application areas.

Admission Requirements

Applicants must have completed significant coursework in pure or applied mathematics, preferably including numerical analysis, differential equations, real analysis, and complex analysis.

Applying

Please visit the Graduate School website for detailed instructions about applying to the master's program.

Requirements

APPLIED MATHEMATICS OPTION

This program requires **30 credit hours**.

Code	Title	Credits
MATH 931	Mathematical Physics	3
IAM 933	Applied Functional Analysis	3
Select an approved two-course sequence in applied mathematics, such as:		**6**
IAM 961 & IAM 962	Numerical Analysis I: Numerical Linear Algebra and Numerical Partial Differential Equations	
Select one of the following:		**18**
Thesis Option:		
MATH #899	Master's Thesis (6 credits)	
Four elective courses, selected with your adviser		
Project Option:		
MATH 898	Master's Project (3 credits)	
Five elective courses, selected with your adviser		
Total Credits		**30**

The elective courses need not be in mathematics, but must be at the 800 level or higher, and at least one must be a technical course in statistics or some other department. The broad elective flexibility allows the student's application interests to have a substantial role in the content of the program.

The student's full program plan must be proposed in writing to the applied mathematics faculty and approved prior to the student's second semester of study. There is no comprehensive examination in this option.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Students possess advanced competence in three basic branches of mathematics -- topology, algebra and analysis -- comprising both content knowledge and the ability to reason with and communicate such knowledge.
- Students possess significant exposure to graduate level content in the broader mathematical sciences.
- Students possess significant depth of graduate-level knowledge in some area(s) of mathematics.

Mathematics (M.S.T.)

https://ceps.unh.edu/mathematics-statistics/program/mst/mathematics

Description

Beginning in the 2023-2024 academic year, the Master or Science for Teachers program in Mathematics 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.

The Master of Science for Teachers program in Mathematics is designed to enable teachers to:

- deepen and broaden their mathematics background in core areas of geometry, algebra, and analysis
- explore new content areas of mathematics
- interact with supportive faculty and students in small classes
- share ideas and teaching approaches with teachers from different areas of the country and of the world
- consider perspectives which allow them to help their own students learn mathematics more effectively
- participate in workshops and seminars to extend their knowledge of mathematics and to promote innovative teaching

The program features a strong emphasis on mathematics content, while also providing opportunities for teachers to consider alternative approaches to pedagogy. The program is typically completed in three summers and is designed primarily for experienced teachers of secondary school mathematics.

Admission Requirement

Applicants for the degree of master of science for teachers (M.S.T.) in mathematics usually possess a background equivalent to at least a minor in mathematics and must have completed education courses sufficient for certification, or have three years teaching experience, or currently hold a full-time teaching position.

Applying

Please visit the Graduate School website for detailed instructions about applying to the MST program.

Requirements

M.S.T. Degree Requirements

The program requires **30 credit hours** of coursework, as outlined below:

Code	Title	Credits
MATH 900	Bridges from the Classroom to Mathematics	1
MATH 905	Euclidean and non-Euclidean Geometries from a Synthetic Perspective	3
MATH 906	Analytic and Transformational Geometry	3
MATH #909	Probability and Statistics for Teachers	3
MATH 913	Graph Theory and Topics in Discrete Mathematics	3
MATH 915	Algebraic Structures	3
MATH 918	Analysis of Real Numbers	3
MATH 925	Problem Solving Seminar	3
Select at least eight additional credit hours from courses numbered MATH 900-MATH 929		8
Total Credits		**30**

In addition, a concluding experience consisting of a mathematics portfolio and a comprehensive problem set is required.

Student Learning Outcomes

- Demonstrate a deep and broad understanding of graduate level mathematics appropriate for teachers in the core areas of geometry, algebra and analysis.
- Possess specialized breadth in additional areas of mathematics beyond the core areas.
- Demonstrate the ability to make connections between areas of mathematics and between the mathematics they are learning and the mathematics they are teaching.

Statistics (M.S.)

https://ceps.unh.edu/mathematics-statistics/program/ms/statistics

Description

The statistics M.S. consists of graduate-level training in classical and modern methods of statistical analysis and provides a solid background in the foundations and application of these tools. With the number of jobs in data science and related technology fields growing exponentially, you'll be well equipped for a range of positions drawing on your statistical modeling and computing skills.

Admission Requirement

Applicants for the M.S. in statistics will typically have an undergraduate degree in the mathematical, physical, biological, or social sciences or in engineering# must have completed mathematical coursework at least through multivariate calculus# and must have knowledge of basic statistics and basic linear algebra at the undergraduate level.

Applying

Please visit the Graduate School website for detailed instructions about applying to the master's program.

Requirements

Degree Requirements

This program requires **30 credit hours**, consisting of at least ten semester courses approved by the department, which includes completion of a project (MATH 898) consisting of a substantial application of statistical methodology to a real problem. Most of the courses will be taken from the department's statistics courses in the range MATH 836-MATH 979 and must include all of the following unless

some of these or equivalent courses were taken prior to enrollment in the program:

Code	Title	Credits
MATH 839	Applied Regression Analysis	3
MATH 840	Design of Experiments I	3
MATH 855	Probability with Applications	3
MATH 856	Principles of Statistical Inference	3

At most, three of the required ten courses may also be taken from the department's approved non-statistics courses and/or approved courses offered in other departments.

For the Master's Project (MATH 898) , the student is required to seek out a faculty member who can serve as project adviser for research and application in an area of mutual interest. Typically this should be done prior to the start of the semester of enrollment in MATH 898. The project concludes with a written report and a public oral presentation. A master's committee of at least two statistics faculty members oversees the student's progress.

MATH 898 may be taken for 3 to 6 credits, depending on the level and amount of research and methodological development required for project completion# the appropriate number of credits is determined by the statistics faculty.

There is no comprehensive examination in this option.

Student Learning Outcomes

- Communicate the theoretical foundations of modern statistical methods to diverse audiences.
- Demonstrate competency in a broad array of statistical methodologies.
- Select, apply, and assess the validity of statistical models and procedures in a variety of situations.
- Demonstrate skill in using computational tools including appropriate use of software to solve practical statistics problems.

Industrial Statistics (Graduate Certificate)

https://ceps.unh.edu/mathematics-statistics/program/certificate/industrial-statistics

Description

The Department of Mathematics and Statistics offers a graduate certificate in the area of industrial statistics. This program is primarily designed to help professionals in manufacturing and service industries to improve their expertise in statistical design of studies, and statistical and analytical methodology for decision making, planning, and quality improvement.

Admissions Requirement

Individuals holding a bachelor's degree are eligible to apply for admission to a graduate certificate program.

Applying

Please visit the Graduate School website for detailed instructions about applying to the certificate program.

Requirements

Certificate Requirements

A graduate certificate in industrial statistics is awarded for completion of four courses as follows:

Code	Title	Credits
Required Courses		
Select three of the following:		9
MATH 836	Advanced Statistical Modeling	
MATH 837	Statistical Methods for Quality Improvement and Design	
MATH 839	Applied Regression Analysis	
MATH 840	Design of Experiments I	
Electives		
Select one of the following:		3
MATH 841	Survival Analysis	
MATH 843	Time Series Analysis	
MATH 844	Design of Experiments II	
MATH 855	Probability with Applications	
MATH 941	Bayesian and Computational Statistics	
MATH 944	Spatial Statistics	
Any other special topics course in the area of industrial statistics. Other special topics courses are occasionally offered and may be added to the list of elective courses		
Total Credits		**12**

Note that all of these have as a prerequisite an introductory statistics course, such as MATH 835 Statistical Methods for Research.

Mechanical Engineering (ME)

Degrees Offered: Ph.D., M.Eng., M.S.

This program is offered in Durham.

The Department of Mechanical Engineering offers degree programs at both the master's and doctoral levels.

The Department of Mechanical Engineering offers studies leading to specialization in the following six concentrations:

- *Fluid Dynamics and Thermal science*
- *Solid Mechanics*
- *Materials Science*
- *Design and Manufacturing*
- *Dynamic Systems and Control*
- *Ocean Engineering*

Admission Requirements

A bachelor of science degree in mechanical engineering is normally required for admission to the graduate program in mechanical engineering. Students from other disciplines may also be admitted to the program. However, in order to be properly prepared for graduate-level coursework, these students must have taken the equivalent of the UNH mechanical engineering undergraduate core courses listed below. Students who are deficient in three or fewer courses may be admitted to the department on a provisional basis. Students who are deficient in more than three courses must apply and enroll as an undergraduate student until they meet the core course requirement. It is department policy

that engineering courses taken as part of an engineering technology program are generally not considered equivalent to any of the courses listed below. The decision on equivalence for any courses taken at an institution other than UNH is at the discretion of the Graduate Committee of the Mechanical Engineering Department.

Applicants must submit current scores (within five years) from the general test of the Graduate Record Examination (GRE).

Core courses required for admission to the M.S. in mechanical engineering degree program:

Code	Title	Credits
Mathematics and Physics Courses		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 528	Multidimensional Calculus	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
Mechanics Courses		
ME 525	Statics	4
ME 526	Mechanics of Materials	3
ME 627	Dynamics	3
ME 643	Machine Design	3
Thermal Sciences Courses		
ME 503	Thermodynamics	3
ME 608	Fluid Dynamics	3
ME 603	Heat Transfer	3
Other Courses		
ME 561	Introduction to Materials Science	4
ME 670	Systems Modeling, Simulation, and Control	4
ECE 537	Introduction to Electrical Engineering	4

https://ceps.unh.edu/mechanical-engineering

Programs

- Mechanical Engineering (Ph.D.) (p. 170)
- Mechanical Engineering (M.Eng.) (p. 171)
- Mechanical Engineering (M.S.) (p. 171)

Faculty

See https://ceps.unh.edu/directory/all for department faculty list.

Mechanical Engineering (Ph.D.)

https://ceps.unh.edu/mechanical-engineering/program/phd/mechanical-engineering

Description

The Department of Mechanical Engineering offers studies leading to specialization in the following six concentrations:

- *Fluid Dynamics and Thermal science*
- *Solid Mechanics*
- *Materials Science*
- *Design and Manufacturing*
- *Dynamic Systems and Control*
- *Ocean Engineering*

Requirements

Following admission into the program, a temporary research advisor and a guidance committee consisting of three professors including the research advisor are appointed for the student by the graduate coordinator. The student's research advisor assists in outlining the student's course of study and may specify individual coursework requirements.

A student entering with a B.S. degree must successfully complete at least twelve 3- or 4-credit courses with five at the 900 level. Students entering with an M.S. degree in engineering are required to take a minimum of five 3- or 4-credit courses with three at the 900 level. This course requirement represents the department's minimum for any Ph.D. student. Students normally take more than the required number. A “B” average (3.00 GPA) with no grade below “B--” is required in all the coursework. No more than 12 credit hours from UNH graduate courses (8 credit hours from non--UNH graduate courses) taken prior to admission to the Graduate School may be applied to the doctoral degree. Further course requirements are identified by the student's area of concentration and by the guidance committee. The guidance committee also administers the qualifying examination. Upon successful completion of required coursework and the qualifying examination, the student may advance to candidacy. A doctoral committee may be appointed once candidacy has been attained. The committee needs to be composed of a minimum of five members, usually three from a student's major department and two from related departments.

Each Ph.D. candidate must conduct research of sufficient originality and significance to warrant the awarding of the Ph.D. degree. The final examination (oral defense) is the defense of the student's dissertation. This will be scheduled in accordance with the Graduate School rules. The candidate will be informed of the results of the defense by the dissertation chair.

All full-time graduate students are required to attend a weekly Mechanical Engineering Graduate Seminar and make one presentation per year.

Student Learning Outcomes

- A deep understanding of at least one core area of Mechanical engineering (e.g., solid mechanics and mechanics of materials, fluid mechanics and thermal science, systems and controls, ocean engineering. [MS/PhD]
- A broader understanding of at 1-2 areas of Mechanical Engineering that are different from the area of research of the student's thesis. [MS/PhD]
- Ability to think critically and creatively in defining research questions and to outline strategies of inquiry. [MS/PhD]
- Ability to document research outcomes comprehensively for publication. [MS/PhD]
- Ability to communicate research results to scientific audience in conferences. [PhD]
- Ability to work collaboratively with other peers. [MS/PhD]

Mechanical Engineering (M.Eng.)

https://ceps.unh.edu/mechanical-engineering/program/meng/mechanical-engineering

Description

The Department of Mechanical Engineering offers a master of engineering degree. The department offers studies leading to specialization in the following six concentrations:

- *Fluid Dynamics and Thermal science*
- *Solid Mechanics*
- *Materials Science*
- *Design and Manufacturing*
- *Dynamic Systems and Control*
- *Ocean Engineering*

Requirements

Code	Title	Credits
Degree Requirements		
Select 28 credit hours of course work [1]		28
ME 992	Master's Project [2]	4
Total Credits		**32**

1. Two 900-level courses of at least 3 credits each must be taken in addition to ME 992 Master's Project.
2. Individuals who can demonstrate accomplishments from professional engineering experience comparable to that expected from a master's project may petition the department to substitute an additional 900-level course for the ME 992 Master's Project requirement.

A “B” average (3.00 GPA) with no grade below “B--” is required in all the coursework. No more than 12 credit hours from UNH graduate courses (8 credit hours from non-UNH graduate courses) taken prior to admission to the Graduate School may be applied to the master's degree. A written report and an oral presentation of the project are required. The format of the project report is determined by the candidate’s research adviser. Master of Engineering students are usually not eligible for a research or teaching assistantship.

All full-time graduate students are required to attend a weekly Mechanical Engineering Graduate Seminar and make one presentation per year.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- An ability to gain in a specific focus area of mechanical engineering.
- An ability to apply principles of mathematics, science, and engineering in a variety of contexts.
- An ability to use the techniques, skills, and tools necessary for science and engineering practice.
- An ability to design and conduct experiments, as well as to analyze and interpret data.

Mechanical Engineering (M.S.)

https://ceps.unh.edu/mechanical-engineering/program/ms/mechanical-engineering

Description

The Department of Mechanical Engineering offers a master of science degree. The department offers studies leading to specialization in the following six concentrations:

- *Fluid Dynamics and Thermal science*
- *Solid Mechanics*
- *Materials Science*
- *Design and Manufacturing*
- *Dynamic Systems and Control*
- *Ocean Engineering*

Requirements

Code	Title	Credits
Degree Requirements		
Select 24 credit hours of course work [1]		24
ME 899	Master's Thesis	8
Total Credits		**32**

1. The coursework must include at least two 900-level courses (3 or more credits each).

All full-time graduate students are required to attend a weekly Mechanical Engineering Graduate Seminar and make one presentation per year.

A “B” average (3.00 GPA) with no grade below “B--” is required in all the coursework. No more than 12 credit hours from UNH graduate courses (8 credit hours from non--UNH graduate courses) taken prior to admission to the Graduate School may be applied to the master’s degree.

Note: An oral examination (thesis defense) covering the candidate's graduate work is conducted and a thesis is prepared in accordance with the Graduate School rules.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- A deep understanding of at least one core area of Mechanical engineering (e.g., solid mechanics and mechanics of materials, fluid mechanics and thermal science, systems and controls, ocean engineering. [MS/PhD]
- A broader understanding of at 1-2 areas of Mechanical Engineering that are different from the area of research of the student's thesis. [MS/PhD]
- Ability to think critically and creatively in defining research questions and to outline strategies of inquiry. [MS/PhD]
- Ability to document research outcomes comprehensively for publication. [MS/PhD]
- Ability to communicate research results to scientific audience in conferences. [PhD]
- Ability to work collaboratively with other peers. [MS/PhD]

Microbiology (MICR)

Degrees Offered: Ph.D., M.S.

This program is offered in Durham.

The Department of Molecular, Cellular, and Biomedical Science offers a Doctor of Philosophy (Ph.D.) degree and a Master of Science (M.S.) degree in Microbiology. Graduate students in microbiology are typically supported by teaching or research assistantships, as well as by competitive internal and external fellowship programs. For more information about the program, including admission and degree requirements, please contact the Department of Molecular, Cellular, and Biomedical Sciences at mcbs.dept@unh.edu.

Distinctive Features of the Program

Research opportunities are available in many cutting-edge microbiology research areas. Incoming students have the opportunity for laboratory rotations with Microbiology program faculty in those cases where a thesis advisor has not been identified or where exposure to a variety of experimental approaches is advantageous.

The Graduate Program in Microbiology offers:

- Outstanding research training in a broad range of areas, including: host-microbe interactions, environmental microbiology, microbial ecology, virology, immunology, parasitology, signal transduction, evolution, genetics, epigenetics, and genomics.
- Weekly seminar series that includes both distinguished invited speakers and graduate student research presentations.
- Opportunities to gain teaching and mentoring experiences with undergraduate students in the biological sciences.
- Strong track record for graduates attaining careers in academia, research institutes, biotechnology and pharmaceutical companies, and state and federal governmental agencies.

Admission Requirements

Applicants are expected to have had adequate preparation in the biological and physical sciences. This typically includes general and organic chemistry, physics, one semester of calculus, a year of general biology, a semester or more of biochemistry, and general microbiology. Formal courses in quantitative analysis and statistics are recommended. Applicants with deficiencies in these background courses who are admitted to the program may be required to complete appropriate coursework without graduate credit. Applicants must submit a personal statement and three letters of recommendation. The personal statement should specify the applicant's motivation for pursuing an advanced degree, research interests, and names of potential faculty mentors. Applicants from non--English--speaking countries must submit current TOEFL scores in addition to the items listed above. Each applicant to the graduate program must be sponsored by a Microbiology graduate program faculty. A mutual decision for assignment to a graduate research advisor is expected before the second semester of study.

https://colsa.unh.edu/molecular-cellular-biomedical-sciences

Programs

- Microbiology (Ph.D.) (p. 172)
- Microbiology (M.S.) (p. 174)

Faculty

Please see https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/phd/microbiology#collapse_1816 for faculty.

Microbiology (Ph.D.)

https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/phd/microbiology

Description

The Ph.D. in Microbiology combines a dynamic curriculum in a broad range of areas with interdisciplinary research opportunities at the frontiers of microbiology, host-microbe interactions, and environmental microbiology. Graduates of the program are equipped for leadership positions in biotechnology and pharmaceutical companies, academic and government research laboratories, and successful careers in teaching and research at the college and university level.

Distinctive Features of the Program

- Research opportunities are available in many cutting-edge microbiology research areas
- Emphasis on interdisciplinary research training
- Well-equipped research laboratories and core facilities on the UNH campus
- Laboratory rotations upon entry to the program to become familiar with different research laboratories
- Weekly graduate student seminar presentations, as well as a departmental seminar series of invited speakers
- Opportunities to gain teaching experiences as a Graduate Teaching Assistant

Research Opportunities

- Host-microbe interactions, parasitology, and immunology
- Environmental microbiology
- Signal transduction pathways
- Molecular microbiology
- Genomics and bioinformatics
- Microbial ecology and evolution
- Biotechnology

Financial Support

- Students admitted to the Ph.D. Program are typically supported by Research Assistantships or Teaching Assistantships
- Intramural summer and academic year fellowships are available to students on a competitive basis

Career Prospects

- Research scientists in biotechnology and pharmaceutical industries
- Lab managers in academic research labs and research institutes, state and federal government agencies
- Academic preparation for future teaching and research roles in a college or university environment

Admission Requirements

- Completion of foundational courses in biology, chemistry (including organic chemistry), physics, genetics, and mathematics
  - Otherwise well-qualified applicants can correct academic deficiencies with enrollment in appropriate courses or independent study during the first year of graduate studies
- Applicants from non-English speaking countries must provide Test of English as a Foreign Language (TOEFL) scores
- Three letters of recommendation
- Personal statement, including research interests and names of two or three potential Microbiology faculty thesis advisors.

Requirements

Ph.D. Degree Requirements

Students with appropriate academic training at the baccalaureate or master's level may be considered for admission to the doctoral program. Students admitted to the Ph.D. program are required to conduct an independent research project in conjunction with a Microbiology graduate program faculty adviser. Specific coursework is determined in conjunction with the graduate committee. Advancement to candidacy requires the successful completion of the following:

1. All courses required by the graduate committee
2. A written qualifying exam administered by the graduate program coordinator and graduate faculty
3. An independent research proposal developed in conjunction with a faculty adviser
4. An oral defense of the research proposal

Students enrolled in the doctoral program are required to complete one semester of teaching and successfully complete and defend a dissertation based on their research proposal. The acceptance of the dissertation is contingent on its approval by the doctoral committee and evidence that at least two manuscripts based on the thesis research have been submitted to a peer-reviewed journal appropriate to the topic.

All graduate students are required to enroll in and attend MCBS 997 Seminar each semester and present one seminar each year.

Code	Title	Credits
Approved courses for the Microbiology Ph.D. and M.S. programs:		
Biological Sciences		
BIOL 804	Plant-Microbe Interactions	3
Microbiology		
MICR 805	Immunology	3
MICR 815	Immunology Laboratory	2
Genetics		
GEN 804	Genetics of Prokaryotic Microbes	5
GEN 813	Microbial Ecology and Evolution	4
GEN 817	Molecular Microbiology	5
Natural Resources		
NR 806	Soil Ecology	4
Additional non-disciplinary courses to consider:		
ANFS 933	Design, Analysis, and Interpretation of Experiments	4
BCHM 825	Cell Phenotyping and Tissue Engineering Laboratory	4
BCHM 853	Cell Culture	5
BCHM 854	Molecular Biology Research Methods	5
BIOL 811	Experimental Design & Analysis	4
BIOL 902	Writing and Publishing Science	2
BIOL 950	Scientific Communication	2
GEN 812	Programming for Bioinformatics	5
GRAD 891	National Science Foundation Graduate Research Fellowship Preparation	0
GRAD 930	Ethics in Research and Scholarship	2 or 3
LSA 900	College Teaching	2
MATH 835	Statistical Methods for Research	3
MCBS 901	Introduction to Research in the Life Sciences	2
MCBS 913	Applied Bioinformatics	3
MCBS 910	Cell Signaling Networks Across the Kingdoms	3
MCBS 997	Seminar	1
NR 905	Grant Writing	2
NR 909	Analysis of Ecological Communities and Complex Data	4

Student Learning Outcomes

All MCBS graduates will be able to:

- Critically apply theories, methodologies, and knowledge to address fundamental questions in their primary area of study.
- Pursue research of significance in the discipline or an interdisciplinary or creative project. Students plan and conduct this research or implement this project under the guidance of an advisor while developing the intellectual independence that typifies true scholarship.
- Demonstrate skills in oral and written communication sufficient to publish and present work in their field and to prepare grant proposals.
- Follow the principles of ethics in their field and in academia.
- Demonstrate, through service, the value of their discipline to the academy and community at large.
- Demonstrate a mastery of skills and knowledge at a level required for college and university undergraduate teaching in their discipline and assessment of student learning.
- Interact productively with people from diverse backgrounds as both leaders/mentors and team members with integrity and professionalism.

Graduates of the Microbiology Ph.D degree program will be able to:

- Demonstrate strong foundational knowledge in microbiology theory and practice, and sub-disciplinary and cross-disciplinary knowledge specific to the student's research area.
- Critically analyze and interpretate the primary literature.
- Integrate knowledge by 1) synthesizing research questions and/or hypotheses, 2) designing, executing, and interpretating research and 3) contextualizing their contributions to the field of study.
- Demonstrate competency in laboratory safety, and specialized microbiological methods.
- Promote the importance of science, the discipline of microbiology, and microbes themselves to society by communicating the meaning and value of your scholarship across formal and informal forums.
- Independently construct analytical arguments as demonstrated by the development, execution, defense and publication of a dissertation research project.

Microbiology (M.S.)

https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/ms/microbiology

Description

The M.S. in Microbiology combines a dynamic curriculum in a broad range of areas with interdisciplinary research opportunities at the frontiers of microbiology, host-microbe interactions, and environmental microbiology. Graduates of the program are equipped for successful careers in biotechnology and pharmaceutical companies, academic and government research laboratories, and as preparation for doctoral programs, medical school, and health-related professional programs.

Distinctive Features of the Program

- Research opportunities are available in many cutting edge microbiology research areas
- Emphasis on interdisciplinary research training
- Well-equipped research laboratories and core facilities on the UNH campus
- Laboratory rotations upon entry to the program to become familiar with different research laboratories
- Weekly graduate student seminar presentations, as well as a departmental seminar series of invited speakers
- Opportunities to gain teaching experience as a Graduate Teaching Assistant

Research Opportunities

- Host-microbe interactions, parasitology, and immunology
- Environmental microbiology
- Signal transduction pathways
- Molecular microbiology
- Genomics and bioinformatics
- Microbial ecology and evolution
- Biotechnology

Financial Support

- Students admitted to the M.S. Program are typically supported by Research Assistantships or Teaching Assistantships
- Intramural summer and academic year fellowships are available to students on a competitive basis.

Career Prospects

- Research scientists in biotechnology and pharmaceutical industries
- Lab managers in academic research labs and research institutes, state and federal government agencies
- Academic preparation for doctoral programs and professional health programs (e.g., medical school)

Admission Requirements

- Completion of foundational courses in biology, chemistry (including organic chemistry), physics, and mathematics
  - Otherwise well-qualified applicants can correct academic deficiencies with enrollment in appropriate courses or independent study during the first year of graduate studies
- Applicants from non-English speaking countries must provide Test of English as a Foreign Language (TOEFL) scores
- Three letters of recommendation
- Personal statement, including research interests and names of two or three potential Microbiology faculty thesis advisors.

Requirements

M.S. Degree Requirements

The Department of Molecular, Cellular, and Biomedical Science (MCBS) offers a Master of Science in Microbiology. Students admitted to the M.S. program are required to conduct an independent research project in conjunction with a faculty adviser and must submit a thesis based on this research to a graduate committee, which determines its acceptability. Specific coursework is determined in conjunction with the graduate committee.

A minimum of **30 credits**, including 6-10 thesis credits (MCBS 899 Master's Thesis), and a minimum of two other graduate level courses at the 800 or 900-level in the area of microbiology, are required. All M.S. students are required to enroll in and attend seminar (MCBS 997) every semester and present one seminar each year. A thesis and a formal defense are also required. In addition, the student must submit at least one manuscript for publication to a peer-reviewed journal.

Code	Title	Credits
Approved courses for the Microbiology Ph.D. and M.S. programs:		
Biological Sciences		
BIOL 804	Plant-Microbe Interactions	3
Microbiology		
MICR 805	Immunology	3
MICR 815	Immunology Laboratory	2
Genetics		
GEN 804	Genetics of Prokaryotic Microbes	5
GEN 813	Microbial Ecology and Evolution	4
GEN 817	Molecular Microbiology	5
Natural Resources		
NR 806	Soil Ecology	4
Additional non-disciplinary courses to consider:		
ANFS 933	Design, Analysis, and Interpretation of Experiments	4
BCHM 825	Cell Phenotyping and Tissue Engineering Laboratory	4
BCHM 853	Cell Culture	5

BCHM 854	Molecular Biology Research Methods	5
BIOL 811	Experimental Design & Analysis	4
BIOL 902	Writing and Publishing Science	2
BIOL 950	Scientific Communication	2
GEN 812	Programming for Bioinformatics	5
GRAD 891	National Science Foundation Graduate Research Fellowship Preparation	0
GRAD 930	Ethics in Research and Scholarship	2 or 3
LSA 900	College Teaching	2
MATH 835	Statistical Methods for Research	3
MCBS 901	Introduction to Research in the Life Sciences	2
MCBS 913	Applied Bioinformatics	3
MCBS 910	Cell Signaling Networks Across the Kingdoms	3
MCBS 997	Seminar	1
NR 905	Grant Writing	2
NR 909	Analysis of Ecological Communities and Complex Data	4

Student Learning Outcomes

All MCBS graduates will be able to:

- Critically apply theories, methodologies, and knowledge to address fundamental questions in their primary area of study.
- Pursue research of significance in the discipline or an interdisciplinary or creative project. Students plan and conduct this research or implement this project under the guidance of an advisor while developing the intellectual independence that typifies true scholarship.
- Demonstrate skills in oral and written communication sufficient to publish and present work in their field and to prepare grant proposals.
- Follow the principles of ethics in their field and in academia.
- Demonstrate, through service, the value of their discipline to the academy and community at large.
- Demonstrate a mastery of skills and knowledge at a level required for college and university undergraduate teaching in their discipline and assessment of student learning.
- Interact productively with people from diverse backgrounds as both leaders/mentors and team members with integrity and professionalism.

Graduates of the Microbiology M.S. degree program will be able to:

- Demonstrate strong foundational knowledge in microbiology theory and practice, and sub-disciplinary and cross-disciplinary knowledge specific to the student's research area.
- Critically analyze and interpretate the primary literature.
- Integrate knowledge by 1) synthesizing research questions and/or hypotheses, 2) designing, executing, and interpretating research and 3) contextualizing their contributions to the field of study.
- Demonstrate competency in laboratory safety, and specialized microbiological methods.
- Promote the importance of science, the discipline of microbiology, and microbes themselves to society by communicating the meaning and value of your scholarship across formal and informal forums.

Molecular, Cellular, Biomedical Sciences (MCBS)

Degree Offered: Ph.D., M.S.

Programs are offered in Durham.

The Department of Molecular, Cellular, and Biomedical Sciences offers a Doctor of Philosophy (Ph.D.) degree in Molecular and Evolutionary Systems Biology (MESB); a Master of Science (M.S.) degree in Bioinformatics; a Master of Science (M.S.) degree in Molecular and Cellular Biotechnology (MCBT); and accelerated master's programs (B.S./M.S.) in Bioinformatics and MCBT. Graduate students in Molecular and Evolutionary Systems Biology are typically supported by teaching or research assistantships, as well as by competitive internal and external fellowship programs. For more information about the program, including admission and degree requirements, please contact the Department of Molecular, Cellular, and Biomedical Sciences at mcbs.dept@unh.edu.

Distinctive Features of the Programs

The overarching goal of the **Ph.D. in Molecular and Evolutionary Systems Biology (MESB)** program is to train a new generation of interdisciplinary researchers with expertise that spans molecular to evolutionary biology.

The Graduate Program in Molecular and Evolutionary Systems Biology offers:

- Outstanding research training in many cutting-edge research areas in molecular and cellular biology, bioinformatics, genetics and genomics, molecular evolution and ecology, neurobiology, and more.
- Weekly seminar series that includes both distinguished invited speakers and graduate student research presentations.
- Opportunities to gain experience teaching and mentoring undergraduate students in the biological sciences.
- A strong track record for graduates attaining successful careers in academia, biomedical research institutes, biotechnology and pharmaceutical companies, and state and federal governmental agencies.

Our professional **M.S. in Bioinformatics** and **M.S. in Molecular and Cellular Biotechnology (MCBT)** programs equip you with the knowledge, skills, abilities, and industry contacts required to take your chosen career in data-rich fields including agriculture and the environment, biotechnology, pharmaceutical, or biomanufacturing industries to the next level.

- Core and elective courses in genetics, biochemistry, molecular and cellular biology of immediate relevance to working professionals.
- Provide students with the specialized knowledge and skills needed to successfully enter or advance their careers in a range of bioscience industries.
- Founded on the existing academic rigor of the thesis-based graduate programs offered in the department.
- Offer experiential learning opportunities in several bioinformatics- and biotechnology-relevant Centers: the Hubbard Center for Genome Studies (HCGS), the University Instrumentation Center (UIC), the Center of Integrated Biomedical and Bioengineering Research (CIBBR), the NH Center for Multiscale Modeling and Manufacturing of Biomaterials (NH BioMade), and the Biomanufacturing Innovation Center (BIC).

Admission Requirements

MESB Ph.D. program applicants should possess a background in basic sciences appropriate for advanced study in the proposed area of specialization (for example, courses in biology, chemistry, organic chemistry, biochemistry, genetics, microbiology and/or physics). The student's committee may require certain undergraduate courses as part of the graduate program if additional competencies would be beneficial

to the student. Applicants must submit a personal statement and three letters of recommendation. The personal statement should specify the applicant's research interests and 2-3 potential faculty mentors by name. International applicants must submit current TOEFL scores in addition to the items listed above.

Bioinformatics M.S. program applicants will be expected to meet the following prerequisites:

- GPA > 3.0 in prior academic programs, and/or strong relevant work experience.
- Required prerequisite courses: introductory biology (two semesters), genetics, organic chemistry.
- Strongly recommended prerequisite courses: genetics, cell biology, math/statistics.
- Demonstration of English proficiency for non-native, English-speaking applicants (i.e., TOEFL score).

Applicants must submit three letters of recommendation, and a personal statement specifying the applicant's professional development and career plan.

Please note that no departmental financial aid (i.e., teaching assistantships or research assistantships) is available to students admitted into this program. Information regarding tuition and fees is located here. Information about other types of financial aid is located here.

MCBT M.S. program applicants will be expected to meet the following prerequisites:

- GPA > 3.0 in prior academic programs, and/or strong relevant work experience.
- Required prerequisite courses: introductory biology (two semesters), genetics, organic chemistry.
- Strongly recommended prerequisite courses: microbiology, cell biology, math/statistics, biochemistry.
- Demonstration of English proficiency for non-native, English-speaking applicants (i.e., TOEFL score).

Applicants must submit three letters of recommendation, and a personal statement specifying the applicant's professional development and career plan.

Please note that no departmental financial aid (i.e., teaching assistantships or research assistantships) is available to students admitted into this program. Information regarding tuition and fees is located here. Information about other types of financial aid is located here.

Accelerated Master's Admission Requirements for UNH Seniors

Accelerated master's admission is designed for highly motivated and qualified UNH students seeking additional training to further their career goals as a researcher in the life sciences. This program is an optimal way for qualified undergraduate students to begin earning graduate credits during their senior year. Students in most programs are able to take up to 12 credits that will count for both undergraduate and graduate credit, allowing them to maximize their time on campus and the return on their educational investment as they seek to increase their marketability after graduation.

Admission to the accelerated master's is highly competitive. Students wishing to pursue this option must have a grade point average greater than 3.2 at the time of application. A faculty advisor must be identified during the junior year and the approval of the advisor must be obtained. Prior to the first semester of the senior year, the student must formally apply to the Graduate School and receive admission to the Accelerated Master's Bioinformatics Graduate Program or the Accelerated Master's MCBT Graduate Program.

https://colsa.unh.edu/molecular-cellular-biomedical-sciences

Programs

- Bioinformatics (M.S.) (p. 176)
- Molecular and Cellular Biotechnology (M.S.) (p. 178)
- Molecular and Evolutionary Systems Biology (Ph.D.) (p. 179)

Faculty

MESB Faculty

MCBT Faculty

Bioinformatics Faculty

Bioinformatics (M.S.)

Description

The Department of Molecular, Cellular, and Biomedical Sciences (MCBS) in the College of Life Sciences and Agriculture (COLSA) offers the professional M.S. in Bioinformatics. This non-thesis degree program addresses the growing workforce and educational needs of the life science industries (including biotechnology, environmental and agricultural sectors). The M.S. in Bioinformatics provides continuing and accessible graduate-level education for individuals from broad socioeconomic backgrounds currently in the workforce, as well as for UNH undergraduate students seeking to enroll in an accelerated Master's program, and to gain enhanced knowledge and specialized skills prior to entering the workforce.

Distinctive Features of the Program

The program is founded on the existing academic rigor of the thesis-based graduate programs offered in MCBS and on the substantial innovative experiential learning opportunities enabled by existing biotechnology-relevant Centers: the Hubbard Center for Genome Studies (HCGS), the University Instrumentation Center (UIC), the Center of Integrated Biomedical and Bioengineering Research (CIBBR), the NH Center for Multiscale Modeling and Manufacturing of Biomaterials (NH BioMade), and the Biomanufacturing Innovation Center (BIC). These resources will enable offering instrumentation training workshops in the following areas: genetic engineering of cells; recombinant protein production and purification; biological mass spectroscopy; nuclear magnetic resonance (NMR) spectroscopy; cell imaging and phenotyping; visualization of macromolecules.

Admission Requirements

A distinguishing feature of the M.S. in Bioinformatics curriculum is its flexibility to accommodate students of diverse backgrounds, and to provide a customized curriculum to meet the career goals that attracted

them to this program. For admission, program applicants will be expected to meet the following prerequisites:
• GPA > 3.0 in prior academic programs, and/or excellent relevant work experience.
• Demonstration of English proficiency for non-native, English-speaking applicants (i.e., TOEFL score).
• Three letters of recommendation
• Personal statement specifying the applicant's professional development and career plan.
• Required prerequisite courses: introductory biology (two semesters), genetics, organic chemistry.
• Strongly recommended prerequisite courses: genetics, cell biology, math/statistics.

Please note that no departmental financial aid (i.e., teaching assistantships or research assistantships) is available to students admitted into this program. Information regarding tuition and fees is located here. Information about other types of financial aid is located here.

Requirements

Completion of the M.S in Bioinformatics requires at least **30 graduate credits** in approved courses, including Core Curriculum courses, Elective courses, and the custom-designed Capstone experience.

Required Core Curriculum

The required core curriculum courses consist of Genomics and Bioinformatics; Programming for Bioinformatics; Design, Analysis, and Interpretation of Experiments; and Applied Bioinformatics. Typically, students will complete the core curriculum courses prior to enrolling in the more advanced offerings. Core requirements may be waived in those instances where the Admissions Committee ascertains that the student already possesses the knowledge and skills provided through these Core Curriculum courses.

Code	Title	Credits
Core Courses		
GEN 811	Genomics and Bioinformatics	0 or 4
GEN 812	Programming for Bioinformatics	5
ANFS 933	Design, Analysis, and Interpretation of Experiments	4
MCBS 913	Applied Bioinformatics	3

Elective courses

In addition to the Core requirements, each student will develop a curriculum plan with the Admissions Committee and their Faculty Advisor that includes elective courses and workshops. Students will be encouraged to select elective courses and a capstone experience that encourage specialization (e.g., protein biochemistry, genetic engineering, cell imaging and phenotyping). Each curriculum plan will be customized to meet the career goals of the student. In addition to approved elective courses, other courses may be incorporated into the curriculum plan to provide breath of training. These courses offered by other academic programs include: bioengineering, biomanufacturing, entrepreneurship and business management, and bioregulatory science (including administrative law, intellectual property, and licensing).

Code	Title	Credits
Electives		
GEN 805	Population Genetics	3
GEN 806	Human Genetics	4
GEN 815	Molecular Evolution	4
GEN 821	Comparative Genomics	4
BMCB 794	Protein Structure and Function	4

Capstone experience (including co-op and internship experiences)

In consultation with the Faculty Advisor and with the approval of the Graduate Program Coordinator, students will design a Capstone experience (up to 6 cr.) that is consistent with their career development plans. The Capstone will typically consist of one of the following: **(a)** a research project in a UNH faculty member's research laboratory (usually the Faculty Advisor); **(b)** an internship experience in an industry setting (including the student's current workplace if applicable); or **(c)** an intentionally designed set of applied training workshops. The preferred scenario for the internship is a partnership between the student's off-site internship supervisor and the UNH Faculty Advisor in which the experiential learning experience has some components performed in the workplace and others on-campus. Two semesters of independent research experience in bioinformatics, including requirement to present at the Graduate Research Conference.

Student Learning Outcomes

All MCBS graduates will be able to:

- Critically apply theories, methodologies, and knowledge to address fundamental questions in their primary area of study.
- Pursue research of significance in the discipline (or an interdisciplinary or creative project). Students plan and conduct this research (or implement their project) under the guidance of an advisor, while developing intellectual independence that typifies true scholarship.
- Demonstrate skills in oral and written communication sufficient to present and publish work in their field, and to prepare grant proposals.
- Follow the principles of ethics in their field, and in academia.
- Demonstrate, through service, the value of their discipline to the academy and community at large.
- Demonstrate a mastery of skills and knowledge at a level required for college and university undergraduate teaching in their discipline and assessment of student learning.
- Interact productively with individuals from diverse backgrounds in the roles of team members, leaders and mentors with integrity and professionalism.

Graduates of the Bioinformatics M.S. program will be able to:

- Identify and/or develop appropriate bioinformatics workflows to address research questions for big data sets in the biological sciences.
- Implement appropriate software tools and statistical analyses packages (including Python, R, and shell scripts), and evaluate the outcomes and performance of these tools.
- Manage large-scale datasets for projects, document workflows, and manage version control in accordance with best practices for ensuring rigor and reproducibility.
- Effectively communicate methodologies and results to project team members, collaborators, and the general public.

Molecular and Cellular Biotechnology (M.S.)

https://colsa.unh.edu/molecular-cellular-biomedical-sciences/molecular-cellular-biotechnology-ms

Description

The Department of Molecular, Cellular, and Biomedical Sciences (MCBS) in the College of Life Sciences and Agriculture (COLSA) offers the professional M.S. in Molecular and Cellular Biotechnology (MCBT). This non-thesis degree program addresses the growing workforce and educational needs of the bioscience industries (including biotechnology, pharmaceutical, biomanufacturing, and medical device companies). The M.S. in MCBT provides continuing and accessible graduate-level education for individuals from broad backgrounds currently in the workforce, as well as for UNH undergraduate students, to gain specialized knowledge and skills prior to entering the workforce.

Distinctive Features of the Program

The program is founded on the existing academic rigor of the thesis-based graduate programs offered in MCBS and on the substantial innovative experiential learning opportunities enabled by existing biotechnology-relevant Centers: the University Instrumentation Center (UIC), the Center of Integrated Biomedical and Bioengineering Research (CIBBR), the NH Center for Multiscale Modeling and Manufacturing of Biomaterials (NH BioMade), and the Biomanufacturing Innovation Center (BIC). These resources will enable offering instrumentation training workshops in the following areas: genetic engineering of cells; recombinant protein production and purification; biological mass spectroscopy; nuclear magnetic resonance (NMR) spectroscopy; cell imaging and phenotyping; visualization of macromolecules.

Admission Requirements

A distinguishing feature of the M.S. in MCBT curriculum is its flexibility to accommodate students of diverse backgrounds, and to provide a customized curriculum to meet the career goals that attracted them to this program. For admission, program applicants will be expected to meet the following prerequisites:

- GPA > 3.0 in prior academic programs, and/or excellent relevant work experience.
- Demonstration of English proficiency for non-native, English-speaking applicants (i.e., TOEFL score).
- Three letters of recommendation
- Personal statement specifying the applicant's professional development and career plan.
- Required prerequisite courses: introductory biology (two semesters), genetics, organic chemistry.
- Strongly recommended prerequisite courses: microbiology, cell biology, math/statistics, biochemistry.

Please note that no departmental financial aid (i.e., teaching assistantships or research assistantships) is available to students admitted into this program. Information regarding tuition and fees is located here. Information about other types of financial aid is located here.

Requirements

Completion of the M.S in MCBT requires at least **30 graduate credits** in approved courses, including Core Curriculum courses, Elective courses, Workshops, and the custom-designed Capstone experience.

Required courses

Students are required to complete the Core Curriculum courses (chosen based on market analysis and additional industry input) to establish graduate-level skill competencies in the areas of protein biochemistry, molecular biology, and cell biology. Core requirements may be waived in those instances where the Admissions Committee ascertains that the student already possesses the knowledge and skills provided through these Core Curriculum courses.

The required core curriculum courses consist of Cell Culture (lecture/lab), Protein Biochemistry (lecture/lab), and Molecular Biology (lecture/lab). Typically, students will complete the core curriculum courses prior to enrolling in the more advanced offerings.

Code	Title	Credits
BCHM 825	Cell Phenotyping and Tissue Engineering Laboratory	4
BCHM 853	Cell Culture	5
BCHM 854	Molecular Biology Research Methods	5
BCHM 855	Protein Biochemistry Laboratory	5

Elective courses

In addition to the Core requirements, each student will develop a curriculum plan with the Admissions Committee and their Faculty Advisor that includes elective courses and workshops. Students will be encouraged to select elective courses and a capstone experience that encourage specialization (e.g., protein biochemistry, genetic engineering, cell imaging and phenotyping). Each curriculum plan will be customized to meet the career goals of the student. In addition to approved elective courses, other courses may be incorporated into the curriculum plan to provide breath of training. These courses offered by other academic programs include: bioengineering, biomanufacturing, entrepreneurship and business management, and bioregulatory science (including administrative law, intellectual property, and licensing).

Code	Title	Credits
General Electives		
ANFS 933	Design, Analysis, and Interpretation of Experiments	4
BCHM 802	Endocrinology	4
BCHM 851	Principles of Biochemistry I	4
BCHM 852	Principles of Biochemistry II	4
BIOL 811	Experimental Design & Analysis	4
BIOL 950	Scientific Communication	2
CHBE 814	Chemical Sensors	4
CHBE 861	Biochemical Engineering	4
CHBE 862	Biomedical Engineering	4
CHBE 866	Biomaterials	4
GRAD 930	Ethics in Research and Scholarship	2 or 3
LGP 971	BioInnovation Research Collaboration and the Law	2
MCBS 895	Special Topics	1-4
MCBS 997	Seminar	1
Cell Biology Electives		
BCHM 863	Biochemistry of Cancer	4
BIOL 805	Molecular and Cellular Neurobiology	4
MICR 805	Immunology	3
Molecular Biology Electives		
GEN 804	Genetics of Prokaryotic Microbes	5

GEN 811	Genomics and Bioinformatics	4
GEN 812	Programming for Bioinformatics	5
GEN 817	Molecular Microbiology	5
GEN 874	Techniques in Plant Genetic Engineering and Biotechnology	4
MCBS 913	Applied Bioinformatics	3
Protein Biochemistry Electives		
BCHM 850	Physical Biochemistry	3
BCHM 860	Pharmacology	4
BCHM 894	Protein Structure and Function	4
MS #910	Macromolecular Characterization	3

Workshops:

Workshops will be offered during the summer, J-term, and—in selected cases—during the academic year. For five prioritized areas, these workshops build from strong in-place MCBT faculty and staff expertise (and infrastructure) that are directly relevant to the biotechnology and pharmaceutical industry: **(1)** Cell Imaging and Phenotyping; **(2)** Cellular Engineering and Analysis of Recombinant Proteins; **(3)** Mass Spectrometry **(4)** Nuclear Magnetic Resonance (NMR) Spectroscopy; and **(5)** Macromolecular Visualization. These workshops will also feature invited participation from regional expert biotech and biopharma colleagues as well as technical specialists from instrument manufacturers, and will typically be developed as one-credit, five-day laboratory immersion experiences on the UNH campus.

Capstone experience (including co-op and internship experiences)

In consultation with the Faculty Advisor and with the approval of the Graduate Program Coordinator, students will design a Capstone experience (up to 10 cr.) that is consistent with their career development plans. The Capstone will typically consist of one of the following: **(a)** a research project in a UNH faculty member's research laboratory (usually the Faculty Advisor); **(b)** an internship/co-op experience in an industry setting (including the student's current workplace if applicable); or **(c)** an intentionally designed set of applied training workshops, as described above. The preferred scenario for the internship is a partnership between the student's off-site internship supervisor and the UNH Faculty Advisor in which the experiential learning experience has some components performed in the workplace and others on-campus.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Accelerated Master's Admission Requirements for UNH Seniors

Accelerated master's admission is designed for highly motivated and qualified UNH students seeking additional training to further their career goals as a researcher in the life sciences. This program is an optimal way for qualified undergraduate students to begin earning graduate credits during their senior year. Students in most programs are able to take up to 12 credits that will count for both undergraduate and graduate credit, allowing them to maximize their time on campus and the return on their educational investment as they seek to increase their marketability after graduation.

Admission to the Accelerated Master's is highly competitive. Students wishing to pursue this option must have a grade point average greater than 3.2 at the time of application. A faculty advisor must be identified during the junior year and the approval of the advisor must be obtained. Prior to the first semester of the senior year, the student must formally apply to the Graduate School and receive admission to the Accelerated Master's MCBT Graduate Program.

Student Learning Outcomes

All MCBS graduates will be able to:

- Critically apply theories, methodologies, and knowledge to address fundamental questions in their primary area of study.
- Pursue research of significance in the discipline (or an interdisciplinary or creative project). Students plan and conduct this research (or implement their project) under the guidance of an advisor, while developing intellectual independence that typifies true scholarship.
- Demonstrate skills in oral and written communication sufficient to present and publish work in their field, and to prepare grant proposals.
- Follow the principles of ethics in their field, and in academia.
- Demonstrate, through service, the value of their discipline to the academy and community at large.
- Demonstrate a mastery of skills and knowledge at a level required for college and university undergraduate teaching in their discipline and assessment of student learning.
- Interact productively with individuals from diverse backgrounds in the roles of team members, leaders and mentors with integrity and professionalism.

Graduates of the Molecular and Cellular Biotechnology M.S. degree program will be able to:

- Demonstrate hands-on, broad based technical skills in biotechnology methodology.
- Demonstrate the ability to critically review current scientific literature in biotechnology.
- Demonstrate critical thinking skills to solve problems in biotechnology.
- Demonstrate comprehensive knowledge of biotechnology concepts.
- Demonstrate professional and scientific communication skills in biotechnology settings.

Molecular and Evolutionary Systems Biology (Ph.D.)

https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/phd/molecular-evolutionary-systems-biology

Description

The Ph.D. in Molecular and Evolutionary Systems Biology (MESB) is a coherently-designed doctoral program that promotes interdisciplinary research, deep knowledge in specific disciplines, and technical, professional, and personal skills needed by 21st century scientists

and educators. Graduates of the program are equipped for leadership roles in biotechnology and pharmaceutical companies, academic and government research laboratories, and successful careers in teaching and research at the college and university level.

Distinctive Features of the Program

- Emphasis on interdisciplinary research training including co-mentorship across traditional disciplines
- Innovative graduate curriculum that emphasizes ethical, legal, and social implications of bioscience research
- Well-equipped research laboratories and core facilities on the UNH campus
- Laboratory rotations upon entry to the program to become familiar with different research laboratories
- Weekly graduate student seminar presentations, as well as a departmental seminar series of invited speakers
- Opportunities to gain teaching experience as a Graduate Teaching Assistant

Research Opportunities

- Molecular and cellular biology
- Protein structure, function, and regulation
- Signal transduction pathways
- Molecular evolutionary genomics
- Genomics and bioinformatics
- Microbial ecology and evolution

Financial Support

- Students admitted to the Ph.D. program are typically supported by Research Assistantships or Teaching Assistantships
- Intramural summer and academic year fellowships are available to students on a competitive basis.

Career Prospects

- Research directors in biotechnology and pharmaceutical industries
- Principle investigators in academic research labs and research institutes, or state and federal government agencies
- Research and teaching positions in a college or university environment

Admission Requirements

- Completion of foundational courses in biology, chemistry (including organic chemistry), physics, and mathematics
  - Otherwise well-qualified applicants can correct academic deficiencies with enrollment in appropriate courses or independent study during the first year of graduate studies
- Applicants from non-English speaking countries must provide Test of English as a Foreign Language (TOEFL) scores
- Three letters of recommendation
- Personal statement, including research interests and names of two or three potential MESB faculty thesis advisors.

Requirements

Ph.D. Degree Requirements

Degree requirements for the MESB Ph.D. degree include a series of core courses in scientific communication, applied bioinformatics, and ethical, legal, and social implications of modern biotechnology, as well as a research proposal, qualifying examinations, and the completion of a dissertation.

Research Proposal and Oral Defense: No later than at the conclusion of the second full semester of dissertation research (typically the third semester if rotating), students prepare a succinct synopsis of their thesis project, including citations. The synopsis includes:

1. Background: a summary of problem and general knowledge in the field.
2. Hypotheses, Questions, and Relevance: articulates specific hypotheses, questions to be addressed, and importance of research.
3. Approach: a general description of approaches with caveats, possible problems, alternative approaches, and resources of expertise.
4. Timeline: a general timeline for completion of the work.
5. Communication: potential audiences for the work (meetings, publications).

Students submit this synopsis to their guidance committee who will provide input in a committee meeting, which should take place no later than the end of the third semester. Upon review by the guidance committee, students defend their proposal in an oral examination.

Qualifying Examination: The inter-disciplinarity inherent in the MESB graduate program requires that students integrate their training and research objectives across different fields of inquiry. This integration across fields is intended to foster unique perspectives on persistent questions in biology. To demonstrate the significance of the new perspectives reflected in their research proposals, students must also submit a written qualifying examination. Written qualifying examinations may take the form of a review or synthesis article that emphasizes the integration of the research disciplines of the primary and secondary mentors and the significance of this integration given the proposed research problem. The specific format and outline of the written examination will be determined by the guidance committee. Once complete, the written qualifying examination will be submitted to, and assessed by, the guidance committee on a pass/fail basis.

Advancement to Candidacy: The student is advanced to candidacy after the qualifying examination has been successfully passed and other requirements have been fulfilled.

Student Learning Outcomes

All MCBS graduates will be able to:

- Critically apply theories, methodologies, and knowledge to address fundamental questions in their primary area of study.
- Pursue research of significance in the discipline (or an interdisciplinary or creative project). Students plan and conduct this research (or implement their project) under the guidance of an advisor, while developing intellectual independence that typifies true scholarship.

- Demonstrate skills in oral and written communication sufficient to present and publish work in their field, and to prepare grant proposals.
- Follow the principles of ethics in their field, and in academia.
- Demonstrate, through service, the value of their discipline to the academy and community at large.
- Demonstrate a mastery of skills and knowledge at a level required for college and university undergraduate teaching in their discipline and assessment of student learning.
- Interact productively with all individuals from diverse backgrounds in the roles of team members, leaders and mentors with integrity and professionalism.

Graduates of the Molecular and Evolutionary Systems Biology Ph. D program will be able to:

- Describe general concepts of molecular evolution and systems biology.
- Demonstrate the ability to design, execute, and analyze research in their area of specialization within molecular evolution and systems biology.
- Critically evaluate hypotheses and form conclusions based on the analysis of genomic, and/or other types of biologically derived multivariate datasets.

Music (MUSI)

Degree Offered: M.A.

This program is offered in Durham.

The Department of Music offers programs leading to the degree of master of arts with options in composition, conducting, and musicology. Each program emphasizes a specific core curriculum that is complemented by a range of supportive courses that foster a broad knowledge of music. There is also enough room for electives (nearly a third of the degree) so that each student may tailor coursework to fit his or her personal interests and needs. Graduates have established successful careers in performance, conducting, public school teaching, college teaching, and research. The program also serves as excellent preparation for doctoral study.

Admission Requirements

For each option, a bachelor's degree in music or its equivalent from an accredited institution is required for admission. Graduate Record Exams are not required. Additional requirements for all applicants include:

- An entrance exam in music theory and music history, taken upon completion of your on-line application with the Graduate School. You are required to take the exam on campus or arrange for an instructor at your current institution or similarly qualified person to proctor the exam for you. Please contact the Department of Music graduate coordinator for details.
- A sample of academic writing, preferably on a musical subject, should be submitted to the Department of Music graduate coordinator, either electronically (pdf file via email) or in hard copy. This might be a paper that has been submitted for a course.

Other admission requirements specific to the three degree areas include:

Composition

- Applicants should submit a portfolio of compositions and arrange for an interview with Professor Michael Annicchiarico.

Conducting

- Applicants must perform a live conducting audition with one of the university ensembles. Please contact the director of bands, director of choral activities, or director of orchestral activities for details and to schedule an audition.

Musicology

- A reading knowledge of both German and French is strongly recommended for candidates who intend to continue on for a Ph.D. in musicology.

https://cola.unh.edu/music

Programs

- Music: Composition (M.A.) (p. 181)
- Music: Conducting (M.A.) (p. 182)
- Music: Musicology (M.A.) (p. 183)

Faculty

See https://cola.unh.edu/music/faculty-staff-directory for faculty.

Music: Composition (M.A.)

https://cola.unh.edu/music/program/ma/music-composition

Description

The master of arts in composition option offers the opportunity for in-depth study of music composition. Some graduates of the program will go on to earn a doctoral degree in composition or music theory, while others will seek careers as film and theater composers, sound designers, teachers, and freelance writers. The program is responsive to the individual ambitions of its students to prepare them for their professional careers in the best way possible.

This degree program has final approval from the National Association of Schools of Music.

Requirements

Completion of the program requires a final project in an area of interest. Projects can take several forms (for example, a composition, a composition recital, a lecture recital, a research paper, etc.) and are usually proposed and developed in concert with the graduate studies coordinator and a faculty member who serves as the project adviser. A final oral examination assesses the candidate's ability to apply compositional skills, and/or to describe advanced independent work of particular interest.

All of the Master of Arts in Music options require **30 credit hours** as well as a final project for completion of the degree.

Code	Title	Credits
Concentration		
MUSI 875 & MUSI 876	Composition and Composition	6
MUSI 877	Advanced Composition	3
MUSI 891	Research Seminar	1-4
Supportive Courses in Music		
MUSI 865	Introduction to Bibliography	3
MUSI 894	Theory Seminar	3
MUSI 869	Musicology Seminar [3]	3
Electives [1]		**9**
Select 9 credits from the following:		
MUSI #871	Counterpoint	
Musicology Courses		
MUSI 801	Topics in Music History [3]	
MUSI 813	Art Song	
MUSI #815	Survey of Opera	
Conducting		
MUSI 831	Advanced Instrumental Conducting	
Applied Lessons Courses		
MUSI 845	Graduate Voice	
MUSI #848	Graduate Cello	
MUSI 852	Graduate Clarinet	
MUSI 853	Graduate Saxophone	
MUSI 855	Graduate Bassoon	
MUSI 856	Graduate French Horn	
MUSI #857	Graduate Trumpet	
MUSI #860	Graduate Tuba	
MUSI 861	Graduate Percussion	
Other Courses		
MUSI 895	Special Studies [2]	
MUSI 869	Musicology Seminar	

1 Normally, electives will be chosen only from offerings within the Department of Music. Students wishing to enroll in electives outside the department are permitted to do so in consultation with the Graduate Coordinator for the Department of Music.

2 MUSI 895 Special Studies may be used to enroll in large and studio ensembles for a total of 6 credits.

3 MUSI 869 Musicology Seminar and MUSI 801 Topics in Music History can be repeated for credit.

Concentration and Supportive Courses are required; other electives are possible with the approval of the department.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

General Competencies for All Music MA Programs

- Demonstrate advanced capacities to work independently and make effective artistic and intellectual judgments and professional decisions in the area of specialization by producing a final project or equivalent.
- Demonstrate advanced competence in the area of specialization.

Additional Competencies, M.A. in Composition

- Demonstrate advanced competencies in composition.
- Demonstrate advanced knowledge and skills in one or more related fields of music.
- Complete a faculty approved final project.
- Manage an advanced performance of their original composition.

Music: Conducting (M.A.)

https://cola.unh.edu/music/program/ma/music-conducting

Description

The master of arts in conducting option offers the opportunity for in-depth study of either instrumental or choral conducting. The program is intended for those who wish to improve their skills and knowledge for use in the school classroom or to prepare for doctoral programs in conducting.

This degree program has final approval from the National Association of Schools of Music.

Requirements

Completion of the program requires a conducting recital and/or significant performances with one of the major university ensembles. A comprehensive oral examination will include discussion of the recital music, appropriate score identification, and questions focused on music history, theory, or education, to be determined in consultation with the members of the candidate's oral examination committee.

All of the Master of Arts in Music options require **30 credit hours** as well as a final project for completion of the degree.

Code	Title	Credits
Concentration		
MUSI 831	Advanced Instrumental Conducting (3 semesters)	6
MUED 883	Instrumental Literature and its Performance	3
MUSI 891	Research Seminar	1-4
Supportive Courses in Music		
MUSI 865	Introduction to Bibliography	3
MUSI 894	Theory Seminar	3
MUSI 869	Musicology Seminar	3
Electives [1]		**9**
Select nine credits from the following:		
Techniques and Methods Courses		
MUED 841	Techniques and Methods in Choral Music	
MUED #847	Techniques and Methods in Woodwind Instruments	
MUED 849	Techniques and Methods in Brass Instruments	
MUED #851	Techniques and Methods in Percussion Instruments	
MUED 871	Marching Band Methods	
MUED #865	Instrumental Music Methods	
MUED 895	Special Studies [2]	
Applied Lessons Courses		
MUSI 845	Graduate Voice	
MUSI #848	Graduate Cello	
MUSI 852	Graduate Clarinet	
MUSI 853	Graduate Saxophone	

MUSI 855	Graduate Bassoon
MUSI 856	Graduate French Horn
MUSI #857	Graduate Trumpet
MUSI #860	Graduate Tuba
MUSI 861	Graduate Percussion
Other Courses	
MUSI 869	Musicology Seminar
MUSI 895	Special Studies

1 Normally, electives will be chosen only from offerings within the Department of Music. Students wishing to enroll in electives outside the department are permitted to do so in consultation with the Graduate Coordinator for the Department of Music.
2 MUSI 895 Special Studies may be used to enroll in large and studio ensembles for a total of 6 credits.
3 MUSI 869 Musicology Seminar can be repeated for credit.

Concentration and Supportive Courses are required; other electives are possible with the approval of the department.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

General Competencies for All Music MA Programs

- Demonstrate advanced capacities to work independently and make effective artistic and intellectual judgments and professional decisions in the area of specialization by producing a final project or equivalent.
- Demonstrate advanced competence in the area of specialization.

Additional Competencies, M.A. in Conducting

- Demonstrate advanced competencies in conducting through studies in gestural technique, score analysis, repertoire, and regular conducting experiences with appropriate ensembles.
- Demonstrate engagement with other fields of music outside of conducting.
- Demonstrate professional capability by rehearsing and conducting a concert-length performance or the equivalent.
- Demonstrate the ability to apply critical thinking to music literature and to have in-depth discussions regarding specific works in the repertoire.

Music: Musicology (M.A.)

https://cola.unh.edu/music/program/ma/music-musicology

Description

The Master of Arts in Musicology offers the opportunity for in-depth study of music history, theory, and criticism. The option is valuable to students who wish to augment undergraduate degrees in performance and/or music education with more intensive academic studies. The Department of Music has maintained a long history of excellence in music historical study and performance. Many graduates have gone on to pursue Ph.D.s and D.M.A.s in music. The M.A. in musicology offers enough electives so that students may also pursue advanced study in performance of an instrument or voice if qualified and accepted by an instructor upon a successful audition.

This degree program has final approval from the National Association of Schools of Music.

Requirements

Completion of the program requires a written research project of substantive nature on a topic of the candidate's special interest. An alternative for some students will be a lecture-recital and written essay. Students emphasizing performance are encouraged to present public recitals in addition to the above. A final oral examination assesses the ability to apply critical thinking to music literature and to describe personal advanced independent work of particular interest.

All of the Master of Arts in Music options require **30 credit hours** as well as a final project for completion of the degree.

Code	Title	Credits
Concentration		
MUSI 869	Musicology Seminar [1]	9
MUSI 891	Research Seminar	1-4
Supportive Courses in Music		
MUSI 865	Introduction to Bibliography	3
MUSI 894	Theory Seminar	3
Select 3 credits from		3
MUSI 801	Topics in Music History	
MUSI #815	Survey of Opera	
Electives [2]		**9**
Select nine credits from the following:		
MUSI #871 Counterpoint		
Musicology Courses		
MUSI 801	Topics in Music History [4]	
MUSI 813	Art Song	
MUSI #815	Survey of Opera	
Applied Lessons Courses		
MUSI 845	Graduate Voice	
MUSI #848	Graduate Cello	
MUSI 852	Graduate Clarinet	
MUSI 853	Graduate Saxophone	
MUSI 855	Graduate Bassoon	
MUSI 856	Graduate French Horn	
MUSI #857	Graduate Trumpet	
MUSI #860	Graduate Tuba	
MUSI 861	Graduate Percussion	
MUSI 895	Special Studies [3]	
MUSI 831	Advanced Instrumental Conducting	

1 Enroll in MUSI 869 Musicology Seminar three times, usually with three different instructors.
2 Normally, electives will be chosen only from offerings within the Department of Music. Students wishing to enroll in electives outside

the department are permitted to do so in consultation with the Graduate Coordinator for the Department of Music.

[3] MUSI 895 Special Studies may be used to enroll in large and studio ensembles for a total of 6 credits.

[4] MUSI 801 Topics in Music History can be repeated for credit, each semester with a different topic and/or different instructor.

Concentration and Supportive Courses are required; other electives are possible with approval of department.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

General Competencies for All Music MA Programs

- Demonstrate advanced capacities to work independently and make effective artistic and intellectual judgments and professional decisions in the area of specialization by producing a final project or equivalent.
- Demonstrate advanced competence in the area of specialization.

Additional Competencies: MA in Musicology

- Demonstrate advanced competencies in musicology, theory, and criticism through written work and research papers in graduate-level music history and theory courses.
- Demonstrate appropriate competency in music theory and analysis by using the analytical tools and research concerns in music theory and analysis appropriately in writing and research.
- Demonstrate professional capability in the major area of study by completing a final project that demonstrates advanced competence and intellectual independence in research and writing in musicology.
- Demonstrate the ability to apply critical thinking to music literature and to describe personal advanced independent work of particular interest.

National Security Intelligence Analysis (NSIA)

- National Security Intelligence Analysis (M.S.) (p. 184)

National Security Intelligence Analysis (M.S.)

https://online.unh.edu/program/ms/national-security-intelligence-analysis

Description

Are you interested in using data to provide timely and objective assessment to decision-makers?

Does your curiosity drive you to analyze national security threats and understand their underlying causes – or their solutions?

Have you wondered about what approach is best to analyze a challenging security issue?

If you answered, "Yes!" to any of these questions, then the University of New Hampshire's National Security Intelligence Analysis MS program may be right for you. Government, private-sector, and not-for-profit employers require analysts who have subject-matter knowledge, critical thinking, qualitative, and quantitative (data science) skills that they can apply to domestic and international security problems.

The UNH Master of Science degree in National Security Intelligence Analysis provides the skills necessary to succeed in the government, corporate environment, or not-for-profit sector. The UNH Master of Science degree in National Security Intelligence Analysis (NSIA) is a fully online program designed to be completed in one calendar year, or longer, if part time. NSIA classes will provide you with relevant content and context to become an analyst. Our first academic goal for students is a deep conceptual understanding of the intelligence process, current national security issues, strategies, and policies of the United States and foreign countries. We broadly employ case studies and experiential learning in the curriculum. Our second and third academic goals are critical thinking and methodological training. We give you the tools to analyze threats and understand their underlying issues from the qualitative and quantitative perspectives.

The Master of Science degree in National Security Intelligence Analysis is offered online with two entry points each academic year. Students may choose to enter in August or January each year. Full-time students are able to complete the degree in 12 months by taking 2 classes in each of the 5 terms per calendar year. Part-time students may complete the program in 24 months, taking a minimum of one class per term.

Requirements

Students must complete ten courses (**30 credits**) to graduate. All courses are offered online.

Code	Title	Credits
Required Courses		
NSIA 810	National Security Policy and the Intelligence Community	3
NSIA 820	Intelligence Analysis	3
NSIA 830	National Security Research Design and Methods	3
NSIA 840	National Security Qualitative Research Design and Analysis	3
NSIA 850	Intelligence Analysis Case Studies	3
NSIA 860	Survey Design and Analysis	3
NSIA 870	National Security Quantitative Research Design and Analysis I	3
NSIA 880	Analytical Writing and Briefing Seminar	3
NSIA 890	National Security Quantitative Research Design and Analysis II	3
NSIA 898	Master's Capstone	3
Total Credits		**30**

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

Accelerated Master's students in the NSIA program take two courses as undergraduates:

1. NSIA 810 National Security Policy and the Intelligence Community
2. NSIA 820 Intelligence Analysis

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

There are six primary NSIA academic goals. Students who complete the NSIA program will demonstrate:

- A deep, conceptual understanding of the United States and foreign countries' national security issues, strategies, and policy.
- An advanced understanding of national security intelligence as a phenomenon and the activities of intelligence organizations in the United States and foreign countries.
- Competency in designing and conducting original qualitative and quantitative research.
- The ability to ethically collect, clean, organize, and store data safely and responsibly according to institutional, legal, and professional standards.
- An optimal level of analytical excellence, including critical thinking, both qualitative and quantitative methods, and the mitigation of inherent and induced uncertainty.
- Superior writing, editing, presentation, and organizational skills.

The NSIA program is designed to be interdisciplinary and applied. We designed our program for students who seek a rich understanding of critical thinking and academic empirical research grounded in the social sciences and humanities. There are four organizational education objectives for the NSIA program, as follows:

- Graduates will become leaders in government, the private sector, and not-for-profit sector, addressing the most challenging problems of our times.
- Graduates will produce evidence-based analysis, creating and disseminating new knowledge to support decision-makers.
- Graduates will be motivated to serve in government and civil society.
- Graduates will be lifelong learners, pursuing opportunities to increase their understanding of the world.

Natural Resources (NR)

Degree Offered: M.S., Certificate

This program is offered in Durham.

The Department of Natural Resources and the Environment offers a Master of Science program that provides advanced, research-based study in the ecology, biogeochemistry, economics, policy, and management of vital natural resources, including water, soil, forests, wildlife, and agricultural crops. Students take an interdisciplinary approach to their research and use the tools of the natural and social sciences, including geospatial methods, to make fundamental and significant contributions toward local, regional, and global sustainability.

Students are supported by a highly productive and internationally recognized faculty, outstanding laboratory facilities, and a diversity of accessible terrestrial, marine, and freshwater field sites. Research conducted by faculty and graduate students has resulted in UNH being ranked second of 316 North American institutions in scholarly contributions to the field of ecology.

Possible career trajectories are diverse. Some graduates pursue private sector environmental and social science consulting. Others seek positions in planning, environmental protection, research, or resource management with federal or state agencies (e.g., NOAA, USDA, EPA, NRCS), private industry, or with non-governmental organizations. Graduates from the environmental economics option may also find careers in agribusiness or banking. Graduates may choose to pursue advanced study at the doctoral level.

Students may choose to specify one of six options:

NATURAL RESOURCES: Ecosystem Science

Students in the Ecosystem Science option typically have a strong background in environmental science, earth science, ecology, or related fields. Areas of interest include the ecology, microbiology and biogeochemistry of soils, groundwaters, and surface waters, with an emphasis on how the different components of an ecosystem interact to produce system-level responses to management, global change, and other perturbations. Understanding controls on carbon storage, nutrient transformations, water quality, soil health and greenhouse gas emissions is central to much of the research conducted by students in this option.

Natural Resources: Environmental Conservation and Sustainability

Students in the Environmental Conservation and Sustainability option typically have a BS/BA degree or strong background in environmental and natural resource sciences with a keen interest in combining the natural sciences with the social sciences. Those without this background may be accepted upon completion of some additional fundamental courses. Areas of interest include natural resource policy, conservation biology, sustainability, ecological ethics and values, international environmental affairs, and spatial data analysis (remote sensing and GIS).

Natural Resources: Environmental Economics

Most entering students have a BA/BS in economics or environmental/agricultural economics. Incoming students should have, at a minimum, coursework in intermediate microeconomic theory, econometrics, and calculus. Areas of interest include agricultural economics, community and regional economics, land economics, water economics, and environmental economics.

Natural Resources: Forestry

Students in the Forestry option typically have an undergraduate degree in forestry or natural resource management. These degrees are specifically designed to meet the accreditation standards of a professional society. Those without this background may need to complete some additional coursework as part of their MS program. Areas of interest include forest resource economics and management, biometrics/measurements, forest

health, forest ecosystem dynamics, and spatial data analysis (remote sensing and GIS).

Natural Resources: Wildlife and Conservation Biology

The MS option in Wildlife and Conservation Biology is typically pursued by those with a BS in Wildlife, Biology, Zoology, Environmental Studies, or related field. Research often takes an integrated field-laboratory approach to study population ecology and conservation, community and landscape ecology, conservation biology and genetics, and applied wildlife management issues.

Natural Resources and the Environment

The Natural Resources and the Environment option is available to students whose research interests and program of study do not align well with one of the five discipline-specific options.

Admission Requirements

Prior to submitting an application, applicants should contact one or more graduate faculty advisers to discuss programs and funding, and secure a commitment of a faculty member to serve as graduate adviser.

Applicants are expected to have completed either an undergraduate degree in the field in which they plan to specialize or show adequate preparation in the basic support courses of the field. Students with good undergraduate records who lack a background in a particular field may be admitted to a program, provided they are prepared to correct any deficiencies. All entering students must have taken at least one basic statistics course. Applicants have the option to submit current scores (within five years) from the general test of the Graduate Record Examination (GRE). GRE scores are not required.

Students entering the forestry option may elect to develop concentrations within any of the above-listed areas. Applicants are expected to have backgrounds in forestry or related biological sciences. Students interested in ecosystem science are required to have adequate preparation in chemistry and mathematics as well as biological or Earth sciences. Students interested in wildlife and conservation biology are expected to have adequate preparation in biological sciences, chemistry, and mathematics. Students interested in environmental conservation and sustainability should have a background appropriate for their area of interest. Since environmental conservation and sustainability covers such a broad area, applicants are always reviewed carefully on an individual basis.

Students interested in environmental economics should have a background in both economics and the environment. Four or more undergraduate courses in economics or environmental economics, including intermediate microeconomics and intermediate macroeconomics, are required as well as calculus and statistics.

A Cooperative Doctoral Program

The Department of Natural Resources and the Environment participates in the Natural Resources and Earth System Science Ph.D. Program (NRESS), an interdepartmental degree offered at UNH. For further details on this program, please visit the NRESS program page.

https://colsa.unh.edu/natural-resources-environment

Programs

- Ecological Genomics (Graduate Certificate) (p. 186)
- Natural Resources and the Environment (M.S.) (p. 187)
- Natural Resources: Ecosystem Science (M.S.) (p. 188)
- Natural Resources: Environmental Conservation and Sustainability (M.S.) (p. 189)
- Natural Resources: Environmental Economics (M.S.) (p. 190)
- Natural Resources: Forestry (M.S.) (p. 191)
- Natural Resources: Wildlife and Conservation Biology (M.S.) (p. 192)

Faculty

Please see https://colsa.unh.edu/natural-resources-environment/people for faculty.

Ecological Genomics (Graduate Certificate)

https://colsa.unh.edu/natural-resources-environment/program/graduate-certificate/ecological-genomics

Description

The Graduate Certificate in Ecological Genomics at the University of New Hampshire is an interdisciplinary program to provide graduate level training that spans molecular to ecological scales. Students will be trained to study genome evolution in an ecological context using a systems-based approach, whereby genomic evolution is considered within an integrated system resulting from mechanisms operating across molecular, cellular, organismal, and ecological scales. Students within the program have the opportunity to build their five course certificate from a variety of course options from four broad disciplinary areas and one required seminar course. The flexibility of the program enables students with interdisciplinary interests to complement their current degrees in the life sciences broadly, and it is ideal for students with career interests in both the applied or basic sciences. This unique program also has an inter-institutional option, which affords the possibility for interested students to fulfill one or more of the requirements through offerings at the University of Maine.

Admission Requirement: Students should be enrolled in any graduate degree program in the College of Life Sciences and Agriculture. Otherwise, students must hold a life-science related baccalaureate degree from an accredited college or university, with a minimum GPA of 2.5 (or its equivalent) and achieve a minimum TOEFL score of 80, for those without a degree from an English-speaking institution. Courses taken at other institutions are not eligible to be transferred into the program.

Requirements

Requirements

This program of study requires five courses and a total of at least **13 credits**: one course selected from offerings in each of four disciplinary

areas and a fifth required seminar course. All courses can be completed at the University of New Hampshire, as outlined below. Through a cooperative agreement between the Universities of New Hampshire and Maine, some courses at University of Maine may fulfill one or more of the requirements for this program. In these cases, the University of New Hampshire student will enroll in an appropriate University of New Hampshire special topics course (e.g. NR 995 Investigations) and the content will be delivered remotely via a University of Maine course. Only select courses may be offered in this cross-institutional format. Contact the coordinator of the certificate program to get an up-to-date list of approved University of Maine courses.

Course Offerings and Requirements:

Code	Title	Credits
Genetics and Genomics		
Select one of the following:		
GEN 805	Population Genetics	3
GEN 815	Molecular Evolution	4
GEN 821	Comparative Genomics	4
GEN 872	Evolutionary Genetics of Plants	4
NR 908	Landscape Genetics	3
Cell Biology, Biochemistry, and Physiology		
Select one of the following:		
BCHM 802	Endocrinology	4
BCHM 850	Physical Biochemistry	3
BCHM 851 & BCHM 852	Principles of Biochemistry I and Principles of Biochemistry II	8
BCHM 863	Biochemistry of Cancer	4
BCHM 894	Protein Structure and Function	4
BIOL 801	Plant Physiology	4
BIOL 805	Molecular and Cellular Neurobiology	4
GEN 817	Molecular Microbiology	5
ZOOL 877	Neuroethology: The Neural Basis of Animal Behavior	4
Ecology and Evolution		
Select one of the following:		
BIOL 804	Plant-Microbe Interactions	3
BIOL 820	Plant-Animal Interactions	4
GEN 813	Microbial Ecology and Evolution	4
NR 834	Tropical Ecology	4
NR 965	Community Ecology	4
ZOOL 833	Behavioral Ecology	4
Bioinformatics and Computational Biology		
Select one of the following:		
GEN 811	Genomics and Bioinformatics	0 or 4
GEN 812	Programming for Bioinformatics	5
MCBS 913	Applied Bioinformatics	3

Natural Resources and the Environment (M.S.)

https://colsa.unh.edu/natural-resources-environment/program/ms/natural-resources-environment

Description

The Department of Natural Resources and the Environment offers a Master of Science program that provides advanced, research-based study in the ecology, biogeochemistry, economics, policy, and management of vital natural resources, including water, soil, forests, wildlife, and agricultural crops. Students take an interdisciplinary approach to their research and use the tools of the natural and social sciences, including geospatial methods, to make fundamental and significant contributions toward local, regional, and global sustainability.

Students are supported by a highly productive and internationally recognized faculty, outstanding laboratory facilities, and a diversity of accessible terrestrial, marine, and freshwater field sites. Research conducted by faculty and graduate students has resulted in UNH being ranked second of 316 North American institutions in scholarly contributions to the field of ecology.

Possible career trajectories are diverse. Some graduates pursue private sector environmental and social science consulting. Others seek positions in planning, environmental protection, research, or resource management with federal or state agencies (e.g., NOAA, USDA, EPA, NRCS), private industry, or with non-governmental organizations. Graduates from the environmental economics option may also find careers in agribusiness or banking. Graduates may choose to pursue advanced study at the doctoral level.

Students may choose to specify one of five options:

- Ecosystem Science
- Environmental Conservation and Sustainability
- Environmental Economics
- Forestry
- Wildlife and Conservation Biology

Requirements

Degree Requirements

An M.S. degree is conferred upon successful completion of a program of not less than 30 credits for natural resources and the environment options: forestry, environmental conservation and sustainability, environmental economics, ecosystem science, and wildlife and conservation biology.

Course Requirements or Equivalents

Code	Title	Credits
NR 903	Approach to Research	2
Choose one of the following additional research methods classes:		**2-3**
NR 905	Grant Writing	
BIOL 902	Writing and Publishing Science	
BIOL 950	Scientific Communication	
GRAD 834	Fundamentals of Citizen and Community Science	
Or an alternative with approval from the Graduate Coordinator		
NR 993	Natural and Environmental Resources Seminar	2
NR 996	Natural Resource Education [1]	2
or NR 900	Teaching Assistantship Practicum	
Select one of the following Data Analysis courses: [2]		**3-4**
ANFS 933	Design, Analysis, and Interpretation of Experiments	
BIOL 811	Experimental Design & Analysis	
DATA 800	Introduction to Applied Analytic Statistics	
ECON 926	Econometrics I	
EDUC 904	Qualitative Inquiry in Research	
ESCI 801	Quantitative Methods in Earth Sciences	
MATH 835	Statistical Methods for Research	
MATH 839	Applied Regression Analysis	
MATH 840	Design of Experiments I	
NR 909	Analysis of Ecological Communities and Complex Data	
NR 913	Hierarchical Modeling in Ecology	
PPOL 908	Quantitative Methods for Policy Research	
PSYC 805	Research Methodology and Statistics I	
PSYC 907	Research Methods and Statistics III	

SOC 901	Sociological Methods I: Intermediate Social Statistics	
SOC 903	Sociological Methods III: Advanced Social Statistics	
SOC 904	Sociological Methods IV: Qualitative and Historical Research Methods	
Select one of the following:		
NR 899	Master's Thesis [3]	6
NR 998	Directed Research [4]	4

1 If you are supported on a Teaching Assistantship, you are required to take NR 900 Teaching Assistantship Practicum, during your first semester.

2 Or other alternative with approval from the Graduate Coordinator.

3 The thesis option will provide a research-based thesis that is the foundation for a peer-reviewed publication.

4 The directed research option is a professionally oriented body of work, most often geared to meet the needs of the stakeholder. The project, designed and conducted by the student, will culminate in a scholarly paper or report that is suitable for publication in the respective field of scholarship.

An approved program of study plan is required during the first semester.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Key Learning Objectives:

- Knowledge and skills outcomes to ensure graduates of the MS program have mastered their discipline: demonstrate knowledge of theory and practice, as well as critical thinking skills and creativity, in conducting ecological, economic, and policy assessment of natural resource and environmental issues and developing solutions to environmental problems;
- successfully employ the field, laboratory, data analysis, and social science skills necessary to perform research concerning natural resources and their management;
- design, propose, and execute research addressing fundamental or critical issues in natural resources;
- contribute to scholarship through publication and presentation of research findings using diverse media.

Professional outcomes to ensure graduates of the MS program successfully compete for jobs in the public and private sectors:

- demonstrate mastery of theory and empirical knowledge in their research concentration and, more generally, in the relevant natural and/or social;
- use written and oral skills to communicate effectively with colleagues, stakeholders, and the public;
- integrate theory and practice to analyze, assess, and solve environmental and social problems and answer questions across diverse scales from local to global;
- develop and employ interdisciplinary relationships and approaches to addressing environmental issues;
- interact with professional peers honestly and ethically, and in ways that show cultural sensitivity, inquisitiveness, and propensity for teamwork.

Natural Resources: Ecosystem Science (M.S.)

https://colsa.unh.edu/natural-resources-environment/program/ms/natural-resources-ecosystem-science

Description

NATURAL RESOURCES: ECOSYSTEM SCIENCE

Students in the Ecosystem Science option typically have a strong background in environmental science, earth science, ecology, or related fields. Areas of interest include the ecology, microbiology and biogeochemistry of soils, groundwaters, and surface waters, with an emphasis on how the different components of an ecosystem interact to produce system-level responses to management, global change, and other perturbations. Understanding controls on carbon storage, nutrient transformations, water quality, soil health and greenhouse gas emissions is central to much of the research conducted by students in this option.

Requirements

Degree Requirements

An M.S. degree is conferred upon successful completion of a program of not less than 30 credits for natural resources and the environment options: forestry, environmental conservation and sustainability, environmental economics, ecosystem science, and wildlife and conservation biology.

Course Requirements or Equivalents

Code	Title	Credits
NR 903	Approach to Research	2
Choose one of the following additional research methods classes:		**2-3**
NR 905	Grant Writing	
BIOL 902	Writing and Publishing Science	
BIOL 950	Scientific Communication	
GRAD 834	Fundamentals of Citizen and Community Science	
Or an alternative with approval from the Graduate Coordinator		
NR 993	Natural and Environmental Resources Seminar	2
NR 996	Natural Resource Education [1]	2
or NR 900	Teaching Assistantship Practicum	
Select one of the following Data Analysis courses: [2]		**3-4**
ANFS 933	Design, Analysis, and Interpretation of Experiments	
BIOL 811	Experimental Design & Analysis	
DATA 800	Introduction to Applied Analytic Statistics	
ECON 926	Econometrics I	
EDUC 904	Qualitative Inquiry in Research	
ESCI 801	Quantitative Methods in Earth Sciences	
MATH 835	Statistical Methods for Research	
MATH 839	Applied Regression Analysis	
MATH 840	Design of Experiments I	
NR 909	Analysis of Ecological Communities and Complex Data	

NR 913	Hierarchical Modeling in Ecology	
PPOL 908	Quantitative Methods for Policy Research	
PSYC 805	Research Methodology and Statistics I	
PSYC 907	Research Methods and Statistics III	
SOC 901	Sociological Methods I: Intermediate Social Statistics	
SOC 903	Sociological Methods III: Advanced Social Statistics	
SOC 904	Sociological Methods IV: Qualitative and Historical Research Methods	
Select one of the following:		
NR 899	Master's Thesis [3]	6
NR 998	Directed Research [4]	4

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An approved program of study plan is required during the first semester.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Key Learning Objectives:

- Knowledge and skills outcomes to ensure graduates of the MS program have mastered their discipline: demonstrate knowledge of theory and practice, as well as critical thinking skills and creativity, in conducting ecological, economic, and policy assessment of natural resource and environmental issues and developing solutions to environmental problems;
- successfully employ the field, laboratory, data analysis, and social science skills necessary to perform research concerning natural resources and their management;
- design, propose, and execute research addressing fundamental or critical issues in natural resources;
- contribute to scholarship through publication and presentation of research findings using diverse media.

Professional outcomes to ensure graduates of the MS program successfully compete for jobs in the public and private sectors:

- demonstrate mastery of theory and empirical knowledge in their research concentration and, more generally, in the relevant natural and/or social;
- use written and oral skills to communicate effectively with colleagues, stakeholders, and the public;
- integrate theory and practice to analyze, assess, and solve environmental and social problems and answer questions across diverse scales from local to global;
- develop and employ interdisciplinary relationships and approaches to addressing environmental issues;
- interact with professional peers honestly and ethically, and in ways that show cultural sensitivity, inquisitiveness, and propensity for teamwork.

Natural Resources: Environmental Conservation and Sustainability (M.S.)

https://colsa.unh.edu/natural-resources-environment/program/ms/natural-resources-environmental-conservation-sustainability

Description

NATURAL RESOURCES: ENVIRONMENTAL CONSERVATION AND SUSTAINABILITY

Students in the Environmental Conservation and Sustainability option typically have a BS/BA degree or strong background in environmental and natural resource sciences with a keen interest in combining the natural sciences with the social sciences. Those without this background may be accepted upon completion of some additional fundamental courses. Areas of interest include natural resource policy, conservation biology, sustainability, ecological ethics and values, international environmental affairs, and spatial data analysis (remote sensing and GIS).

Requirements

Degree Requirements

An M.S. degree is conferred upon successful completion of a program of not less than 30 credits for natural resources and the environment options: forestry, environmental conservation and sustainability, environmental economics, ecosystem science, and wildlife and conservation biology.

Course Requirements or Equivalents

Code	Title	Credits
NR 903	Approach to Research	2
Choose one of the following additional research methods classes:		**2-3**
NR 905	Grant Writing	
BIOL 902	Writing and Publishing Science	
BIOL 950	Scientific Communication	
GRAD 834	Fundamentals of Citizen and Community Science	
Or an alternative with approval from the Graduate Coordinator		
NR 993	Natural and Environmental Resources Seminar	2
NR 996	Natural Resource Education [1]	2
or NR 900	Teaching Assistantship Practicum	
Select one of the following Data Analysis courses: [2]		**3-4**
ANFS 933	Design, Analysis, and Interpretation of Experiments	
BIOL 811	Experimental Design & Analysis	
DATA 800	Introduction to Applied Analytic Statistics	
ECON 926	Econometrics I	
EDUC 904	Qualitative Inquiry in Research	
ESCI 801	Quantitative Methods in Earth Sciences	

MATH 835	Statistical Methods for Research	
MATH 839	Applied Regression Analysis	
MATH 840	Design of Experiments I	
NR 909	Analysis of Ecological Communities and Complex Data	
NR 913	Hierarchical Modeling in Ecology	
PPOL 908	Quantitative Methods for Policy Research	
PSYC 805	Research Methodology and Statistics I	
PSYC 907	Research Methods and Statistics III	
SOC 901	Sociological Methods I: Intermediate Social Statistics	
SOC 903	Sociological Methods III: Advanced Social Statistics	
SOC 904	Sociological Methods IV: Qualitative and Historical Research Methods	
Select one of the following:		
NR 899	Master's Thesis [3]	6
NR 998	Directed Research [4]	4

1 If you are supported on a Teaching Assistantship, you are required to take NR 900 Teaching Assistantship Practicum, during your first semester.

2 Or other alternative with approval from the Graduate Coordinator.

3 The thesis option will provide a research-based thesis that is the foundation for a peer-reviewed publication.

4 The directed research option is a professionally oriented body of work, most often geared to meet the needs of the stakeholder. The project, designed and conducted by the student, will culminate in a scholarly paper or report that is suitable for publication in the respective field of scholarship.

An approved program of study plan is required during the first semester.

Environmental Conservation Option Requirements

Code	Title	Credits
Select one of the following Ecology courses:		4
NR 806	Soil Ecology	
NR 830	Terrestrial Ecosystems	
NR 834	Tropical Ecology	
NR 851	Aquatic Ecosystems	
NR 857	Remote Sensing of the Environment	
NR 947	Ecosystem Science: Theory, Practice, and Management Applications for Sustainability	
NR 965	Community Ecology	
MEFB 825	Marine Ecology	

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Key Learning Objectives:

- Knowledge and skills outcomes to ensure graduates of the MS program have mastered their discipline: demonstrate knowledge of theory and practice, as well as critical thinking skills and creativity, in conducting ecological, economic, and policy assessment of natural resource and environmental issues and developing solutions to environmental problems;
- successfully employ the field, laboratory, data analysis, and social science skills necessary to perform research concerning natural resources and their management;
- design, propose, and execute research addressing fundamental or critical issues in natural resources;
- contribute to scholarship through publication and presentation of research findings using diverse media.

Professional outcomes to ensure graduates of the MS program successfully compete for jobs in the public and private sectors:

- demonstrate mastery of theory and empirical knowledge in their research concentration and, more generally, in the relevant natural and/or social;
- use written and oral skills to communicate effectively with colleagues, stakeholders, and the public;
- integrate theory and practice to analyze, assess, and solve environmental and social problems and answer questions across diverse scales from local to global;
- develop and employ interdisciplinary relationships and approaches to addressing environmental issues;
- interact with professional peers honestly and ethically, and in ways that show cultural sensitivity, inquisitiveness, and propensity for teamwork.

Natural Resources: Environmental Economics (M.S.)

https://colsa.unh.edu/natural-resources-environment/program/ms/natural-resources-environmental-economics

Description

NATURAL RESOURCES: ENVIRONMENTAL ECONOMICS

Most entering students have a BA/BS in economics or environmental/agricultural economics. Incoming students should have, at a minimum, coursework in intermediate microeconomic theory, econometrics, and calculus. Areas of interest include agricultural economics, community and regional economics, land economics, water economics, and environmental economics.

Requirements

Degree Requirements

An M.S. degree is conferred upon successful completion of a program of not less than 30 credits for natural resources and the environment options: forestry, environmental conservation and sustainability, environmental economics, ecosystem science, and wildlife and conservation biology.

Course Requirements or Equivalents

Code	Title	Credits
NR 903	Approach to Research	2
Choose one of the following additional research methods classes:		**2-3**
NR 905	Grant Writing	
BIOL 902	Writing and Publishing Science	

BIOL 950	Scientific Communication	
GRAD 834	Fundamentals of Citizen and Community Science	
Or an alternative with approval from the Graduate Coordinator		
NR 993	Natural and Environmental Resources Seminar	2
NR 996	Natural Resource Education [1]	2
or NR 900	Teaching Assistantship Practicum	
Select one of the following Data Analysis courses: [2]		**3-4**
ANFS 933	Design, Analysis, and Interpretation of Experiments	
BIOL 811	Experimental Design & Analysis	
DATA 800	Introduction to Applied Analytic Statistics	
ECON 926	Econometrics I	
EDUC 904	Qualitative Inquiry in Research	
ESCI 801	Quantitative Methods in Earth Sciences	
MATH 835	Statistical Methods for Research	
MATH 839	Applied Regression Analysis	
MATH 840	Design of Experiments I	
NR 909	Analysis of Ecological Communities and Complex Data	
NR 913	Hierarchical Modeling in Ecology	
PPOL 908	Quantitative Methods for Policy Research	
PSYC 805	Research Methodology and Statistics I	
PSYC 907	Research Methods and Statistics III	
SOC 901	Sociological Methods I: Intermediate Social Statistics	
SOC 903	Sociological Methods III: Advanced Social Statistics	
SOC 904	Sociological Methods IV: Qualitative and Historical Research Methods	
Select one of the following:		
NR 899	Master's Thesis [3]	6
NR 998	Directed Research [4]	4

1 If you are supported on a Teaching Assistantship, you are required to take NR 900 Teaching Assistantship Practicum, during your first semester.

2 Or other alternative with approval from the Graduate Coordinator.

3 The thesis option will provide a research-based thesis that is the foundation for a peer-reviewed publication.

4 The directed research option is a professionally oriented body of work, most often geared to meet the needs of the stakeholder. The project, designed and conducted by the student, will culminate in a scholarly paper or report that is suitable for publication in the respective field of scholarship.

An approved program of study plan is required during the first semester.

Environmental Economics Option Requirements

Code	Title	Credits
ECON 926	Econometrics I	4
ECON 976	Microeconomics I	4

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

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Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Key Learning Objectives:

- Knowledge and skills outcomes to ensure graduates of the MS program have mastered their discipline: demonstrate knowledge of theory and practice, as well as critical thinking skills and creativity, in conducting ecological, economic, and policy assessment of natural resource and environmental issues and developing solutions to environmental problems;
- successfully employ the field, laboratory, data analysis, and social science skills necessary to perform research concerning natural resources and their management;
- design, propose, and execute research addressing fundamental or critical issues in natural resources;
- contribute to scholarship through publication and presentation of research findings using diverse media.

Professional outcomes to ensure graduates of the MS program successfully compete for jobs in the public and private sectors:

- demonstrate mastery of theory and empirical knowledge in their research concentration and, more generally, in the relevant natural and/or social;
- use written and oral skills to communicate effectively with colleagues, stakeholders, and the public;
- integrate theory and practice to analyze, assess, and solve environmental and social problems and answer questions across diverse scales from local to global;
- develop and employ interdisciplinary relationships and approaches to addressing environmental issues;
- interact with professional peers honestly and ethically, and in ways that show cultural sensitivity, inquisitiveness, and propensity for teamwork.

Natural Resources: Forestry (M.S.)

https://colsa.unh.edu/natural-resources-environment/program/ms/natural-resources-forestry

Description

NATURAL RESOURCES: FORESTRY

Students in the Forestry option typically have an undergraduate degree in forestry or natural resource management. Those without this background may need to complete some additional coursework as part of their MS program. Areas of interest include forest resource economics and management, biometrics/measurements, forest health, forest ecosystem dynamics, and spatial data analysis (remote sensing and GIS).

Requirements

Degree Requirements

An M.S. degree is conferred upon successful completion of a program of not less than 30 credits for natural resources and the environment options: forestry, environmental conservation and sustainability, environmental economics, ecosystem science, and wildlife and conservation biology.

Course Requirements or Equivalents

Code	Title	Credits
NR 903	Approach to Research	2
Choose one of the following additional research methods classes:		**2-3**

NR 905	Grant Writing	
BIOL 902	Writing and Publishing Science	
BIOL 950	Scientific Communication	
GRAD 834	Fundamentals of Citizen and Community Science	
Or an alternative with approval from the Graduate Coordinator		
NR 993	Natural and Environmental Resources Seminar	2
NR 996	Natural Resource Education [1]	2
or NR 900	Teaching Assistantship Practicum	
Select one of the following Data Analysis courses: [2]		**3-4**
ANFS 933	Design, Analysis, and Interpretation of Experiments	
BIOL 811	Experimental Design & Analysis	
DATA 800	Introduction to Applied Analytic Statistics	
ECON 926	Econometrics I	
EDUC 904	Qualitative Inquiry in Research	
ESCI 801	Quantitative Methods in Earth Sciences	
MATH 835	Statistical Methods for Research	
MATH 839	Applied Regression Analysis	
MATH 840	Design of Experiments I	
NR 909	Analysis of Ecological Communities and Complex Data	
NR 913	Hierarchical Modeling in Ecology	
PPOL 908	Quantitative Methods for Policy Research	
PSYC 805	Research Methodology and Statistics I	
PSYC 907	Research Methods and Statistics III	
SOC 901	Sociological Methods I: Intermediate Social Statistics	
SOC 903	Sociological Methods III: Advanced Social Statistics	
SOC 904	Sociological Methods IV: Qualitative and Historical Research Methods	
Select one of the following:		
NR 899	Master's Thesis [3]	6
NR 998	Directed Research [4]	4

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An approved program of study plan is required during the first semester.

Accelerated Master's

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Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Key Learning Objectives:

- Knowledge and skills outcomes to ensure graduates of the MS program have mastered their discipline: demonstrate knowledge of theory and practice, as well as critical thinking skills and creativity, in conducting ecological, economic, and policy assessment of natural resource and environmental issues and developing solutions to environmental problems;
- successfully employ the field, laboratory, data analysis, and social science skills necessary to perform research concerning natural resources and their management;
- design, propose, and execute research addressing fundamental or critical issues in natural resources;
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- integrate theory and practice to analyze, assess, and solve environmental and social problems and answer questions across diverse scales from local to global;
- develop and employ interdisciplinary relationships and approaches to addressing environmental issues;
- interact with professional peers honestly and ethically, and in ways that show cultural sensitivity, inquisitiveness, and propensity for teamwork.

Natural Resources: Wildlife and Conservation Biology (M.S.)

https://colsa.unh.edu/natural-resources-environment/program/ms/natural-resources-wildlife-conservation-biology

Description

NATURAL RESOURCES: WILDLIFE AND CONSERVATION BIOLOGY

The MS option in Wildlife and Conservation Biology is typically pursued by those with a BS in Wildlife, Biology, Zoology, Environmental Studies, or related field. Research often takes an integrated field-laboratory approach to study population ecology and conservation, community and landscape ecology, conservation biology and genetics, and applied wildlife management issues.

Requirements

Degree Requirements

An M.S. degree is conferred upon successful completion of a program of not less than 30 credits for natural resources and the environment options: forestry, environmental conservation and sustainability, environmental economics, ecosystem science, and wildlife and conservation biology.

Course Requirements or Equivalents

Code	Title	Credits
NR 903	Approach to Research	2
Choose one of the following additional research methods classes:		**2-3**

NR 905	Grant Writing	
BIOL 902	Writing and Publishing Science	
BIOL 950	Scientific Communication	
GRAD 834	Fundamentals of Citizen and Community Science	
Or an alternative with approval from the Graduate Coordinator		
NR 993	Natural and Environmental Resources Seminar	2
NR 996	Natural Resource Education [1]	2
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Select one of the following Data Analysis courses: [2]		**3-4**
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BIOL 811	Experimental Design & Analysis	
DATA 800	Introduction to Applied Analytic Statistics	
ECON 926	Econometrics I	
EDUC 904	Qualitative Inquiry in Research	
ESCI 801	Quantitative Methods in Earth Sciences	
MATH 835	Statistical Methods for Research	
MATH 839	Applied Regression Analysis	
MATH 840	Design of Experiments I	
NR 909	Analysis of Ecological Communities and Complex Data	
NR 913	Hierarchical Modeling in Ecology	
PPOL 908	Quantitative Methods for Policy Research	
PSYC 805	Research Methodology and Statistics I	
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SOC 901	Sociological Methods I: Intermediate Social Statistics	
SOC 903	Sociological Methods III: Advanced Social Statistics	
SOC 904	Sociological Methods IV: Qualitative and Historical Research Methods	
Select one of the following:		
NR 899	Master's Thesis [3]	6
NR 998	Directed Research [4]	4

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Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Key Learning Objectives:

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- successfully employ the field, laboratory, data analysis, and social science skills necessary to perform research concerning natural resources and their management;
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- use written and oral skills to communicate effectively with colleagues, stakeholders, and the public;
- integrate theory and practice to analyze, assess, and solve environmental and social problems and answer questions across diverse scales from local to global;
- develop and employ interdisciplinary relationships and approaches to addressing environmental issues;
- interact with professional peers honestly and ethically, and in ways that show cultural sensitivity, inquisitiveness, and propensity for teamwork.

Natural Resources and Earth Systems Science (NRES)

Degree Offered: Ph.D.

This program is offered in Durham.

The graduate program in Natural Resources and Earth Systems Science (NRESS) is an interdepartmental program offering the Ph.D. degree for interdisciplinary work in areas related to the understanding and management of the environment in the broadest context. Areas of study include, but are not limited to, ecosystem science, biogeochemical cycling, geochemical systems, atmospheric science, environmental philosophy, forestry, geologic science, hydrology, marine science, oceanography, social science, environmental policy and ethics, environmental education, and multidisciplinary natural resources management.

The NRESS Ph.D. program offers two degrees:

Ph.D. in Natural Resources and Environmental Studies (NRES)

Students in NRES focus on problems dealing with the allocation and distribution of natural resources, policies at the local to global scale, and ethical and societal factors that affect resource management. Students receiving the Ph.D. degree in NRES will typically have a bachelor's and/or master's degree in economics, environmental conservation, philosophy, political science, or sociology.

Ph.D. in Earth and Environmental Sciences (EES)

Students in EES focus on problems dealing with the physical, chemical, and/or biological processes that affect earth and environmental systems. Students receiving the Ph.D. degree in EES will typically have a bachelor's

and/or master's degree in biology, ecology, environmental science, geology, hydrology, or microbiology.

Admission Requirements

Applicants to the NRESS Program come from a wide range of undergraduate majors and master's degree concentrations. Individuals are admitted based on the quality of their previous work and its relevance to the particular area of study they propose to pursue.

Students are expected to have completed a master's degree before entering the program, although this is not a requirement.

All applicants must identify an adviser before being admitted, and this faculty member must agree to serve as the applicant's adviser. Certain applicants may be admitted with deficiencies identified by their adviser and/or by the executive committee. These deficiencies normally must be corrected in the first year of the program. Applicants are not required to submit GRE test scores (this requirement is optional). Please see the program website for details on applying to the program.

Faculty

The NRESS Ph.D. Program has over 75 UNH faculty members who serve as advisers, mentors and guidance and doctoral committee members for the current 56-60 NRESS students. NRESS faculty request appointment from across the University, representing all UNH colleges, multiple research groups, departments, schools, and the UNH Cooperative Extension.

Prospective students are strongly encouraged to contact NRESS faculty members directly when seeking a potential adviser for mentoring and possible funding of their doctoral studies. Applicants are required to secure a UNH NRESS adviser to be considered for admission.

https://gradschool.unh.edu/natural-resources-earth-systems-science-phd

Programs

- Earth and Environmental Sciences (Ph.D.) (p. 194)
- Natural Resources and Environmental Studies (Ph.D.) (p. 195)

Faculty

See https://gradschool.unh.edu/natural-resources-earth-systems-science-phd/research/faculty-research for a list of NRESS-designated faculty and their research interests.

Earth and Environmental Sciences (Ph.D.)

https://gradschool.unh.edu/natural-resources-earth-systems-science-phd/program/phd/earth-environmental-sciences

Description

The graduate program in Natural Resources and Earth Systems Science (NRESS) is an interdepartmental program offering the Ph.D. degree for interdisciplinary work in areas related to the understanding and management of the environment in the broadest context. Areas of study include, but are not limited to, ecosystem science, biogeochemical cycling, geochemical systems, atmospheric science, environmental philosophy, forestry, geologic science, hydrology, marine science, oceanography, social science, environmental policy and ethics, environmental education, and multidisciplinary natural resources management.

Earth and Environmental Sciences (EES)

The NRESS Ph.D. in Earth and Environmental Sciences (EES) focuses on problems dealing with the physical, chemical, and/or biological processes that affect earth and environmental systems. Students receiving the Ph.D. degree in EES will typically have a bachelor's and/or master's degree in biology, ecology, environmental science, geology, hydrology, or microbiology.

Requirements

Degree Requirements

The requirements of the doctoral program are flexible to accommodate the diverse interests and needs of students. All students in the NRESS program must meet the requirements listed below.

Committees and Coursework

The Ph.D. guidance and dissertation committees must consist of at least five members. The chair must be a member of the NRESS faculty. Three of the five members (including the chair) must be NRESS faculty, and committee members must be from more than one academic department. Students are strongly encouraged to include at least one off-campus member. Off-campus committee members must hold a doctoral (or terminal) degree and be approved by the student's adviser, the NRESS Program, and the Graduate School dean. Students should select the guidance committee in a timely manner, within one year for full-time students and two years for part-time students.

Core Area Course Requirements

All students will take one course in each of four core areas while enrolled in the program: natural sciences, ethics/policy/law, methods, and seminar. Students are also required to take NRES 997, Interdisciplinary Research in Natural Resources and Earth and Environmental Sciences, preferably within the first year of enrollment. Any course used to satisfy the natural sciences, ethics/policy/law, and methods core areas must be a classroom course of at least 3 credits. The seminar course must be interactive and must be at least 1 credit. Independent study courses may not be used to satisfy core requirements. Students must complete a Preliminary Coursework Approval Form, which lists the student's planned coursework, within one year for full-time students and two years for part-time students. A Final Course Approval Form, with signatures from the adviser, committee members, and the NRESS program chair is submitted once the coursework is completed.

Students Entering the Program without a Master's Degree

Students entering the program without a master's degree are expected to complete a minimum of 36 credit hours. There is not a specific credit requirement beyond the required four core courses and NRES 997 for students who have completed a M.S. or M.A. degree in a related field. Students enter the NRESS program with diverse backgrounds and preparation in their desired area of study. Therefore, final credit requirements are determined by the guidance committee and may include

additional coursework necessary to enhance the student's selected field of study and/or correct any deficiencies in the student's previous program. Students may apply a maximum of 12 credits of independent study and/or seminar courses to their total course requirement.

Transfer Credits

Graduate-level courses taken prior to admission may be transferred into the program and applied to the total only if they were not taken while matriculated in another degree program, as per Graduate School policy. These courses may not be used to meet the core course requirements. Transfer of credits must be approved by the adviser, the guidance committee, and the Graduate School.

Language Proficiency

Language proficiency may be required at the discretion of the student's adviser/committee. If required, a student will need to show proficiency in one foreign language or one computer language.

Examinations

Each student is required to pass three examinations, each of which has both a written and oral component. Additional preliminary examinations may be administered before the three required exams as the committee deems necessary. Performance on such an exam will determine areas where the student needs additional coursework or could result in the student's removal from the program.

Comprehensive exam (sometimes referred to as the qualifying exam)**:** The student must prepare an extensive written answer to one question from each committee member that covers the basic concepts and factual material deemed essential for the student's program. Three weeks are allowed for completion of the exam during which time students are expected to work solely on their answers. Answers are expected to be anywhere from 10 – 20 pages per question with extensive literature citations. Completed written answers are submitted to the adviser who then distributes copies to the other committee members for review. Approximately 1 – 2 weeks are allowed for the committee to read the answers, after which time the student gives an oral presentation to the committee. Following the presentation, committee members will ask for clarification of the student's answers, if necessary. The committee may require a student to repeat part, or all, of the comprehensive exam if the student's performance is deemed unsatisfactory. This exam should be taken within three years of initiation of graduate study in the program.

Proposal exam: The student must present to the committee a written proposal on the dissertation research topic. Once the proposal is written, the student will complete a public oral presentation of the proposed research, followed by an oral examination by the committee.

Final exam: The student must complete a written Ph.D. dissertation prior to the final exam. Once written, the student is required to complete an oral defense of the dissertation, which will include both a public presentation and oral examination by the committee.

A student may be required to take additional courses following either the comprehensive or proposal exam, or may be removed from the program following failure of any of the required exams. Students are advanced to candidacy after successfully completing the comprehensive exam, proposal exam, and all coursework required by the guidance committee as summarized on the Coursework Approval Form.

Student Learning Outcomes

The Earth and Environmental Sciences (EES) PhD degree within the Natural Resources and Earth Systems Science PhD Program trains scientists whose research addresses fundamental and applied questions dealing with the physical, chemical, and/or biological processes that affect earth and environmental systems at local, regional, national, and global scales. Through interdisciplinary coursework and doctoral research, we train researchers who can independently pursue the process of science and scholarship, and effectively apply their research to both solve basic questions in earth and environmental science and apply their work to issues of relevance to society and the environment, especially in this era of global change. learning outcomes:

- Critically review and cogently synthesize relevant literature, and identify need for new research.
- Draw on previously published work to independently design and execute new experiments or field manipulations or develop models with a high degree of sophistication. The design and execution of an experiment or the building of a model should demonstrate an understanding of good laboratory or field or modeling practices.
- Structure a coherent and convincing scientific or policy argument.
- Lead the writing of manuscripts describing their research and its impacts that are suitable for publication in peer-reviewed scientific journals or appropriate professional outlets for their particular sub-discipline, and be able to describe their research in presentations at national meetings of major relevant scientific societies, and at national and international symposia hosted by other professional organizations. The general expectation is that the final dissertation will include three first-authored publications submitted to or accepted in a peer-reviewed journal, or ready for submission.
- Articulate how their research relates to a broader context outside of academia, and how their expertise will be applicable in the execution of complex research problems.

Natural Resources and Environmental Studies (Ph.D.)

https://gradschool.unh.edu/natural-resources-earth-systems-science-phd/program/phd/natural-resources-environmental-studies

Description

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The NRESS Ph.D. in Natural Resources and Environmental Studies (NRES) focuses on problems dealing with the allocation and distribution of natural resources, policies at the local to global scale, and ethical and societal factors that affect resource management. Students typically

enter the program with a bachelor's and/or master's degree in economics, environmental conservation, philosophy, political science, or sociology.

Requirements

Degree Requirements

The requirements of the doctoral program are flexible to accommodate the diverse interests and needs of students. All students in the NRESS program must meet the requirements listed below.

Committees and Coursework

The Ph.D. guidance and dissertation committees must consist of at least five members. The chair must be a member of the NRESS faculty. Three of the five members (including the chair) must be NRESS faculty, and committee members must be from more than one academic department. Students are strongly encouraged to include at least one off-campus member. Off-campus committee members must hold a doctoral (or terminal) degree and be approved by the student's adviser, the NRESS Program, and the Graduate School dean. Students should select the guidance committee in a timely manner, within one year for full-time students and two years for part-time students.

Core Area Course Requirements

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Transfer Credits

Graduate-level courses taken prior to admission may be transferred into the program and applied to the total only if they were not taken while matriculated in another degree program, as per Graduate School policy. These courses may not be used to meet the core course requirements. Transfer of credits must be approved by the adviser, the guidance committee, and the Graduate School.

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Student Learning Outcomes

The Natural Resources and Environmental Studies (NRES) PhD degree within the Natural Resources and Earth Systems Science PhD Program trains scientists and scholars whose research addresses problems dealing with the allocation and distribution of natural resources, related policies at the local to global scale, and ethical and societal factors that affect resource management. Through interdisciplinary coursework and doctoral research, we train researchers who can independently pursue the process of science and scholarship, effectively apply their research to both solve basic questions in natural resource and environmental

studies and apply their work to issues of relevance to society and the environment, especially in this era of global change. learning outcomes:

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- Draw on previously published work to independently design and execute new experiments or field manipulations or develop models with a high degree of sophistication. The design and execution of an experiment or the building of a model should demonstrate an understanding of good laboratory, field or modeling practices.
- Structure a coherent and convincing academic argument.
- Lead the writing of manuscripts describing their research and its impacts that are suitable for publication in peer-reviewed journals or appropriate professional outlets for their particular sub-discipline, and be able to describe their research in presentations at national meetings of major relevant scientific societies, and at national and international symposia hosted by other professional organizations. The general expectation is that the final dissertation will include three first-authored publications submitted to or accepted in a peer-reviewed journal, or ready for submission.
- Articulate how their research relates to a broader context outside of academia, and how their expertise will be applicable in the execution of complex research problems.

Nonprofit (CPSO)

Programs: Graduate Certificate

Offered Online

The College of Professional Studies-Online, Business and Technology Academic Center offers a Graduate Certificate in Nonprofit Leadership.

Admission Requirements

Graduate Certificates

Admission requirements include a bachelor's degree, and official transcripts.

Programs

- Nonprofit Leadership (Graduate Certificate) (p. 197)

Learning Outcomes

Outcomes-Based Learning

Our greatest concern is that our graduates develop a specific set of skills and abilities.

The College's outcome-based degree programs and curriculum:

- Provide standards to be met in demonstrating competence
- Form a base from which to design and pursue learning activities
- Foster the ability to demonstrate self-directed learning

In addition to individual student assessment and grading, learning outcomes assessment is conducted in all programs to ensure the quality of our programs and to prompt ongoing improvements in teaching and learning.

Graduate Degree Learning Outcomes

Based in our commitment to our students through our mission, vision and values, every graduate degree program at the College of Professional Studies - Online provides students with opportunities to learn and demonstrate their abilities to do the following:

Communicate, particularly

- Communicate effectively—orally and written—with respect to theories, arguments, methods, and concepts, using supplemental materials and technology as appropriate.
- Disaggregate, reformulate and adapt principle ideas, techniques or methods when completing a paper or project.
- Contribute to, expand, evaluate or refine the scholarship within the field of study.
- Collaborate with diverse people and teams using elements of effective team dynamics to effectively and appropriately structure team work.

Think critically and comprehensively, particularly

- Demonstrate analytical skills needed to gather and assess information to influence data-driven decision making.
- Exhibit a conceptual understanding of the most widely applicable methodologies of decision-making; for example, employ creative problem solving for strategic planning.
- Demonstrate critical thinking, appropriate analytical models, and critical reasoning processes to evaluate evidence, select among alternatives, and generate creative options in furtherance of effective decision making.

Apply knowledge to workplace and community, particularly

- Display competency and appropriate skills for working effectively with people from diverse backgrounds and orientations.
- Effectively engage in one's broader community through various forms of outreach.
- Design and implement a project that requires the application of advanced knowledge to a practical challenge and articulate the insights gained from the experience.[1]

Gain specialized knowledge, particularly

- Demonstrate proficiency in specialized skills and technologies needed to participate in the intellectual and organizational aspects of one's profession.

[1] *Not applicable to Graduate Certificate programs.*

Nonprofit Leadership (Graduate Certificate)

https://cps.unh.edu/online/program/graduate-certificate/nonprofit-leadership

Description

The Graduate Certificate in Nonprofit Leadership is designed for nonprofit leaders and managers and those seeking to transition to nonprofit to earn a credential related to their work. Students will gain a deeper understanding of the skills and knowledge needed to solve problems and to specialize in an area of interest in nonprofit program development, grant writing, or volunteer recruitment and retention.

Students will have the opportunity to:

1. Develop as successful professionals for highly competitive positions in nonprofit organizations;
2. Assess and enrich their capacity to function as a leader in today's business environment;
3. Demonstrate an understanding of nonprofit organizations, their structure, their legal and social responsibilities.

Requirements

Certificate Requirements

Graduate credit is only granted for courses completed with a grade of B-- or higher
Minimum GPA Requirement: 3.0

Code	Title	Credits
Nonprofit Leadership-Graduate Certificate		
LD 820	Cultivating Your Leadership Capabilities	3
LD 827	Leading and Governing Nonprofit Organizations	3
LD 821	Ethical Decision-Making	3
Complete three credits from the following:		*3*
APST 805	Grant Writing	
LD 806	Fundraising and Resource Development	
LD 825	Volunteer Leadership	
Total Credits		**12**

Nursing (NURS)

Degrees Offered: M.S., D.N.P., Graduate Certificate

Programs are offered in Durham and online.

Graduate Program Offerings

Clinical Nurse Leader

Students graduate as an advanced generalist as a clinical nurse leader (CNL) with a master of science degree. Graduates are eligible to sit for the American Association of Colleges of Nursing (AACN) Clinical Nurse Leader national certification examination. The CNL is a role in the field of nursing designed to provide master's--prepared, point-of-care nurse leaders with the ability to manage and solve complex patient problems within a systems framework.

Evidence-Based Nursing

The Evidence Based Nursing (EBN) nursing track focuses on developing advanced generalist nursing practice in a focused area of study, promoting interdisciplinary collaboration, fostering life-long learning, and preparing students for the leading edge of health care knowledge and delivery. Students strengthen knowledge and skills in clinical decision making, the application of nursing interventions, and their ability to critique and appropriately use evidence as a foundation for practice.
In this graduate track, students study nursing as an applied discipline, advancing their knowledge of theoretical perspectives for clinical practice, with an emphasis on leadership; the cultural, social, and political context of health and illness; and quality improvement methodologies. Students are mentored in the enactment of leadership strategies to improve quality care in nursing practice through an intensive clinical practicum.

Family Nurse Practitioner

This program prepares family nurse practitioners (FNP) who are clinically competent and practice with cultural humility as advanced practiced registered nurse (APRN). FNPs provide patient centered health care to individuals, families, and communities across the life span. Clinical practice includes health promotion, disease prevention, teaching, counseling, and acute and chronic disease management. At the completion of the program, students are eligible to sit for national certification as a family nurse practitioner. Upon licensure, FNPs may practice autonomously as well as in collaboration with other health professionals..

Adult-Gerontology Acute Care Nurse Practitioner program

The Master Entry Adult-Gerontology Acute Care Nurse Practitioner program (MS-AGACNP) will prepare the baccalaureate prepared nurse (BSN, RN) to practice as an Adult-Gerontology Nurse Practitioner (AGACNP) and increase access to acute care medical and surgical services. Building upon a background in nursing, graduates can apply newly learned knowledge and skills within the acute care setting, including and not limited to hospitals and ambulatory care centers. Successful completion of this program permits students to sit for national certification with the AACN or ANCC.

Psychiatric-Mental Health Nurse Practitioner

This online Master's program offers both full- and part-time options combines the convenience of online learning with high and low-fidelity simulation experiences, competency-based education, and guidance of expert faculty. Foundational and specialty courses are taught by faculty with expertise in the content areas with current and relevant clinical and scholarly experience. Upon completion of the foundational coursework, students will transition into the Psychiatric-Mental Health Nurse Practitioner (PMHNP) specialty course portion of the program. Within the PMHNP specialty courses, students take aligned didactic coursework prior to transitioning into an immersive clinical practicum experience. Students complete a minimum of 750 clinical hours and participate in three intensives (one virtual and two on-campus) scheduled throughout the program. Students can begin during the fall or spring term. Upon successful program completion, graduates will be eligible to sit for the ANCC board certification exam for Psychiatric-Mental Health Nurse Practitioner Across the Lifespan (PMHNP-BC).

Direct Entry Master's in Nursing

The Direct Entry Master's in Nursing Program (DEMN) is a full-time, five-semester, 63-credit course of study designed for non--RN students who hold a B.S. or B.A. or higher degree in a field other than nursing. The curriculum begins in January and includes two summer sessions. Students graduate as an advanced generalist with a Master of Science (M.S.) degree in nursing. Students are prepared to take the Clinical Nurse Leader certification examination in their final semester.

Post-Master's Certification Offerings

Post-Master's Psychiatric-Mental Health Nurse Practitioner Certificate Program

This Post-Master's Psychiatric-Mental Health Certificate Program (PM-PMHNP) is designed for the advanced practice nurse (APN) with a master's or doctoral degree and at least one year of APN clinical practice experience who is seeking to effectively care for patients with complex psychiatric and physical health needs. The aim of the program is to prepare APNs to add advanced psychiatric nursing skills of diagnostic

assessment, psychotherapy, prescribing psychiatric medications and ongoing management to treat patients with a range of psychiatric conditions.Courses embrace a lifespan perspective and address foundational neurobiology, psychiatric assessment and diagnosis, psychopharmacology,psychotherapeutic treatment, and ongoing clinical management of psychiatric conditions. Didactic coursework along with clinical experiences and coursework provide the student with an evidence-based framework for comprehensive psychiatric-mental health care. Upon successful completion of the program, students are eligible to sit for the ANCC board examination to become certified Psychiatric-Mental Health Nurse Practitioners.

Post-Master's Primary Care Family Nurse Practitioner Certificate Program

The Post-Master's Primary Care Family Nurse Practitioner Certificate (PM-FNP) program is designed for those individuals with a master's degree in nursing who wish to expand their practice into the role of a family nurse practitioner. The PM-FNP specialty area prepares nurses to provide comprehensive care that includes health promotion, maintenance and restoration for persons across the life span.

Post-Master's Adult-Gerontology Acute Care Nurse Practitioner program

The Post-Master's Adult-Gerontology Acute Care Nurse Practitioner program (PM-AGACNP) will prepare the advanced practice nurse (APRN) to perform as an Adult-Gerontology Nurse Practitioner (AGACNP) and increase access to acute care medical and surgical services within the region. With backgrounds as either nurse practitioners or master's prepared nurses with significant acute or critical care clinical experience, graduates can apply newly learned knowledge and skills within the acute care setting, including and not limited to hospitals and ambulatory care centers.

Doctoral Offerings

The Online Doctor of Nursing Practice (DNP) program prepares nurses for the highest level of specialized nursing practice. DNP graduates are innovative leaders prepared to translate evidence into practice, improve systems of care and measure health outcomes in diverse settings. Students are required to plan, implement and evaluate a quality improvement project customized to support their unique aspirations.

We offer two pathways to the Online Doctor of Nursing Practice degree:

- The **Post Baccalaureate DNP (PB DNP)** program is for nurses with a baccalaureate degree in nursing who are seeking leadership development and certification as a **Primary Care Family Nurse Practitioner, Adult-Gerontological Acute Care Nurse Practitioner, Psychiatric-Mental Health Nurse Practitioner** or **Nurse Informaticist**.
- #The **Post Master's DNP (PM DNP)** program is for nurses with a master's degree in nursing or another field who bring their own knowledge, interests, expertise, experience and insights to this leadership specialty. Students build on these assets while learning to create innovative solutions for health care.

The curriculum is designed for students working full-time and includes personal leadership development, systems theory, quality improvement, patient safety, health equity and design thinking to prepare transformative leaders to assume diverse roles and emerging opportunities.

Accelerated Master's Offerings

Graduate Program in Nursing Accelerated Master's

Qualified senior nursing students at the University of New Hampshire may be admitted to the Graduate School prior to graduation and must have been admitted for the semester in which they wish to enroll in courses for graduate credit. A 3.2 cumulative grade-point average is normally required to be considered for the accelerated master's program. Seniors who have been admitted to the accelerated master's program may register for a maximum of three courses for up to 12 graduate credits.

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.

Students accepted to the accelerated master's program follow the clinical nurse leader or evidence-based nursing track and are admitted with the stipulation that their RN license must be obtained prior to beginning any clinical course. Stipulation is removed upon verification of the RN license provided to the department of nursing.

Direct Entry Master's in Nursing Accelerated Master's Program for Current UNH Junior Students

The Direct Entry Master's in Nursing Program provides an opportunity for accelerated admission to the graduate program for full time undergraduate UNH students who are not current nursing students and meet admission criteria. Students may apply during the second semester of their junior year by the posted application deadline. Application review continues until all seats are filled. To be considered, undergraduate students must have completed all major requirements by the fall of their senior year. Direct entry courses taken during the spring of the senior year of undergraduate program will fulfill elective credits to complete B.A./B.S. degree requirements at UNH. A grade point average of 3.2 or better is required. Previous course work is taken into consideration. Prerequisite courses include Human Anatomy & Physiology I and II with lab, Microbiology at the cellular level, and Statistics with a grade of B or better. Applicants who are in the process of completing a prerequisite course spring semester must have instructor submit grade to date directly to the Department of Nursing by April 8. Students who have not completed all prerequisite courses at the time of application may be admitted with the stipulation that all prerequisite courses are completed with a B or better prior to starting the program.

Applicants are strongly encouraged to meet with the Graduate Program in Nursing coordinator and their discipline-specific adviser early on in their undergraduate program to plan this course of study.

Admission Requirements

Individuals interested in the Graduate Program in Nursing at UNH apply to the University of New Hampshire Graduate School. Applicants must complete the Graduate School application, which can be found at www.gradschool.unh.edu. All applicants who are not native English speakers are required to demonstrate a sufficient level of proficiency in the English language to meet the admission requirement of the Graduate School. Proficiency can be demonstrated by the receipt of a bachelor's or advanced degree from an accredited institution of higher education in the United States or from a university in another country where English is the primary language of instruction. All other non-native speakers must achieve a minimum score of 550 (paper-based), 213 (computer-based), or

80 (Internet-based) on the Test of English as Foreign Language (TOEFL). The Graduate Record Exam (GRE) and Miller Analogies Test (MAT) are not required.

Post-Master's Certification Admission Requirements

In addition to the standard Graduate School requirements, the Nursing Department requires:

1. Unencumbered, active RN license in the United States;
2. Master's degree in Nursing;
3. Two letters of reference. References should be substantial with one academic, if available, and one current professional with graduate education background. Letters of recommendation from family or friends are not acceptable;
4. Updated resume; and
5. Course description for any course you request waived, if taken outside UNH.

https://chhs.unh.edu/nursing/

Programs

- Nursing (D.N.P.) (p. 200)
- Nursing: Adult-Gerontology Acute Care Nurse Practitioner (D.N.P.) (p. 201)
- Nursing: Health Data Science (D.N.P.) (p. 202)
- Nursing: Primary Care Family Nurse Practitioner (D.N.P.) (p. 203)
- Nursing: Psychiatric-Mental Health Nurse Practitioner (D.N.P.) (p. 204)
- Nursing: Adult Gerontology Acute Care Nurse Practitioner (M.S.) (p. 205)
- Nursing: Clinical Nurse Leader (M.S.) (p. 206)
- Nursing: Direct Entry (M.S.) (p. 207)
- Nursing: Evidence-Based Practice (M.S.) (p. 209)
- Nursing: Primary Care Family Nurse Practitioner (M.S.) (p. 210)
- Nursing: Psychiatric Mental Health Nurse Practitioner (M.S.) (p. 211)
- Adult Gerontology Acute Care Nurse Practitioner (Post Masters) (p. 212)
- Primary Care Family Nurse Practitioner (Post Masters) (p. 212)
- Psychiatric Mental Health Nurse Practitioner (Post Masters) (p. 213)

Faculty

See https://chhs.unh.edu/directory/all for faculty.

Nursing (D.N.P.)

https://chhs.unh.edu/nursing/program/dnp/nursing

Description

The online **Post Master's Doctor of Nursing Practice (PM-DNP)** program is for nurses with a master's degree in nursing or another ?eld who bring their own knowledge, interests, expertise, and insights to this leadership specialty.Students build on these assets while focusing on innovative design and implementation in the healthcare setting.
PM-DNP admits cohorts twice a year with start dates in January and August. Asynchronous courses are delivered 100% online in 8-week blocks so students may plan their own study times. The PM-DNP program can be completed in 2.5 years or in 1.5 years with an accelerated plan of study.

The PM-DNP curriculum consists of core and DNP Scholarly Project courses. Once a student is admitted, a doctoral committee reviews their graduate transcripts and may grant a course waiver for equivalency with one or more DNP core courses. Individual plans of study are created around each student's needs and interests. Students may apply up to 500 hours earned during their master's program toward the 1,000 required practicum hours.

Admission Requirements

1. Applicants must hold a master's degree. A minimum 3.25 cumulative GPA for graduate work is preferred.
2. Registered Nurse licensure: An unencumbered registered nurse license in the United States
3. Letters of recommendation: Three letters of reference pertaining to academic ability, professional competency,and personal character are required.
4. Updated resume
5. Professional statement: The professional statement must include a written essay responding to each of the following:
   a. How will a Doctor of Nursing Practice (DNP) degree from the University of New Hampshire help you attain your professional goals?
   b. Describe your current advanced nursing role, or if you are pursuing a new specialty, explain what you are planning to do with your nursing career in your specialty after you complete the DNP.
   c. In addition to the information contained in your resume, what strengths do you possess that would contribute to your success in the DNP program and in a community of interprofessional scholars?
   d. Identify one scholarly inquiry from your practice you would like to explore as part of the DNP program (e.g.,quality improvement initiative, evidence-based practice guidelines, new model of care, policy analysis).
6. Interview: After initial review of the application, applicants may be contacted for an interview.

Requirements

Post Master's DNP program (33 credits; 500 practicum hours)

The online Doctor of Nursing Practice degree (Post-Master's entry) requires students complete **21-33 credits** via 11 courses. The online DNP program aims to produce graduates prepared to improve health and care outcomes through coursework in organizational and systems leadership, quality improvement processes, and translation of evidence into practice, to name a few.

Degree Requirements

Code	Title	Credits
NURS 933	Applied Analytics for QI in Health Care	3
NURS 960	Healthcare Finance Management	3
NURS 963	Biostats and Epidemiology	3
NURS 964	Information Systems and Technology Improvement	3
NURS 966	Creative Leadership: Embracing Disruption and Innovation	3
NURS 967	Evidence Based Practice Methods	3
NURS 969	Health Systems Policy, Economics & Financial Planning	3
NURS 973	Quality & Safety	3
NURS 980	Doctoral Scholarly Project I	3
NURS 981	Doctoral Scholarly Project II	3
NURS 982	Doctoral Scholarly Project III	3

Students are required to successfully complete DNP coursework, have 1,000 documented advanced practice clinical hours (includes up to 500 clinical hours earned in master's program), produce a publishable scholarly paper, and present their DNP Project.

If a student completed fewer than 500 clinical hours in their Master's program, the student must enroll in NURS 970 Clinical Practicum for Advanced Practice Nurse, under the supervision of the DNP director. NURS 970 is a 2-credit course and allows the student to complete up to 250 clinical practicum hours; this course may be repeated once.

Student Learning Outcomes

- Employ strategic leadership skills to shape practice environments to produce positive, patient centered, healthcare outcomes at individual and system levels.
- Serve in a healthcare leadership and change agent role as part of a diverse, complex, and patient-centered health care system.
- Act as a practice scholar to design, direct and evaluate system changes to promote safe, timely, effective, efficient, equitable and patient-centered care.
- Use data analytic methods, information systems and technology to evaluate, integrate and apply knowledge that will improve programs of care, outcomes of care and care systems.
- Use translational science and analytic methods to develop, identify, implement, and evaluate best practices to improve health care and health care systems.
- Design and implement health promotion and clinical prevention strategies across the health/illness continuum to optimize health and disease management.
- Systematically use improvement methods to monitor and evaluate care processes and outcomes and applies data for continuous improvement and safety
- Advocate for social justice through policy, professional and political engagement.
- Applies leadership principles that support inter-professional practice.
- Facilitate interprofessional collaboration to implement practice models, peer review, practice guidelines, health policy, and standards of care.

Nursing: Adult-Gerontology Acute Care Nurse Practitioner (D.N.P.)

Description

The online Doctor of Nursing Practice (DNP) program prepares nurses for the highest level of specialized nursing practice. DNP graduates are innovative leaders prepared to translate evidence into practice, improve systems of care and measure health outcomes in diverse settings. Students are required to plan, implement, and evaluate a quality improvement project customized to support their unique aspirations.

The Post Baccalaureate DNP (PB DNP) program is for nurses with a baccalaureate degree in nursing who are seeking leadership development and certification as an Adult-Gerontology Acute Care Nurse Practitioner.

Graduates of the Post Baccalaureate Adult-Gerontology Nurse Practitioner Program are prepared to practice as an Adult-Gerontology Nurse Practitioner (AGACNP) and increase access to acute care medical and surgical services. Building upon a background in nursing, graduates can apply newly learned knowledge and skills within the acute care setting, including and not limited to hospitals and ambulatory care centers. Successful completion of this program permits students with sit for national certification with the AACN or ANCC.

Admission Requirements

1. Registered Nurse licensure: An unencumbered registered nurse license in the United State
2. Letters of recommendation: Three letters of reference pertaining to academic ability, professional competency, and personal character are required.
3. Updated resume
4. Professional statement: The professional statement must include a written essay responding to each of the following:
   a. Describe a clinical experience that demonstrates your critical thinking and readiness to enter doctoral study.
   b. Explain how you use a nursing theoretical/conceptual lens to improve care.
   c. Tell us about a U.S. policy or health issue you are passionate about and why.
5. Interview: After initial review of the application, applicants may be contacted for an interview.

Requirements

Degree Requirements

Code	Title	Credits
NURS 812	Advanced Pharmacology and Therapeutics	3
NURS 814	Advanced Health Assessment Across the Lifespan	3
NURS 816	Health Promotion Theory and Population Health	3
NURS 818	Foundations of Evidence Based Practice	3
NURS 820	Advanced Physiology and Pathophysiology Across the Lifespan	3
NURS 900	Foundations of Scholarly Writing & Professional Communication	3
NURS 910	Genomics & Ethics	3
NURS 911	Diagnosis & Management - Diagnostic Reasoning	3
NURS 915	Leadership, Role & Collaboration	3
NURS 917	Biostats and Epidemiology	3
NURS 850	Foundations in Acute Care	3
NURS 851	Foundations in Acute Care Clinical Practicum	2

NURS 852	Adult-Gerontology Acute Care Nurse Practitioner I	3
NURS 853	Adult-Gerontology Acute Care Nurse Practitioner I Clinical Practicum	2
NURS 854	Adult-Gerontology Acute Care Nurse Practitioner II	3
NURS 855	Adult-Gerontology Acute Care Nurse Practitioner II Clinical Practicum	2
NURS 856	Adult-Gerontology Acute Care Nurse Practitioner III	3
NURS 857	Adult-Gerontology Acute Care Nurse Practitioner III Clinical Practicum	2
NURS 858	Adult-Gerontology Acute Care Nurse Practitioner IV	3
NURS 859	Adult-Gerontology Acute Care Nurse Practitioner IV Clinical Practicum	2
NURS 947	DNP Systems Thinking Seminar I	3
NURS 948	DNP Systems Thinking Seminar II	3
NURS 949	DNP Systems Thinking Seminar III	3
NURS 964	Information Systems and Technology Improvement	3
NURS 967	Evidence Based Practice Methods	3
NURS 969	Health Systems Policy, Economics & Financial Planning	3
NURS 973	Quality & Safety	3
Total Credits		**76**

Student Learning Outcomes

Upon completion of the Master of Science in Nursing, the graduate student is expected to:

- Employ strategic leadership skills to shape practice environments to produce positive, patient centered, healthcare outcomes at individual and system levels.
- Serve in a healthcare leadership and change agent role as part of a diverse, complex, and patient-centered health care system.
- Act as a practice scholar to design, direct and evaluate system changes to promote safe, timely, effective, efficient, equitable and patient-centered care.
- Use data analytic methods, information systems and technology to evaluate, integrate and apply knowledge that will improve programs of care, outcomes of care and care systems.
- Use translational science and analytic methods to develop, identify, implement, and evaluate best practices to improve health care and health care systems.
- Design and implement health promotion and clinical prevention strategies across the health/illness continuum to optimize health and disease management.
- Systematically use improvement methods to monitor and evaluate care processes and outcomes and applies data for continuous improvement and safety
- Advocate for social justice through policy, professional and political engagement.
- Applies leadership principles that support inter-professional practice.
- Facilitate interprofessional collaboration to implement practice models, peer review, practice guidelines, health policy, and standards of care.

In addition, the Adult-Gerontology Acute Care Nurse Practitioner graduate will:

- Meet eligibility requirements for certification as an AGACNP with the American Nurses Credentialing Center (ANCC) or as an ACNPC-AG with the American Association of Critical Care Nurses (AACN)
- Meet state requirements for certification, licensure, and prescriptive authority
- Obtain federal Drug Enforcement Administration (DEA) authorization to prescribe controlled substances (Schedules II through IV) for patients within the AGACNP's practice area
- Participate in the education of future AGACNPs through preceptorship
- Be lifelong learners

Nursing: Health Data Science (D.N.P.)

https://online.unh.edu/program/dnp/nursing-health-data-science

Description

The online **Post Baccalaureate Doctor of Nursing Practice (PB DNP)** program **Health Data Science (HDS)** option is focused on leadership and innovation. Graduates will meet the qualifications for ANCC Informatics Nursing Certification.

The PB DNP admits cohorts twice a year with start dates in January and August. Applicants will be scheduled for a virtual interview when their application is complete. Asynchronous courses are delivered 100% online in 8-week blocks so students may plan their own study times.

The PB DNP program has required foundation core courses and HDS courses. After completing the foundational core, students will enter the HDS option. The PB DNP program can be completed in 4.5 years or in 3.5 years with an accelerated plan of study.

Students will work with dedicated nursing faculty to design, implement and evaluate their capstone quality improvement project. Students will present their DNP project at our DNP Scholarly Symposium at the end of the program.

Admission Requirements

1. Registered Nurse licensure: An unencumbered registered nurse license in the United State
2. Baccalaureate degree in nursing or another field
3. Letters of recommendation: Three letters of reference pertaining to academic ability, professional competency, and personal character are required.
4. Updated resume
5. Professional statement: The professional statement must include a written essay responding to each of the following:
   a. Describe a clinical experience that demonstrates your critical thinking and readiness to enter doctoral study.
   b. Explain how you use a nursing theoretical/conceptual lens to improve care.
   c. Tell us about a U.S. policy or health issue you are passionate about and why.
6. Interview: After initial review of the application, applicants may be contacted for an interview.

Requirements

PB DNP. Health Data Science (HDS) program (69 credits; 1000 practicum hours)

Code	Title	Credits
NURS 900	Foundations of Scholarly Writing & Professional Communication	3
NURS 812	Advanced Pharmacology and Therapeutics	3
NURS 814	Advanced Health Assessment Across the Lifespan	3
NURS 816	Health Promotion Theory and Population Health	3
NURS 818	Foundations of Evidence Based Practice	3

NURS 820	Advanced Physiology and Pathophysiology Across the Lifespan	3
NURS 910	Genomics & Ethics	3
NURS 915	Leadership, Role & Collaboration	3
NURS 917	Biostats and Epidemiology	3
NURS 933	Applied Analytics for QI in Health Care	3
NURS 947	DNP Systems Thinking Seminar I	3
NURS 948	DNP Systems Thinking Seminar II	3
NURS 949	DNP Systems Thinking Seminar III	3
NURS 964	Information Systems and Technology Improvement	3
NURS 966	Creative Leadership: Embracing Disruption and Innovation	3
NURS 967	Evidence Based Practice Methods	3
NURS 969	Health Systems Policy, Economics & Financial Planning	3
NURS 973	Quality & Safety	3
HDS 800	Mathematics and Statistics for Health Data Science	3
HDS 803	Translation of Health Data	3
HDS 804	Health Data Systems	3
HDS 806	Outcomes Research	3
HDS 811	Health Data Science Practice	3
Total Credits		**69**

Student Learning Outcomes

- Employ strategic leadership skills to shape practice environments to produce positive, patient centered, healthcare outcomes at individual and system levels.
- Serve in a healthcare leadership and change agent role as part of a diverse, complex, and patient-centered health care system.
- Act as a practice scholar to design, direct and evaluate system changes to promote safe, timely, effective, efficient, equitable and patient-centered care.
- Use data analytic methods, information systems and technology to evaluate, integrate and apply knowledge that will improve programs of care, outcomes of care and care systems.
- Use translational science and analytic methods to develop, identify, implement, and evaluate best practices to improve health care and health care systems.
- Design and implement health promotion and clinical prevention strategies across the health/illness continuum to optimize health and disease management.
- Systematically use improvement methods to monitor and evaluate care processes and outcomes and applies data for continuous improvement and safety
- Advocate for social justice through policy, professional and political engagement.
- Applies leadership principles that support inter-professional practice.
- Facilitate interprofessional collaboration to implement practice models, peer review, practice guidelines, health policy, and standards of care.

Nursing: Primary Care Family Nurse Practitioner (D.N.P.)

https://online.unh.edu/program/dnp/nursing-primary-care-family-nurse-practitioner

Description

The online Doctor of Nursing Practice (DNP) program prepares nurses for the highest level of specialized nursing practice. DNP graduates are innovative leaders prepared to translate evidence into practice, improve systems of care and measure health outcomes in diverse settings. Students are required to plan, implement, and evaluate a quality improvement project customized to support their unique aspirations.

The Post Baccalaureate DNP (PB DNP) program is for nurses with a baccalaureate degree in nursing who are seeking leadership development and certification as a Primary Care Family Nurse Practitioner

Admission Requirements

1. Registered Nurse licensure: An unencumbered registered nurse license in the United State
2. Baccalaureate degree in nursing or another field
3. Letters of recommendation: Three letters of reference pertaining to academic ability, professional competency, and personal character are required.
4. Updated resume
5. Professional statement: The professional statement must include a written essay responding to each of the following:
   a. Describe a clinical experience that demonstrates your critical thinking and readiness to enter doctoral study.
   b. Explain how you use a nursing theoretical/conceptual lens to improve care.
   c. Tell us about a U.S. policy or health issue you are passionate about and why.
6. Interview: After initial review of the application, applicants may be contacted for an interview.

Requirements

Post Baccalaureate DNP: Primary Care Family Nurse Practitioner (PC-FNP) program

Code	Title	Credits
NURS 900	Foundations of Scholarly Writing & Professional Communication	3
NURS 969	Health Systems Policy, Economics & Financial Planning	3
NURS 816	Health Promotion Theory and Population Health	3
NURS 915	Leadership, Role & Collaboration	3
NURS 917	Biostats and Epidemiology	3
NURS 818	Foundations of Evidence Based Practice	3
NURS 933	Applied Analytics for QI in Health Care	3
NURS 964	Information Systems and Technology Improvement	3
NURS 973	Quality & Safety	3
NURS 910	Genomics & Ethics	3
NURS 820	Advanced Physiology and Pathophysiology Across the Lifespan	3
NURS 812	Advanced Pharmacology and Therapeutics	3
NURS 814	Advanced Health Assessment Across the Lifespan	3
NURS 911	Diagnosis & Management - Diagnostic Reasoning	3
NURS 967	Evidence Based Practice Methods	3
NURS 920	FNP Health Management I - Didactic	3
NURS 921	FNP Health Management I - Clinical	4
NURS 947	DNP Systems Thinking Seminar I	3
NURS 922	FNP Health Management II - Didactic	3
NURS 923	FNP Health Management II - Clinical	4
NURS 948	DNP Systems Thinking Seminar II	3
NURS 924	FNP Health Management III - Didactic	3
NURS 940	FNP Health Management III - Clinical	4
NURS 949	DNP Systems Thinking Seminar III	3
Total Credits		**75**

Student Learning Outcomes

The Primary Care Family Nurse Practitioner builds upon the skills of the baccalaureate prepared nurse.

Upon completion of the Master of Science in Nursing, the graduate student is expected to:

- Employ strategic leadership skills to shape practice environments to produce positive, patient centered, healthcare outcomes at individual and system levels.
- Serve in a healthcare leadership and change agent role as part of a diverse, complex, and patient-centered health care system.
- Act as a practice scholar to design, direct and evaluate system changes to promote safe, timely, effective, efficient, equitable and patient-centered care.
- Use data analytic methods, information systems and technology to evaluate, integrate and apply knowledge that will improve programs of care, outcomes of care and care systems.
- Use translational science and analytic methods to develop, identify, implement, and evaluate best practices to improve health care and health care systems.
- Design and implement health promotion and clinical prevention strategies across the health/illness continuum to optimize health and disease management.
- Systematically use improvement methods to monitor and evaluate care processes and outcomes and applies data for continuous improvement and safety
- Advocate for social justice through policy, professional and political engagement.
- Applies leadership principles that support inter-professional practice.
- Facilitate interprofessional collaboration to implement practice models, peer review, practice guidelines, health policy, and standards of care.

In addition, the Primary Care Family Nurse Practitioner graduate will:

- Utilize advanced assessment, diagnostic reasoning, and evidence-based practice when partnering with individuals, families, and communities to optimize health.
- Judiciously prescribe treatment modalities to manage acute and chronic conditions within state and federal scope of practice regulations.
- Function as an independent practitioner to manage comprehensive primary care across the lifespan.

Nursing: Psychiatric-Mental Health Nurse Practitioner (D.N.P.)

Description

The online Doctor of Nursing Practice (DNP) program prepares nurses for the highest level of specialized nursing practice. DNP graduates are innovative leaders prepared to translate evidence into practice, improve systems of care and measure health outcomes in diverse settings. Students are required to plan, implement, and evaluate a quality improvement project customized to support their unique aspirations.

The Post Baccalaureate DNP (PB DNP) program is for nurses with a baccalaureate degree in nursing who are seeking leadership development and certifcation as a Pyschiatric-Mental Health Nurse Practitioner. This program will prepare the experienced Registered Nurse (RN) with the knowledge, skills,and competencies to assess,diagnose, and manage mental healthcare patients across the lifespan. Foundational core coursework to prepare the advanced practice nurse is completed prior to transitioning into specialty content.

Courses are competency based, founded on evidence-based approaches to care management and learning strategies with commitment to student success and continuous quality improvement embedded within the process. Synchronous, asynchronous, low and high-fidelity simulation, on campus intensives,and clinical immersion will reinforce didactic content and afford the student the opportunity to transition to an active member of a collaborative mental health care team.

Upon successful program completion, graduates will be eligible to sit for the ANCC board certification exam for Psychiatric-Mental Health Nurse Practitioner Across the Lifespan (PMHNP-BC).

Admission Requirements

1. Registered Nurse licensure: An unencumbered registered nurse license in the United States
2. Letters of recommendation: Three letters of reference pertaining to academic ability, professional competency, and personal character are required.
3. Updated resume
4. Professional statement: The professional statement must include a written essay responding to each of the following:
   a. This is a graduate program that requires a high cognitive load, explain in detail how you are going to prepare yourself for that and manage throughout the program?
   b. Discuss the DNP PMHNP program, what experiences have contributed to your interest and how do you visualize yourself in this role after graduation?
   c. Where do you visualize yourself in 3 years, 5 years, and 7 years?
5. Interview: After initial review of the application, applicants may be contacted for an interview.

Requirements

Degree Requirements

Clinical Hours: 750*

Code	Title	Credits
Required Courses		
NURS 812	Advanced Pharmacology and Therapeutics	3
NURS 814	Advanced Health Assessment Across the Lifespan	3
NURS 816	Health Promotion Theory and Population Health	3
NURS 818	Foundations of Evidence Based Practice	3
NURS 820	Advanced Physiology and Pathophysiology Across the Lifespan	3
NURS 900	Foundations of Scholarly Writing & Professional Communication	3
NURS 910	Genomics & Ethics	3
NURS 911	Diagnosis & Management - Diagnostic Reasoning	3
NURS 915	Leadership, Role & Collaboration	3
NURS 917	Biostats and Epidemiology	3
NURS 977	Neurobiology of Mental Disorders Across the Lifespan	2
NURS 978	Psychopharmacology of Mental Health Disorders Across the Lifespan I	2

NURS 979	Psychopharmacology of Mental Health Disorders Across the Lifespan II	2
NURS 983	Foundations of Psychiatric-Mental Health Practice and Assessment	3
NURS 986	Psychiatric-Mental Health Nurse Practitioner Practicum I	2
NURS 987	Psychiatric-Mental Health Nurse Practitioner Practicum II	3
NURS 988	Psychiatric-Mental Health Nurse Practitioner Practicum III	3
NURS 989	Psychiatric-Mental Health Nurse Practitioner Practicum IV	3
NURS 990	Mental Health & Special Populations	3
NURS 991	Diagnosis & Management of Mental Health Disorders Across the Lifespan I	3
NURS 992	Diagnosis & Management of Mental Health Disorders Across the Lifespan II	3
NURS 947	DNP Systems Thinking Seminar I	3
NURS 948	DNP Systems Thinking Seminar II	3
NURS 949	DNP Systems Thinking Seminar III	3
NURS 964	Information Systems and Technology Improvement	3
NURS 967	Evidence Based Practice Methods	3
NURS 969	Health Systems Policy, Economics & Financial Planning	3
NURS 973	Quality & Safety	3
Total Credits		**80**

* Clinical hours are completed through the following required courses: NURS 986, NURS 987, NURS 988, NURS 989.

Student Learning Outcomes

The Psychiatric-Mental Health Nurse Practitioner builds upon the skills of the baccalaureate prepared generalist nurse.

At the completion of the DNP Psychiatric-Mental Health Nurse Practitioner program, the graduate student is prepared to:

- Serve in a healthcare leadership and change agent role as part of a diverse, complex, and patient-centered health care system.
- Act as a practice scholar to design, direct and evaluate system changes to promote safe, timely, effective, efficient, equitable and patient-centered care.
- Use data analytic methods, information systems and technology to evaluate, integrate and apply knowledge that will improve programs of care, outcomes of care and care systems.
- Use translational science and analytic methods to develop, identify, implement, and evaluate best practices to improve health care and health care systems.
- Design and implement health promotion and clinical prevention strategies across the health/illness continuum to optimize health and disease management.
- Systematically use improvement methods to monitor and evaluate care processes and outcomes and applies data for continuous improvement and safety
- Advocate for social justice through policy, professional and political engagement.
- Applies leadership principles that support inter-professional practice.

In addition to the Outcomes above, the Psychiatric-Mental Health Nurse Practitioner graduate will:

- Utilize advanced practice knowledge, skills, and competencies to assess, diagnose, and coordinate and manage mental health care patients across the lifespan
- Recommend and prescribe evidence-based developmentally appropriate treatment modalities to manage psychiatric conditions in patients across the lifespan defined by shared decision-making and patient concordance within state and federal scope of practice regulations
- Engage in professional, bias-free, quality, safe, collaborative, and ethical, evidence-based practice across all mental healthcare practice settings

Nursing: Adult Gerontology Acute Care Nurse Practitioner (M.S.)

https://chhs.unh.edu/nursing/program/ms/adult-gerontology-acute-care-nurse-practitioner

Description

The Master Entry Adult-Gerontology Acute Care Nurse Practitioner program (MS-AGACNP) will prepare the baccalaureate prepared nurse (BSN, RN) to practice as an Adult-Gerontology Nurse Practitioner (AGACNP) and increase access to acute care medical and surgical services. Building upon a background in nursing, graduates can apply newly learned knowledge and skills within the acute care setting, including and not limited to hospitals and ambulatory care centers.

Successful completion of this program permits students to sit for national certification with the American Association of Colleges of Nursing (AACN) or American Nurses Credentialing Center (ANCC).

Requirements

Degree Requirements

Clinical Hours: 500*

Code	Title	Credits
Required Courses		
NURS 818	Foundations of Evidence Based Practice	3
NURS 816	Health Promotion Theory and Population Health	3
NURS 910	Genomics & Ethics	3
NURS 820	Advanced Physiology and Pathophysiology Across the Lifespan	3
NURS 812	Advanced Pharmacology and Therapeutics	3
NURS 814	Advanced Health Assessment Across the Lifespan	3
NURS 911	Diagnosis & Management - Diagnostic Reasoning	3
NURS 850	Foundations in Acute Care	3
NURS 851	Foundations in Acute Care Clinical Practicum	2
NURS 852	Adult-Gerontology Acute Care Nurse Practitioner I	3
NURS 853	Adult-Gerontology Acute Care Nurse Practitioner I Clinical Practicum	2
NURS 854	Adult-Gerontology Acute Care Nurse Practitioner II	3
NURS 855	Adult-Gerontology Acute Care Nurse Practitioner II Clinical Practicum	2
NURS 856	Adult-Gerontology Acute Care Nurse Practitioner III	3
NURS 857	Adult-Gerontology Acute Care Nurse Practitioner III Clinical Practicum	2
NURS 858	Adult-Gerontology Acute Care Nurse Practitioner IV	3
NURS 859	Adult-Gerontology Acute Care Nurse Practitioner IV Clinical Practicum	2
Total Credits		**46**

* Clinical hours are completed through the following required courses: NURS 851, NURS 853, NURS 855, NURS 857, NURS 859.

Student Learning Outcomes

Students entering the Masters of Science in Adult-Gerontology Acute Care Nurse Practitioner program are expected to:

- Continue to acquire and adapt foundational knowledge in nursing, the sciences, and humanities in professional practice

- Effectively communicate in written, verbal, and nonverbal communication strategies
- Abide by the American Nurses Association's Code of Ethics.

At the completion of the Master of Science in Nursing, the graduate student is prepared to:

- Assume clinical and ethical leadership of patients with acute, critical, and chronic illness.
- Implement their full scope of practice ranging from disease prevention to the diagnosis and treatment of complex medical and mental health diagnoses, to the provision of palliative care.
- Promote health and clinical prevention strategies across the health/illness continuum to optimize health and disease management.
- Provide respectful care with regard to the needs, values, and preferences of patients and families
- Design, direct and evaluate system changes to promote safe, timely, effective, efficient, equitable, and patient-centered care.
- Analyze data, information systems, and technology to evaluate, integrate, and apply knowledge and evidence that will support best practice and improve programs of care, outcomes of care and care systems.
- Advocate for social justice through policy, professional, and political engagement.
- Apply leadership principles that support inter-professional practice.

Additionally, MS-AGACNP graduate will:

- Meet eligibility requirements for certification as an AGACNP with the American Nurses Credentialing Center (ANCC) or as an ACNPC-AG with the American Association of Critical Care Nurses (AACN)
- Meet state requirements for certification, licensure, and prescriptive authority
- Obtain federal Drug Enforcement Administration (DEA) authorization to prescribe controlled substances (Schedules II through IV) for patients within the AGACNP's practice area
- Participate in the education of future AGACNPs through preceptorship
- Be lifelong learners

Nursing: Clinical Nurse Leader (M.S.)

https://chhs.unh.edu/nursing/program/ms/nursing-clinical-nurse-leader

Description

Students graduate as an advanced generalist as a clinical nurse leader (CNL) with a master of science degree. Graduates are eligible to sit for the American Association of Colleges of Nursing (AACN) Clinical Nurse Leader national certification examination. The CNL is a role in the field of nursing designed to provide master's--prepared, point-of-care nurse leaders with the ability to manage and solve complex patient problems within a systems framework.

Admission Requirements

Registered nurses (RNs) who have successfully passed the NCLEX--RN, currently hold an unencumbered, active RN license in the United States, and who hold a baccalaureate degree in either nursing or another field can be considered for admission. Applicants are required to have a good academic record and completion of coursework in statistics and research. The following is required:

1. Unencumbered, active RN license in the United States
2. Baccalaureate degree in nursing or another field
3. Cumulative GPA of 3.0 or higher in associate and baccalaureate programs
4. Nursing experience is preferred but not required for Clinical Nurse Leader and Evidence-Based Nursing tracks
5. 3 letters of recommendation
   Recommendation letters submitted by relatives or friends, as well as letters older than one year, will not be accepted. References should be substantial with one academic, if available, and two current nursing professionals with graduate education background.
6. Personal Statement. Prepare a brief but careful statement regarding:
   a. Reasons you wish to do graduate work in this field, including your immediate and long-range objectives.
   b. Your specific research or professional interest and experiences in this field.

RNs whose baccalaureate degree is in a field other than nursing may apply to the master of science degree in nursing (MS) program and will be considered for the track that is commensurate with their clinical experience based on faculty discretion.

Requirements

Degree Requirements

Clinical Hours: 500*

Code	Title	Credits
Required Courses		
NURS 901	Health Policy	3
NURS 902	Advanced Physical Assessment	2
NURS 908	Advanced Physiology & Pathophysiology Across the Lifespan	3
NURS 925	Leadership, Role & Collaboration	3
NURS 952	Clinical Nursing Leadership	2
NURS 952C	Clinical Nursing Leadership Clinical	6
NURS 953	Promoting Quality Management	3
NURS 958	Clinical Nurse Leader Capstone	6
NURS 963	Biostats and Epidemiology	3
NURS 968	Foundations of Evidence Based Practice	3
Total Credits		**34**

* Clinical hours are completed through the following required courses: NURS 952C, NURS 958.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

The Masters of Science Clinical Nurse Leader program builds upon the skills of the baccalaureate prepared nurse.

Students entering the CNL Program are expected 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.

At the completion of the Master's nursing program, the graduate student is prepared to:

- Serve in a healthcare leadership and change agent role as part of a diverse, complex,and patient-centered health care system.
- Act as a practice scholar to design, direct and evaluate system changes to promote safe, timely, effective, efficient, equitable and patient-centered care.
- Use data analytic methods, information systems and technology to evaluate,integrate and apply knowledge that will improve programs of care, outcomes of care and care systems.
- Use translational science and analytic methods to develop, identify, implement, and evaluate best practices to improve health care and health care systems.
- Design and implement health promotion and clinical prevention strategies across the health/illness continuum to optimize health and disease management.
- Systematically use improvement methods to monitor and evaluate care processes and outcomes and applies data for continuous improvement and safety
- Advocate for social justice through policy, professional and political engagement.
- Applies leadership principles that support inter-professional practice.

In addition the Clinical Nurse Leader graduate will:

- Act as lateral integrator to design, direct, and evaluate system changes to promote safe, timely, efficient, effective, equitable, patient centered care.

Nursing: Direct Entry (M.S.)

https://chhs.unh.edu/nursing/direct-entry-masters-nursing

Description

The Direct Entry Master's in Nursing Program is a full-time, five-semester, program of study designed for non–RN students who hold a B.S. or B.A. or higher degree in a field other than nursing. The curriculum begins in January and includes two summer sessions. This program offers the American Association of Colleges of Nursing (AACN) Clinical Nurse Leader (CNL) track. The CNL is a role in the field of nursing designed to provide master's-prepared, point-of-care nurse leaders with the ability to manage and solve complex patient problems within a systems framework.

Students graduate as an advanced generalist with a master of science (MS) degree in nursing and upon passing certification examination, as a clinical nurse leader (CNL). Students take the CNL certification examination in their final semester. Students complete a clinical immersion experience in clinical nursing leadership, which includes 300 clinical hours. Students are admitted with the stipulation that they must pass NCLEX-RN prior to completion of the program. The stipulation is met once the RN license is received. Students are eligible to take the NCLEX-RN after completing a total of 57 credits of accelerated study. Students conclude their CNL master's preparation with a clinical nurse leader capstone course, which includes a project and 200 clinical hours and take the CNL certification examination in the final semester.

Admission Requirements

A grade point average of 3.0 or better is suggested. Previous course work and professional experience is taken into consideration. Experience in health care is not required. Prerequisite courses include Human Anatomy & Physiology I and II with lab, Microbiology at the cellular level, and Statistics with a grade of B or better. Students who have not completed all prerequisite courses at the time of application may be admitted with the stipulation that all prerequisite courses are completed with a B or better prior to starting the program.

Knowledge of the basic processes and methods of research is necessary for students entering the DEMN program. While many undergraduate programs include a research methods course, if a student does not have a background in research, he or she should enroll in an introductory research course or introductory nursing research textbooks may be used as self--study resources prior to matriculation in the DEMN program.

Letters of recommendation should be substantial with at least one academic reference and two references from current professionals with graduate education background. Letters of recommendation from family or friends are not acceptable.

Requirements

Degree Requirements

Students complete 63 total credits.

Clinical Hours: 860*

Code	Title	Credits
Required Courses		
NURS 801	Health Policy and Nursing Practice	3

NURS 807	Pathophysiology and Pharmacology	4
NURS 811	Clinical Reasoning Through Simulation	2
NURS 813	Health Assessment and Clinical Nursing Theory	4
NURS 813C	Health Assessment and Clinical Nursing (90 clinical hours)	2
NURS 822	Chronic Disease Management	3
NURS 826	Caring for People with Severe and Persistent Mental Illness	2
NURS 826C	Caring for People with Severe and Persistent Mental Illness Clinical (90 clinical hours)	2
NURS 827	Managing Acute and Complex Care of Individuals	4
NURS 827C	Managing Acute and Complex Care of Individuals Clinical (90 clinical hours)	2
NURS 831	Childbearing and Childrearing Families	2
NURS 831C	Childbearing and Childrearing Families Clinical (90 clinical hours)	2
NURS 835	Leadership in Healthcare	3
NURS 844	Population Health	3
NURS 902	Advanced Physical Assessment	2
NURS 908	Advanced Physiology & Pathophysiology Across the Lifespan	3
NURS 952	Clinical Nursing Leadership	2
NURS 952C	Clinical Nursing Leadership Clinical (300 clinical hours)	6
NURS 953	Promoting Quality Management	3
NURS 958	Clinical Nurse Leader Capstone (project plus 200 clinical hours)	6
NURS 968	Foundations of Evidence Based Practice	3
Total Credits		**63**

* Clinical hours are completed through the following required courses: NURS 813C, NURS 826C, NURS 827C, NURS 952C, NURS 958.

Degree Plan

Plan of Study

Course	Title	Credits
First Year		
Spring		
NURS 801	Health Policy and Nursing Practice	3
NURS 807	Pathophysiology and Pharmacology	4
NURS 813	Health Assessment and Clinical Nursing Theory (plus lab)	4
NURS 813C	Health Assessment and Clinical Nursing	2
NURS 968	Foundations of Evidence Based Practice	3
	Credits	**16**
Summer		
NURS 822	Chronic Disease Management	3
NURS 826	Caring for People with Severe and Persistent Mental Illness	2
NURS 826C	Caring for People with Severe and Persistent Mental Illness Clinical	2
NURS 831	Childbearing and Childrearing Families	2
NURS 831C	Childbearing and Childrearing Families Clinical	2
NURS 902	Advanced Physical Assessment	2
NURS 908	Advanced Physiology & Pathophysiology Across the Lifespan	3
	Credits	**16**
Fall		
NURS 811	Clinical Reasoning Through Simulation	2
NURS 827	Managing Acute and Complex Care of Individuals	4
NURS 827C	Managing Acute and Complex Care of Individuals Clinical	2
NURS 835	Leadership in Healthcare	3
NURS 844	Population Health	3
	Credits	**14**
Second Year		
Spring		
NURS 952	Clinical Nursing Leadership	2
NURS 952C	Clinical Nursing Leadership Clinical	6
NURS 953	Promoting Quality Management	3
Eligible for NCLEX-RN		
	Credits	**11**
Summer		
NURS 958	Clinical Nurse Leader Capstone	6
	Credits	**6**
	Total Credits	**63**

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Accelerated Master's Program

The Direct Entry Master's in Nursing Program provides an opportunity for accelerated admission to the graduate program for full time undergraduate UNH students who are not current nursing students and meet admission criteria. Students may apply during the second semester of their junior year by the posted application deadline. Application review continues until all seats are filled. To be considered, undergraduate students must have completed all major requirements by the fall of their senior year. Direct entry courses taken during the spring of the senior year of undergraduate program will fulfill elective credits to complete B.A./B.S. degree requirements at UNH. A grade point average of 3.2 or better is required. Previous course work is taken into consideration. Prerequisite courses include Human Anatomy & Physiology I and II with lab, Microbiology at the cellular level, and Statistics with a grade of B or better. Applicants who are in the process of completing a prerequisite course spring semester must have instructor submit grade to date directly to the Department of Nursing by April 8. Students who have not completed all prerequisite courses at the time of application may be admitted with the stipulation that all prerequisite courses are completed with a B or better prior to starting the program.

Applicants are strongly encouraged to meet with the Graduate Program in Nursing coordinator and their discipline-specific adviser early on in their undergraduate program to plan this course of study.

Student Learning Outcomes

At the completion of the Master's nursing program, the graduate student is prepared to:

- Serve in a healthcare leadership and change agent role as part of a diverse, complex,and patient-centered health care system.
- Act as a practice scholar to design, direct and evaluate system changes to promote safe, timely, effective, efficient, equitable and patient-centered care.
- Use data analytic methods, information systems and technology to evaluate,integrate and apply knowledge that will improve programs of care, outcomes of care and care systems.
- Use translational science and analytic methods to develop, identify, implement, and evaluate best practices to improve health care and health care systems.
- Design and implement health promotion and clinical prevention strategies across the health/illness continuum to optimize health and disease management.
- Systematically use improvement methods to monitor and evaluate care processes and outcomes and applies data for continuous improvement and safety
- Advocate for social justice through policy, professional and political engagement.
- Applies leadership principles that support inter-professional practice.

In addition to the Master's Outcomes, the CNL graduate will:

- Act as lateral integrator to design, direct, and evaluate system changes to promote safe, timely, efficient, effective, equitable, patient centered care.

Nursing: Evidence-Based Practice (M.S.)

https://chhs.unh.edu/nursing/program/ms/nursing-evidence-based-practice

Description

Evidence-Based Nursing

The evidence-based nursing track focuses on developing advanced generalist nursing practice in a focused area of study, promoting interdisciplinary collaboration, fostering life-long learning, and preparing students for the leading edge of health care knowledge and delivery. Students strengthen knowledge and skills in clinical decision making, the application of nursing interventions, and their ability to critique and appropriately use evidence as a foundation for practice. In this graduate track, students study nursing as an applied discipline, advancing their knowledge of theoretical perspectives for clinical practice, with an emphasis on leadership; the cultural, social, and political context of health and illness; and quality improvement methodologies. Students are mentored in the enactment of leadership strategies to improve quality care in nursing practice through an intensive clinical practicum.

Admission Requirements

Registered nurses (RNs) who have successfully passed the NCLEX--RN, currently hold an unencumbered, active RN license in the United States, and who hold a baccalaureate degree in either nursing or another field can be considered for admission. Applicants are required to have a good academic record and completion of coursework in statistics and research. The following is required:

1. Unencumbered, active RN license in the United States
2. Baccalaureate degree in nursing or another field
3. Cumulative GPA of 3.0 or higher in associate and baccalaureate programs
4. Nursing experience is preferred but not required for Clinical Nurse Leader and Evidence-Based Nursing tracks
5. Successful completion of undergraduate statistics course and undergraduate research course
6. 3 letters of recommendation (1 academic and 2 from current nursing professionals with graduate education). Letters of recommendation should be substantial. Referee's credentials should be included on reference form. Letters of recommendation from family or friends are not acceptable.
7. Admission committee may request an interview

RNs whose baccalaureate degree is in a field other than nursing may apply to the master of science degree in nursing (MS) program and will be considered for the track that is commensurate with their clinical experience based on faculty discretion.

Requirements

Degree Requirements

Clinical Hours: 112*

Code	Title	Credits
Required Courses		
NURS 901	Health Policy	3
NURS 908	Advanced Physiology & Pathophysiology Across the Lifespan	3
NURS 909	Advanced Health Assessment Across the Lifespan	3
NURS 925	Leadership, Role & Collaboration	3
NURS 944	Health Promotion Theory & Population Health	3
NURS 953	Promoting Quality Management	3
NURS 955	Practicum in Advanced Nursing Practice	3
NURS 956	Capstone Project Seminar	3
NURS 963	Biostats and Epidemiology	3
NURS 968	Foundations of Evidence Based Practice	3
Total Credits		**30**

* Clinical hours are completed through the following required course: NURS 955.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

The Masters of Science Evidence Based Practice program builds upon the skills of the baccalaureate prepared nurse.

At the completion of the Master's nursing program, the graduate student is prepared to:

- Serve in a healthcare leadership and change agent role as part of a diverse, complex,and patient-centered health care system.
- Act as a practice scholar to design, direct and evaluate system changes to promote safe, timely, effective, efficient, equitable and patient-centered care.
- Use data analytic methods, information systems and technology to evaluate,integrate and apply knowledge that will improve programs of care, outcomes of care and care systems.
- Use translational science and analytic methods to develop, identify, implement, and evaluate best practices to improve health care and health care systems.
- Design and implement health promotion and clinical prevention strategies across the health/illness continuum to optimize health and disease management.
- Systematically use improvement methods to monitor and evaluate care processes and outcomes and applies data for continuous improvement and safety
- Advocate for social justice through policy, professional and political engagement.
- Applies leadership principles that support interprofessional practice.

Nursing: Primary Care Family Nurse Practitioner (M.S.)

https://chhs.unh.edu/nursing/program/ms/family-nurse-practitioner

Description

Primary Care Family Nurse Practitioner

This program prepares family nurse practitioners (FNP) who are clinically competent and practice with cultural humility as advanced practiced registered nurse (APRN). FNPs provide patient centered health care to individuals, families, and communities across the life span. Clinical practice includes health promotion, disease prevention, teaching, counseling, and acute and chronic disease management. At the completion of the program, students are eligible to sit for national certification as a family nurse practitioner. Upon licensure, FNPs may practice autonomously as well as in collaboration with other health professionals.

Admission Requirements

Applicants are required to have an unencumbered RN license in the United States, degree in nursing or outside nursing, and successful completion of undergraduate statistics and research to be eligible to apply to this program.

1. Unencumbered, active RN license in the United States
2. Baccalaureate degree in nursing or another field
3. Cumulative GPA of 3.0 or higher in associate and baccalaureate programs
4. Minimum one year nursing experience preferred.
5. Successful completion of undergraduate statistics course and undergraduate research course
6. 3 letters of recommendation. Recommendation letters submitted by relatives or friends, as well as letters older than one year, will not be accepted. References should be substantial with one academic, if available, and two current nursing professionals with graduate education background.
7. Personal Statement. Prepare a brief but careful statement regarding:
   a. Reasons you wish to do graduate work in this field, including your immediate and long-range objectives.
   b. our specific research or professional interest and experiences in this field.

Non-BSN Admission Requirements*:* RNs whose baccalaureate degree is in a discipline other than nursing may apply to the master of science degree in nursing (M.S.) program and will be considered for the track that is commensurate with their clinical experience based on faculty discretion.

Requirements

Degree Requirements

Clinical Hours: 750*

Code	Title	Credits
Required Courses		
NURS 818	Foundations of Evidence Based Practice	3
NURS 969	Health Systems Policy, Economics & Financial Planning	3
NURS 816	Health Promotion Theory and Population Health	3
NURS 915	Leadership, Role & Collaboration	3
NURS 910	Genomics & Ethics	3
NURS 917	Biostats and Epidemiology	3
NURS 820	Advanced Physiology and Pathophysiology Across the Lifespan	3
NURS 812	Advanced Pharmacology and Therapeutics	3
NURS 814	Advanced Health Assessment Across the Lifespan	3
NURS 911	Diagnosis & Management - Diagnostic Reasoning	3
NURS 920	FNP Health Management I - Didactic	3
NURS 921	FNP Health Management I - Clinical	4
NURS 922	FNP Health Management II - Didactic	3
NURS 923	FNP Health Management II - Clinical	4
NURS 924	FNP Health Management III - Didactic	3
NURS 940	FNP Health Management III - Clinical	4
Total Credits		**51**

* Clinical hours are completed through the following required courses: NURS 921, NURS 923, NURS 940.

Student Learning Outcomes

The Family Nurse Practitioner builds upon the skills of the baccalaureate prepared generalist nurse.

At the completion of the Master's nursing program, the graduate student is prepared to:

- Serve in a healthcare leadership and change agent role as part of a diverse, complex, and patient-centered health care system.
- Act as a practice scholar to design, direct and evaluate system changes to promote safe, timely, effective, efficient, equitable and patient-centered care.
- Use data analytic methods, information systems and technology to evaluate, integrate and apply knowledge that will improve programs of care, outcomes of care and care systems.

- Use translational science and analytic methods to develop, identify, implement, and evaluate best practices to improve health care and health care systems.
- Design and implement health promotion and clinical prevention strategies across the health/illness continuum to optimize health and disease management.
- Systematically use improvement methods to monitor and evaluate care processes and outcomes and applies data for continuous improvement and safety
- Advocate for social justice through policy, professional and political engagement.
- Applies leadership principles that support inter-professional practice.

In addition to the Master's Outcomes above, the Primary Care Family Nurse Practitioner graduate will:

- Utilize advanced assessment, diagnostic reasoning, and evidence-based practice when partnering with individuals, families, and communities to optimize health
- Judiciously prescribe treatment modalities to manage acute and chronic conditions within state and federal scope of practice regulations
- Function as an independent practitioner to manage comprehensive primary care across the lifespan.

Nursing: Psychiatric Mental Health Nurse Practitioner (M.S.)

https://chhs.unh.edu/nursing/program/ms/psychiatric-mental-health-nurse-practitioner

Description

The Master's in Nursing degree specialty track option in Psychiatric-Mental Health Nurse Practitioner (PMHNP) will prepare the experienced Registered Nurse (RN) with the knowledge, skills, and competencies to assess, diagnose, and manage mental healthcare patients across the lifespan. Foundational core coursework to prepare the advanced practice nurse is completed prior to transitioning into specialty content.

Courses are competency based, founded on evidence-based approaches to care management and learning strategies with commitment to student success and continuous quality improvement embedded within the process. Synchronous, asynchronous, low and high-fidelity simulation, on campus intensives, and clinical immersion will reinforce didactic content and afford the student the opportunity to transition to an active member of a collaborative mental health care team.

Upon successful program completion, graduates will be eligible to sit for the ANCC board certification exam for Psychiatric-Mental Health Nurse Practitioner Across the Lifespan (PMHNP-BC).

Admission Requirements

1. Unencumbered, active RN license in the United States.
2. Baccalaureate degree in Nursing and/or another field.
3. One full year of Registered Nurse experience minimum (Psychiatric experience not required).
4. 3 professional letters of reference–academic and/or professional.
5. Personal statement. Prepare a brief but careful statement regarding:
   a. This is a graduate program that requires a high cognitive load, explain in detail how you are going to prepare yourself for that and manage throughout the program?
   b. Discuss the Master's PMHNP program, what experiences have contributed to your interest and how do you visualize yourself in this role after graduation?
   c. Where do you visualize yourself in 3 years, 5 years, and 7 years?
6. Resume

Non-BSN Admission Requirements: RNs whose baccalaureate degree is in a discipline other than nursing may apply to the Master of Science degree in nursing (M.S.) program PMHNP track option and will be considered for the track that is commensurate with their clinical experience based on faculty discretion.

Requirements

Degree Requirements

Clinical Hours: 750*

Code	Title	Credits
NURS 818	Foundations of Evidence Based Practice	3
NURS 816	Health Promotion Theory and Population Health	3
NURS 915	Leadership, Role & Collaboration	3
NURS 820	Advanced Physiology and Pathophysiology Across the Lifespan	3
NURS 812	Advanced Pharmacology and Therapeutics	3
NURS 814	Advanced Health Assessment Across the Lifespan	3
NURS 911	Diagnosis & Management - Diagnostic Reasoning	3
NURS 977	Neurobiology of Mental Disorders Across the Lifespan	2
NURS 983	Foundations of Psychiatric-Mental Health Practice and Assessment	3
NURS 978	Psychopharmacology of Mental Health Disorders Across the Lifespan I	2
NURS 991	Diagnosis & Management of Mental Health Disorders Across the Lifespan I	3
NURS 979	Psychopharmacology of Mental Health Disorders Across the Lifespan II	2
NURS 992	Diagnosis & Management of Mental Health Disorders Across the Lifespan II	3
NURS 986	Psychiatric-Mental Health Nurse Practitioner Practicum I	2
NURS 990	Mental Health & Special Populations	3
NURS 987	Psychiatric-Mental Health Nurse Practitioner Practicum II	3
NURS 988	Psychiatric-Mental Health Nurse Practitioner Practicum III	3
NURS 989	Psychiatric-Mental Health Nurse Practitioner Practicum IV	3
Total Credits		**50**

* Clinical hours are completed through the following required courses: NURS 986, NURS 987, NURS 988, NURS 989.

Student Learning Outcomes

The Psychiatric-Mental Health Nurse Practitioner builds upon the skills of the baccalaureate prepared generalist nurse.

At the completion of the Master's nursing program, the graduate student is prepared to:

- Serve in a healthcare leadership and change agent role as part of a diverse, complex, and patient-centered health care system.
- Act as a practice scholar to design, direct and evaluate system changes to promote safe, timely, effective, efficient, equitable and patient-centered care.

- Use data analytic methods, information systems and technology to evaluate, integrate and apply knowledge that will improve programs of care, outcomes of care and care systems.
- Use translational science and analytic methods to develop, identify, implement, and evaluate best practices to improve health care and health care systems.
- Design and implement health promotion and clinical prevention strategies across the health/illness continuum to optimize health and disease management.
- Systematically use improvement methods to monitor and evaluate care processes and outcomes and applies data for continuous improvement and safety
- Advocate for social justice through policy, professional and political engagement.
- Applies leadership principles that support inter-professional practice.

In addition to the Master's Outcomes above, the Psychiatric-Mental Health Nurse Practitioner graduate will:

- Utilize advanced practice knowledge, skills, and competencies to assess, diagnose, and coordinate and manage mental health care patients across the lifespan
- Recommend and prescribe evidence-based developmentally appropriate treatment modalities to manage psychiatric conditions in patients across the lifespan defined by shared decision-making and patient concordance within state and federal scope of practice regulations
- Engage in professional, bias-free, quality, safe, collaborative, and ethical, evidence-based practice across all mental healthcare practice settings

Adult Gerontology Acute Care Nurse Practitioner (Post Masters)

https://online.unh.edu/program/post-masters/adult-gerontology-acute-care-nurse-practitioner

Description

The purpose of this post-master's certificate program is to the prepare the advanced practice nurse (APRN)to perform as an Adult-Gerontology Nurse Practitioner (AGACNP) and increase access to acute care medical and surgical services within their region. With backgrounds as either nurse practitioners or master's prepared nurses with significant acute or critical care clinical experience, graduates can apply newly learned knowledge and skills within the acute care setting, including and not limited to hospitals and ambulatory care centers. Training will help increase the qualified workforce to meet acute and critical medical needs, including in rural areas where recruitment and retention has been a significant challenge.

This program is designed for the APRN with a master's degree within nursing, those already holding a nurse practitioner certification, APRNs with a master's degree and significant clinical experience in an acute or critical care setting will also be considered. The aim of this program is to prepare APRNs at an advanced level to successfully diagnose and manage medical-surgical patients who are acutely or critically ill through prescribing of pharmacologic and non-pharmacologic interventions, coordination of consultations and care, and continued management of chronic illnesses, comorbidities, and end of life needs.

Courses will focus on the adult-gerontological population with an emphasis on integration of prior coursework, such as pathophysiology and physical assessment, to build skills in diagnostic reasoning and subsequent management of the acutely ill patient using evidenced based practice. In addition, coursework will also include interdisciplinary work with case management and social work to improve comprehension and future utilization in transitions in care.

Requirements

A customized plan of study will be created for admitted students and is based upon prior course work. Additional foundational coursework may be required to meet AACN or ANCC certification requirements.

Certificate Requirements

Clinical Hours: 500*

Code	Title	Credits
Required Courses		
NURS 850	Foundations in Acute Care	3
NURS 851	Foundations in Acute Care Clinical Practicum	2
NURS 852	Adult-Gerontology Acute Care Nurse Practitioner I	3
NURS 853	Adult-Gerontology Acute Care Nurse Practitioner I Clinical Practicum	2
NURS 854	Adult-Gerontology Acute Care Nurse Practitioner II	3
NURS 855	Adult-Gerontology Acute Care Nurse Practitioner II Clinical Practicum	2
NURS 856	Adult-Gerontology Acute Care Nurse Practitioner III	3
NURS 857	Adult-Gerontology Acute Care Nurse Practitioner III Clinical Practicum	2
NURS 858	Adult-Gerontology Acute Care Nurse Practitioner IV	3
NURS 859	Adult-Gerontology Acute Care Nurse Practitioner IV Clinical Practicum	2
Total Credits		**25**

* Clinical hours are completed through the following required courses: NURS 851, NURS 853, NURS 855, NURS 857, NURS 859.

Primary Care Family Nurse Practitioner (Post Masters)

https://chhs.unh.edu/nursing/program/certificate/family-nurse-practitioner

Description

The Department of Nursing offers the Post-Master's Primary Care Family Nurse Practitioner Certificate Program for students who completed a master of science degree in nursing. The certificate of advanced practice is designed for those individuals with a master's degree in nursing who wish to expand their practice into the role of a primary care family nurse practitioner. The PM-PC-FNP specialty area prepares family nurse practitioners (FNP) who are clinically competent and practice with cultural humility as advanced practiced registered nurse (APRN). FNPs provide patient centered health care to individuals, families,and communities across the life span. Clinical practice includes health promotion, disease prevention, teaching, counseling, and acute and chronic disease management. At the completion of the program, students are eligible to sit for national certification as a family nurse practitioner. Upon licensure, FNPs may practice autonomously as well as in collaboration with other health professionals.

Students accepted into the PM-PC-FNP certificate program will have an individualized plan of study developed. Course waivers will be granted based upon their educational background and previous coursework in master's program.

Admission Requirements

Applicants are required to have an unencumbered RN license in the United States, degree in nursing or outside nursing, and successful completion of undergraduate statistics and research to be eligible to apply to this program.

1. Unencumbered, active RN license in the United States
2. Baccalaureate degree in nursing or another field. Masters degree in nursing.
3. Cumulative GPA of 3.0 or higher in associate and baccalaureate programs
4. Successful completion of undergraduate statistics course and undergraduate research course
5. 2 letters of recommendation. Recommendation letters submitted by relatives or friends, as well as letters older than one year, will not be accepted. References should be substantial with one academic, if available, and two current nursing professionals with graduate education background.
6. Updated Resume
7. Personal Statement. Prepare a brief but careful statement regarding:
   a. Reasons you wish to do graduate work in this field, including your immediate and long-range objectives.
   b. our specific research or professional interest and experiences in this field.
8. Course descriptions should be submitted for any course you request waived.

Requirements

Students accepted into the PM-FNP certificate program will have an individualized plan of study developed. Course waivers will be based upon educational background and previous coursework in master's program.

Certificate Requirements

Clinical Hours: 750*

Code	Title	Credits
NURS 818	Foundations of Evidence Based Practice	3
NURS 969	Health Systems Policy, Economics & Financial Planning	3
NURS 816	Health Promotion Theory and Population Health	3
NURS 915	Leadership, Role & Collaboration	3
NURS 910	Genomics & Ethics	3
NURS 820	Advanced Physiology and Pathophysiology Across the Lifespan	3
NURS 812	Advanced Pharmacology and Therapeutics	3
NURS 814	Advanced Health Assessment Across the Lifespan	3
NURS 911	Diagnosis & Management - Diagnostic Reasoning	3
NURS 917	Biostats and Epidemiology	3
NURS 920	FNP Health Management I - Didactic	3
NURS 921	FNP Health Management I - Clinical	4
NURS 922	FNP Health Management II - Didactic	3
NURS 923	FNP Health Management II - Clinical	4
NURS 924	FNP Health Management III - Didactic	3
NURS 940	FNP Health Management III - Clinical	4

* Clinical hours are completed through the following required courses NURS 921, NURS 923 and NURS 940.

Psychiatric Mental Health Nurse Practitioner (Post Masters)

https://chhs.unh.edu/nursing/program/graduate-certificate/psychiatric-mental-health

Description

The Post-Master's Psychiatric-Mental Health Nurse Practitioner (PMHNP) program will prepare the APRN with the knowledge, skills, and competencies to assess, diagnose, and manage mental health care patients across the lifespan. The program is designed for the licensed APRN who has a master's degree and at least one year of advanced practice nursing experience*. Courses are competency based, founded on evidence-based approaches to care management and learning strategies with commitment to student success and continuous quality improvement embedded within the process.

Synchronous, asynchronous, low and high-fidelity simulation, on campus intensives, and clinical immersion will reinforce didactic content and afford the student the opportunity to transition to an active member of a collaborative mental health care team. Upon successful program completion, graduates will be eligible to sit for the ANCC board certification exam for Psychiatric-Mental Health Nurse Practitioner Across the Lifespan (PMHNP-BC).

Admission Requirements

In addition to the standard Graduate School requirements, the Department of Nursing and PM-PMHNP program require:

1. Unencumbered, active RN license in the United States
2. At least a master's degree in nursing; current license to practice as an APRN.
3. Nurse practitioner certification and/or Advanced Practice Nurse specialty with one year of practice experience; prerequisite coursework in prior Nurse Practitioner academic program to fulfill the requirements of ANCC *
4. 3 professional letters of reference–academic and/or professional.
5. Personal statement.Prepare a brief but careful statement regarding:
   a. This is a post-graduate program that requires a high cognitive load, explain in detail how you are going to prepare yourself for that and manage throughout the program?
   b. Discuss the Post-Master's PMHNP program, what experiences have contributed to your interest and how do you visualize yourself in this role after graduation?
   c. Where do you visualize yourself in 1 year, 3 years, and 5 years?
6. Resume

*Eligibility for the American Nurses Credentialing Center (ANCC) Psychiatric Mental Health Nurse Practitioner (Across the Lifespan)certification examination requires completion of the following three separate,comprehensive graduate-level courses:

- Advanced Physical/Health Assessment
- Advanced Pathophysiology (through the lifespan)
- Advanced Pharmacology

Prior coursework will be evaluated during the application process and any noted deficiencies will be disclosed at the time of admission.

Requirements

A customized plan of study will be created for admitted students and is based upon prior course work. Additional foundational coursework to meet ANCC certification requirements may be required.

Certificate Requirements

Clinical Hours: 750*

Code	Title	Credits
Required Courses		
NURS 977	Neurobiology of Mental Disorders Across the Lifespan	2
NURS 983	Foundations of Psychiatric-Mental Health Practice and Assessment	3
NURS 978	Psychopharmacology of Mental Health Disorders Across the Lifespan I	2
NURS 991	Diagnosis & Management of Mental Health Disorders Across the Lifespan I	3
NURS 979	Psychopharmacology of Mental Health Disorders Across the Lifespan II	2
NURS 992	Diagnosis & Management of Mental Health Disorders Across the Lifespan II	3
NURS 986	Psychiatric-Mental Health Nurse Practitioner Practicum I (150 Clinical Hours)	2
NURS 990	Mental Health & Special Populations	3
NURS 987	Psychiatric-Mental Health Nurse Practitioner Practicum II (200 Clinical Hours)	3
NURS 988	Psychiatric-Mental Health Nurse Practitioner Practicum III (200 Clinical Hours)	3
NURS 989	Psychiatric-Mental Health Nurse Practitioner Practicum IV (200 Clinical Hours)	3
Total Credits		**29**

* Clinical hours are completed through the following required courses: NURS 986, NURS 987, NURS 988, NURS 989.

Nutritional Sciences (NUTR)

Degrees Offered: Ph.D., M.S., and Graduate Certificate

This program is offered in Durham.

The Department of Agriculture, Nutrition, and Food Systems offers advanced degrees in Nutritional Sciences at the Masters and Doctoral levels, as well as a Didactic Program in Dietetics Graduate Certificate.

At the Masters level, students will engage in a research project related to the nutritional sciences and gain a comprehensive understanding of nutritional science through coursework. Students can earn a master's degree through three unique pathways: M.S. in Nutritional Sciences, M.S. in Nutrition and Dietetics, and M.S. in Nutrition. All three options emphasize active participation in hypothesis-driven research of publishable quality.

The Ph.D. in Nutritional Sciences trains students to gain advanced knowledge and develop research expertise in such areas as nutritional epidemiology, gut microbiome-host interactions, nutritional assessment, behavioral nutrition, and community nutrition as it pertains to chronic disease risk (e.g., cardiovascular disease, obesity, cognitive function) and food access, dietary patterns, and policy.

In addition, a Didactic Program in Dietetics Graduate Certificate provides prerequisites coursework to apply to a dietetic internship.

https://colsa.unh.edu/agriculture-nutrition-food-systems

Programs

- Nutritional Sciences (Ph.D.) (p. 214)
- Nutrition (M.S.) (p. 216)
- Nutrition and Dietetics (M.S.) (p. 216)
- Nutritional Sciences (M.S.) (p. 218)
- Didactic Program in Dietetics (Graduate Certificate) (p. 220)

Faculty

Please see https://colsa.unh.edu/agriculture-nutrition-food-systems/faculty-staff-directory for faculty.

Nutritional Sciences (Ph.D.)

https://colsa.unh.edu/agriculture-nutrition-food-systems/program/phd/nutritional-sciences

Description

The Ph.D. in Nutritional Sciences trains students to gain advanced knowledge and develop research expertise in such areas as nutritional epidemiology, gut microbiome-host interactions, nutritional assessment, behavioral nutrition, and community nutrition as it pertains to chronic disease risk (e.g., cardiovascular disease, obesity, cognitive function) and food access, dietary patterns, and policy.

Requirements

Degree Requirements

Doctor of Philosophy (Ph.D.) graduate students work with their advisor and Doctoral Guidance Committee to plan a program of study including the required core courses, competencies, and develop a research proposal. To complete the degree, students must complete a research proposal, pass a qualifying exam, conduct dissertation research, and complete and defend a dissertation.

Guidance and Dissertation Committees: During the first semester, the student and advisor jointly select members of a guidance committee. A nomination form must be sent to the graduate school to officially appoint the committee membership. The Guidance Committee consists of 3-5 members and is responsible for approving the proposal and oversees the qualifying examination. Once the student has advanced to candidacy, the Doctoral Dissertation Committee is formed. The Dissertation Committee is responsible for administering the dissertation exam.

Dissertation Proposal and Defense: All Ph.D. students are required to develop a formally approved research proposal typically by the end of the third semester and no later than the fourth semester. Proposals are approved by the dissertation committee and the major advisor. In addition to the written proposal, students are expected to present a proposal defense presentation. This proposal should consist of the following:

1. Comprehensive review of the literature related to the student's research topic.

2. Statement of need/justification.
3. Research goal with a list of research objectives with stated hypotheses that address the major research questions.
4. Plan of work describing the experimental approaches or methods to be used in answering the thesis questions.
5. Expected outcomes and potential pitfalls for each objective.
6. Timeline for completion of the work.
7. Preliminary research where appropriate.

Candidacy: Following approval of the research proposal and completion of coursework, doctoral students should advance to candidacy. Candidacy is reached after passing a formal qualifying examination that assesses both broad basic knowledge of the student's field, and topics central to the research project. The purpose of the exam is to measure of the student's likelihood of successfully completing a doctoral program. The qualifying exam comprises written and oral components.

1. Written exam: Student choose three areas of specialization in consultation with their Doctoral Guidance Committee. The advisor solicits questions from Committee members and administers the exam. Once completed, Committee members evaluate the responses. The student is expected to demonstrate competence in each of the chosen areas, reflected in clear, concise, well-organized synthetic essays, or written materials in grant format. The exam may be "closed book" or "open book" at the discretion of the advisor.
2. Oral exam: An oral exam is conducted by the Doctoral Guidance Committee and chaired by the advisor. The student should demonstrate mastery of fundamental concepts in the designated areas of specialization, drawing upon a broad spectrum of information to answer theoretical and practical questions. There may be focus on any area that was deemed weak in the written exam.

When the student has passed both parts of the qualifying exam, the advisor will inform the Graduate School and recommend that the student be advanced to candidacy in the Ph.D. degree program.

Dissertation and Oral Defense: All students must complete a dissertation reporting original research. After completion of the research, the candidate must provide a copy of the dissertation to the Doctoral Dissertation committee at least two weeks prior to the final oral examination. The final thesis defense consists of two parts: an oral presentation of the research in a public seminar, and an oral defense of the dissertation conducted by the Doctoral Dissertation Committee. Final approval of the dissertation will be determined by a majority vote of the committee.

Number of Credits Required: There is no specific credit requirement for the Ph.D., though students must take the required core courses and fulfill the competences outlined below. Up to 8 credits of graduate credit from another institution may be transferred, provided the credits were not counted toward another degree, and the course grade was a B or higher. Petitions requesting transfer credit must be supported by the advisor and graduate committee and approved by the UNH Graduate School.

1. Core Course Requirements:

Code	Title	Credits
ANFS 901	Introduction to Agriculture, Nutrition, and Food Systems Graduate Studies [1]	1
ANFS 997	Agriculture, Nutrition, and Food Systems Seminar [2]	1
ANFS 999	Doctoral Dissertation Research [3]	0
NUTR 960 & NUTR 961	Research Methods in Nutritional Science I and Research Methods in Nutritional Science II [4]	8
NUTR Electives [5]		

[1] To be taken at the earliest opportunity, typically in the initial fall semester of the graduate program.
[2] All students are required to register and participate in this course for a minimum of 3 credits.
[3] All students are required to register and participate at least twice, and must be taken after candidacy.
[4] Providing students foundational and practical application related to science communication and experimental design analysis, most students will complete during their first year of studies.
[5] In consultation with their guidance committee, students are required to complete a minimum of 8 additional graduate NUTR credits.

2. Competency Requirements: Students will design a program of study in close consultation with their guidance committee, including their academic courses and scientific research project.

3. Electives: Each student, in consultation with their graduate committee, will define one or more areas of informal specialization, and will take additional courses appropriate for their area(s) of specialization.

4. Additional Information:

- All students in the Nutritional Sciences Ph.D. Program are expected to present their research in ANFS departmental seminar at least three times (including the defense seminar). Students are also encouraged to present at professional conferences and acquire teaching and/or mentoring experience.

Annual Evaluation: The annual evaluation of graduate students ensures that students receive the mentorship they deserve and are making progress toward completion of their degrees. The annual evaluation of graduate students consists of a collaborative effort between faculty adviser and student to:

- Complete a self-assessment;
- Present a professional quality CV suitable for awards, job applications, and internships;
- Produce a narrative of service or other activities not captured on a CV;
- Develop annual goals.

Student Learning Outcomes

Nutrition knowledge-related

- Demonstrate knowledge and understanding in key content areas of nutritional sciences and public health nutrition issues

Research design and analysis

- Identify the strengths and weaknesses of study designs utilized in nutrition-related research
- Independently conduct nutrition-related data analyses
- Interpret the results and scientific literature to inform dietary recommendations, public policy, or chronic disease intervention

Scientific method

- Demonstrate the ability to independently design and defend an original, hypothesis-driven project to advance the field of nutritional sciences.

Critical thinking

- Integrate scientific evidence and critically evaluate research findings in specific fields related to nutritional sciences.

Communication skills

- Disseminate evidence-based information on nutritional sciences and public health
- Deliver nutrition research findings to multiple scientific audiences (i.e. research conference, academic journal)
- Incorporate critical feedback in their research and academic work

Professionalism

- Conduct research in an ethical manner
- Demonstrate collaboration and leadership skills
- Master concepts of equity, diversity, and inclusion in different settings (e.g. healthcare, education, community health)

Nutrition (M.S.)

https://colsa.unh.edu/agriculture-nutrition-food-systems/program/ms/nutrition

Description

The M.S. in Nutrition delivers a content-rich core and substantial learning experiences to prepare students for careers in nutrition and professional health fields. Students with appropriate undergraduate preparation can complete the program within one academic year. The M.S. in Nutrition program is well-suited for students interested in pursuing subsequent professional allied health pathways (e.g., medical school) or dietetic internships that require a master's degree for admittance. As part of the program, students will demonstrate capacity to engage in critical and systems thinking, convey and apply nutrition concepts, work as individuals and in teams, and identify strategies for lifelong learning.

Requirements

The M.S. Nutrition requires a minimum of 32 graduate credits. There are eight core courses* that include a year-long research experience (NUTR 960 and NUTR 961). Elective coursework support students' diverse interests and career goals. Students will be required to earn a B- or better in graduate courses to earn credits toward their degree.

*Students who previously complete any required core 800-level courses at the 700-level as part of the UNH undergraduate degree will substitute a graduate NUTR elective alternative from a prescribed list.

Code	Title	Credits
Core Course Requirements		
NUTR 820	Community Nutrition	4
NUTR 850	Nutritional Biochemistry	4
NUTR 873	Clinical Nutrition	4
NUTR 880	Critical Issues in Nutrition	4
NUTR 960	Research Methods in Nutritional Science I	4
NUTR 961	Research Methods in Nutritional Science II	4
ANFS 901	Introduction to Agriculture, Nutrition, and Food Systems Graduate Studies	1
ANFS 997	Agriculture, Nutrition, and Food Systems Seminar	1
Electives		
Select two courses from the following:		
NUTR 809	Nutritional Epidemiology	4
NUTR 810	Advanced Diabetes Care	2
NUTR 815	Advanced Sports Nutrition	4
NUTR 830	From Seed to Sea: Examining Sustainable Food Systems	4
NUTR 840	Nutrition for Children with Special Needs	4
NUTR 860	Behavioral Nutrition and Counseling	4
NUTR 851	Nutritional Biochemistry of Micronutrients	4
NUTR 855	Concepts and Controversies in Weight Management	4
NUTR 860	Behavioral Nutrition and Counseling	4
NUTR 876	Advanced Pathophysiology and Clinical Care	4
NUTR 895	Investigations	1-4
NUTR 927	Nutrition and Gut Microbes in Human Health	4

Student Learning Outcomes

Nutrition knowledge-related

- Build knowledge and understanding in key content areas of nutritional sciences and public health nutrition issues

Research design and analysis

- Identify the strengths and weaknesses of study designs utilized in nutrition-related research
- Conduct nutrition-related data analyses
- Interpret the results and scientific literature to inform dietary recommendations, public policy, or chronic disease intervention

Scientific method

- Demonstrate the ability to design and defend an original, hypothesis-driven project to advance the field of nutritional sciences

Critical thinking

- Integrate scientific evidence and critically evaluate research findings in specific fields related to nutritional sciences

Communication skills

- Disseminate evidence-based information on nutritional sciences and public health
- Deliver nutrition research findings to multiple scientific audiences (i.e. research conference, academic journal)
- Incorporate critical feedback in their research and academic work

Professionalism

- Conduct research in an ethical manner
- Demonstrate collaboration and leadership skills
- Master concepts of equity, diversity, and inclusion in different settings (e.g., healthcare, education, community health)

Nutrition and Dietetics (M.S.)

https://colsa.unh.edu/agriculture-nutrition-food-systems/program/ms/nutrition-dietetics

Description

The Master of Science in Nutrition and Dietetics option is designed as a 4 semester program of required coursework. We invite 10 new students to begin each Fall semester. Upon conclusion of the program, our graduates are eligible to take the Registered Dietitian Nutritionist (RDN) exam.

The first year of the curriculum is comprised primarily of academic course work, the core of which focuses on culinary skill development, nutrition counseling, weight management, clinical care and research. Interns will select elective coursework during the first year to tailor their learning to specific interests. The second year of the program includes practicum-based learning in a variety of clinical, community, and food service operations integrated with curriculum related coursework.

Admission Requirements

- Applicants must have a minimum of a 3.0 GPA.
- To be considered for admission, students applying for the program need to have received a Didactic Program in Dietetics (DPD) verification statement from an accredited undergraduate dietetics program that meets the requirements of the Accreditation Council for Education in Nutrition and Dietetics (ACEND) prior to the program start. Applicants are encouraged to carefully review the program website for admission requirements, application instructions, and detailed program information.

The Master of Science in Nutrition and Dietetics program at the University of New Hampshire is currently granted accreditation by ACEND of the Academy of Nutrition and Dietetics. ACEND is a specialized accrediting body recognized by the Commission on Recognition of Post-secondary Accreditation and the United States Department of Education.

Contact information for ACEND: (800) 877-1600 ext.5400, acend@eatright.org, 120 South Riverside Plaza, Suite 2190 Chicago, IL 60606-6995.

Requirements

Degree Requirements

The Master of Science in Nutrition and Dietetics requires that students complete required coursework, including over 1,200 hours of practicum-based learning and related course work in food service, community and clinical experiences. The competencies integrated into the program reflect those established by ACEND.

Students must earn a B- or better in graduate courses to earn credit toward the degree.

Code	Title	Credits
Required Courses		
NUTR 829	Dietetics: Intro to Dietetics Principle and Practice [1]	2
NUTR 831	Dietetics: Clinical Theory and Practice	10
NUTR 832	Dietetics: Food Service and Community	10
NUTR 836	Sustainable Food Systems and Culinary Arts Practicum	3
NUTR 855	Concepts and Controversies in Weight Management	4
NUTR 860	Behavioral Nutrition and Counseling	4
NUTR 876	Advanced Pathophysiology and Clinical Care	4
NUTR 960	Research Methods in Nutritional Science I	4
NUTR 961	Research Methods in Nutritional Science II	4
ANFS 901	Introduction to Agriculture, Nutrition, and Food Systems Graduate Studies	1
Electives		
Select two courses (for a minimum of 4 credits) from the following:		
NUTR 809	Nutritional Epidemiology	4
NUTR 810	Advanced Diabetes Care	2
NUTR 815	Advanced Sports Nutrition	4
NUTR 830	From Seed to Sea: Examining Sustainable Food Systems	4
NUTR 840	Nutrition for Children with Special Needs	4
NUTR 850	Nutritional Biochemistry	4
NUTR 851	Nutritional Biochemistry of Micronutrients	4
NUTR 895	Investigations	1-4
NUTR 927	Nutrition and Gut Microbes in Human Health	4

[1] NUTR 829 is taken twice for a total of 4 credits.

Student Learning Outcomes

CRDNs Explained

UNH's Master of Science in Nutrition and Dietetics accreditation agency, ACEND, requires that the curriculum covers certain competencies which are "specific knowledge, skills, values, and behaviors required for effective performance as a practitioner." These are identified as CRDNs (Competency for Registered Dietitian Nutritionists). Each required non-elective course will contain CRDNS, some of which may be tracked by the instructor and program. A complete list of the required CRDNs are as follows:

Domain 1. Scientific and Evidence Base of Practice: Integration of scientific information and translation of research into practice.
Domain 2. Professional Practice Expectations: Beliefs, values, attitudes, and behaviors for the professional dietitian nutritionist level of practice.
Domain 3. Clinical and Customer Services: Development and delivery of information, products and services to individuals, groups, and populations.
Domain 4. Practice Management and Use of Resources: Strategic application of principles of management and systems in the provision of services to individuals and organization.
Domain 5. Leadership and Career Management: Skills, strengths, knowledge and experience relevant to leadership potential and professional growth for the nutrition and dietetics practitioner.

- CRDN 1.1 Select indicators of program quality and/or customer service and measure achievement of objectives.
- CRDN 1.2 Evaluate research and apply evidence-based guidelines, systematic reviews and scientific literature in nutrition and dietetics practice.
- CRDN 1.3 Justify programs, products, services and care using appropriate evidence or data.
- CRDN 1.4 Conduct projects using appropriate research or quality improvement methods, ethical procedures and data analysis utilizing current and/or new technologies.
- CRDN 1.5 Incorporate critical-thinking skills in overall practice.
- CRDN 2.1 Practice in compliance with current federal regulations and state statutes and rules, as applicable, and in accordance with accreditation standards and the Scope of Practice for the Registered Dietitian Nutritionist, Standards of Practice, Standards of Professional Performance, and Code of Ethics for the Profession of Nutrition and Dietetics.
- CRDN 2.2 Demonstrate professional writing skills in preparing professional communications.
- CRDN 2.3 Demonstrate active participation, teamwork and contributions in group settings.
- CRDN 2.4 Function as a member of interprofessional teams.
- CRDN 2.5 Work collaboratively with NDTRs and/or support personnel in other disciplines.
- CRDN 2.6 Refer clients and patients to other professionals and services when needs are beyond individual scope of practice.

- CRDN 2.7 Apply change management strategies to achieve desired outcomes.
- CRDN 2.8 Demonstrate negotiation skills.
- CRDN 2.9 Actively contribute to nutrition and dietetics professional and community organizations.
- CRDN 2.10 Demonstrate professional attributes in all areas of practice.
- CRDN 3.1 Perform Medical Nutrition Therapy by utilizing the Nutrition Care Process including use of standardized nutrition terminology as a part of the clinical workflow elements for individuals, groups and populations of differing ages and health status, in a variety of settings.
- CRDN 3.2 Conduct nutrition focused physical exams.
- CRDN 3.3 Perform routine health screening assessments including measuring blood pressure, conducting waived point-of-care laboratory testing (such as blood glucose or cholesterol), recommending and/or initiating nutrition-related pharmacotherapy plans (such as modifications to bowel regimens, carbohydrate to insulin ratio, B12 or iron supplementation)
- CRDN 3.4 Provide instruction to clients/patients for self-monitoring blood glucose, considering diabetes medication and medical nutrition therapy plan.
- CRDN 3.5 Explain the steps involved and observe the placement of nasogastric or nasoenteric feeding tubes; if available, assist in the process of placing nasogastric or nasoenteric feeding tubes.
- CRDN 3.6 Conduct a swallow screen and refer to the appropriate health care professional for full swallow evaluation when needed.
- CRDN 3.7 Demonstrate effective communication and documentation skills for clinical and client services in a variety of formats and settings, which include telehealth and other information technologies and digital media.
- CRDN 3.8 Design, implement and evaluate presentations to a target audience.
- CRDN 3.9 Develop nutrition education materials that are culturally and age appropriate and designed for the literacy level of the audience.
- CRDN 3.10 Use effective education and counseling skills to facilitate behavior change.
- CRDN 3.11 Develop and deliver products, programs or services that promote consumer health, wellness and lifestyle management.
- CRDN 3.12 Deliver respectful, science-based answers to client/patient questions concerning emerging trends.
- CRDN 3.13 Coordinate procurement, production, distribution and service of goods and services, demonstrating and promoting responsible use of resources.
- CRDN 3.14 Develop and evaluate recipes, formulas and menus for acceptability and affordability that accommodate the cultural diversity and health needs of various populations, groups and individuals.
- CRDN 4.1 Participate in management functions of human resources (such as hiring, training and scheduling).
- CRDN 4.2 Perform management functions related to safety, security and sanitation that affect employees, clients, patients, facilities and food.
- CRDN 4.3 Conduct clinical and client service quality management activities (such as quality improvement or quality assurance projects).
- CRDN 4.4 Apply current information technologies to develop, manage and disseminate nutrition information and data.
- CRDN 4.5 Analyze quality, financial and productivity data for use in planning.
- CRDN 4.6 Propose and use procedures as appropriate to the practice setting to promote sustainability, reduce waste and protect the environment.
- CRDN 4.7 Conduct feasibility studies for products, programs or services with consideration of costs and benefits.
- CRDN 4.8 Develop a plan to provide or develop a product, program or service that includes a budget, staffing needs, equipment and supplies.
- CRDN 4.9 Engage in the process for coding and billing for nutrition and dietetics services to obtain reimbursement from public or private payers, fee-for-service and value-based payment systems.
- CRDN 4.10 Analyze risk in nutrition and dietetics practice (such as risks to achieving set goals and objectives, risk management plan, or risk due to clinical liability or foodborne illness).
- CRDN 5.1 Perform self-assessment that includes awareness in terms of learning and leadership styles and cultural orientation and develop goals for self-improvement.
- CRDN 5.2 Identify and articulate one's skills, strengths, knowledge and experiences relevant to the position desired and career goals.
- CRDN 5.3 Prepare a plan for professional development according to Commission on Dietetic Registration guidelines.
- CRDN 5.4 Advocate for opportunities in the professional settings (such as asking for additional responsibility, practicing negotiating a salary or wage or asking for a promotion).
- CRDN 5.5 Demonstrate the ability to resolve conflict.
- CRDN 5.6 Promote team involvement and recognize the skills of each member.
- CRDN 5.7 Mentor others.
- CRDN 5.8 Identify and articulate the value of precepting.

Nutritional Sciences (M.S.)

https://colsa.unh.edu/agriculture-nutrition-food-systems/program/ms/nutritional-sciences

Description

The program is for students who anticipate a professional career involving research or discovery, with a strong background in the basic biology and chemistry of nutrition. This degree may be most appropriate for students who expect to pursue further advanced studies, e.g., additional graduate studies or professional school, after graduation. Graduates of the Master of Science (M.S.) in Nutritional Sciences will be valued in the marketplace as they will have a demonstrated capacity to engage in critical and systems thinking, convey and apply nutrition concepts in clinical, research and community settings, work as individuals and in teams, and identify strategies for lifelong learning.

In this thesis-based program students gain a comprehensive understanding of nutritional science through their coursework and engagement in research. Emphasis is placed on active participation in original hypothesis-driven research of publishable quality.

Requirements

Degree Requirements

The program of study must include a minimum of **30 graduate credits** including 6 credit Master's Thesis based on a research project. Courses will be taken to fulfill expected competency requirements in experimental design and analysis and in scientific writing and communication. In consultation with the student's graduate committee and the area of research specialization, other courses will be taken as appropriate.

Core Course Requirements

Code	Title	Credits
NUTR 899	Master's Thesis	6
NUTR 960 & NUTR 961	Research Methods in Nutritional Science I and Research Methods in Nutritional Science II [1]	8
ANFS 901	Introduction to Agriculture, Nutrition, and Food Systems Graduate Studies [2]	1
ANFS 997	Agriculture, Nutrition, and Food Systems Seminar [3]	2
Electives [4]		
Select a minimum of 8 credits from the following:		
NUTR 809	Nutritional Epidemiology	4
NUTR 810	Advanced Diabetes Care	2
NUTR 815	Advanced Sports Nutrition	4
NUTR 820	Community Nutrition	4
NUTR 830	From Seed to Sea: Examining Sustainable Food Systems	4
NUTR 850	Nutritional Biochemistry	4
NUTR 851	Nutritional Biochemistry of Micronutrients	4
NUTR 855	Concepts and Controversies in Weight Management	4
NUTR 860	Behavioral Nutrition and Counseling	4
NUTR 927	Nutrition and Gut Microbes in Human Health	4

1. These courses provide students foundational and practical application related to science communication and experimental design and analysis, most students will complete the courses during their first year of studies.
2. To be taken at the earliest opportunity, typically in the initial fall semester of the graduate program.
3. All students are required to register and participate in this course (1 credit CR/Fail) for a minimum of 2 credits.
4. In consultation with their guidance committee, students are required to complete a minimum of 8 additional NUTR graduate credits.

Competency Requirements

A thesis committee will be appointed early in the program and will consist of at least three members of the graduate faculty; one of these will be the primary mentor. Students will design a program of study in close consultation with their thesis committee, including their academic courses and scientific research project. The student's committee may require certain undergraduate courses as part of the graduate program if additional competencies would be beneficial to the student. No more than 4 credits of NUTR 895 Investigations can apply toward the total credit count.

Additional Requirements

All students in the Nutritional Sciences Graduate Programs are expected to:

- Present their research in ANFS 997 Agriculture, Nutrition, and Food Systems Seminar at least twice (exclusive of the thesis defense). Students are also encouraged to present at professional conferences and acquire teaching and/or mentoring experience.
- Serve as a teaching assistant for at least one semester or have at least one significant teaching experience in nutrition.
- Defend their research proposal, both in written and oral form. Approval form must be on file with department.
- Write and defend an original thesis of publishable quality.

Annual Evaluation

The annual evaluation of graduate students ensures that students receive the mentorship they deserve and are making progress toward completion of their degrees. The annual evaluation of graduate students consists of a collaborative effort between faculty adviser and student to:

- Complete a self-assessment;
- Present a professional quality CV suitable for awards, job applications, and internships;
- Produce a narrative of service or other activities not captured on a CV (if applicable);
- Develop annual goals.

Additional information can be found in the program graduate handbook, which includes expectations, guidelines, and detailed policies.

Accelerated Master's

The accelerated path to a M.S. Nutritional Sciences requires a minimum of **34 graduate credits**.

Qualified students who are admitted under the Accelerated Master's program may complete up to 12 credits at the 800-level during their senior year, earning dual credit toward their B.S. and M.S. degrees.

During the fifth year (Sept-May), enrolled students will complete a minimum of 22 additional credits toward the program requirements. There are five core courses that include a year-long research experience (i.e. NUTR 960 Research Methods in Nutritional Science I and NUTR 961 Research Methods in Nutritional Science II) during the last year of the student's program. Students will be required to earn a B- or better in graduate courses to earn credits toward their degree.

Core Required Courses

Code	Title	Credits
NUTR 809	Nutritional Epidemiology	4
NUTR 850	Nutritional Biochemistry	4
NUTR 851	Nutritional Biochemistry of Micronutrients	4
NUTR 855	Concepts and Controversies in Weight Management	4
NUTR 860	Behavioral Nutrition and Counseling	4
NUTR 880	Critical Issues in Nutrition	4
NUTR 960	Research Methods in Nutritional Science I	4
NUTR 961	Research Methods in Nutritional Science II	4
ANFS 901	Introduction to Agriculture, Nutrition, and Food Systems Graduate Studies [1]	1
ANFS 997	Agriculture, Nutrition, and Food Systems Seminar	1

1. To be taken at the earliest opportunity, typically in the initial fall semester of the graduate program.

Student Learning Outcomes

Nutrition knowledge-related

- Build knowledge and understanding in key content areas of nutritional sciences and public health nutrition issues

Research design and analysis

- Identify the strengths and weaknesses of study designs utilized in nutrition-related research
- Conduct nutrition-related data analyses
- Interpret the results and scientific literature to inform dietary recommendations, public policy, or chronic disease intervention

Scientific method

- Demonstrate the ability to design and defend an original, hypothesis-driven project to advance the field of nutritional sciences.

Critical thinking

- Integrate scientific evidence and critically evaluate research findings in specific fields related to nutritional sciences.

Communication skills

- Disseminate evidence-based information on nutritional sciences and public health
- Deliver nutrition research findings to multiple scientific audiences (i.e. research conference, academic journal).
- Incorporate critical feedback in their research and academic work

Professionalism

- Conduct research in an ethical manner
- Demonstrate collaboration and leadership skills
- Master concepts of equity, diversity, and inclusion in different settings (e.g., healthcare, education, community health)

Didactic Program in Dietetics (Graduate Certificate)

https://colsa.unh.edu/agriculture-nutrition-food-systems/program/certificate/didactic-program-dietetics

Description

The Didactic Program in Dietetics Certificate is a two semester program that prepares students to enter a dietetic internship. This certificate program is designed for students who previously received a bachelor's degree and are seeking a Verification Statement, which is the documentation required to enter a dietetic internship. Eligibility criteria include a previous bachelor's degree (in any field) and successful completion of the prerequisite courses.

The path to becoming a registered dietitian includes earning a bachelor's degree (in any field), completing an accredited Didactic Program in Dietetics (this may be completed at the undergraduate or graduate level), completing an accredited Dietetic Internship, and passing the National Registered Dietitian Exam. The University of New Hampshire's DPD curriculum is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND). Coursework includes a variety of science and professional courses that meet the ACEND required knowledge. Course instructors incorporate a variety of educational techniques including in-class learning and hands on clinical and simulation experiences. Approximately 70-80% of our graduating students who apply for dietetic internships are matched to an internship during their final semester.

Admission Requirements

1. Bachelor's degree with GPA ≥ 3.0
2. Completion of prerequisite courses within the past 10 years with a combined GPA ≥ 3.2
3. Earned ≥ B in the introductory nutrition course (NUTR 400 Nutrition in Health and Well Being or equivalent)
4. Earned ≥ C+ in the Anatomy and Physiology I or Chemistry I course (BMS 507 Human Anatomy and Physiology I or CHEM 403 General Chemistry I or approved equivalent)

Prerequisite Courses at UNH (or approved equivalent from outside institution):

Code	Title	Credits
DPD Professional Courses		
ENGL 401	First-Year Writing	4
HMP 401	United States Health Care Systems	4
NUTR 400	Nutrition in Health and Well Being	4
NUTR 403	Culinary Arts Skills Development	4
NUTR 476	Nutritional Assessment	4
NUTR 504	Managerial Skills in Dietetics	4
NUTR 550	Food Science: Principle and Practice	4
NUTR 610	Nutrition Education and Counseling	4
NUTR 650	Life Cycle Nutrition	4
PSYC 402	Statistics in Psychology	4
or SOC 402	Statistics	
SOC 400	Introductory Sociology	4
or PSYC 401	Introduction to Psychology	
DPD Science Courses		
BMCB 658	General Biochemistry	3
BMS 501	Microbes in Human Disease	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
CHEM 545	Organic Chemistry	3
CHEM 546	Organic Chemistry Laboratory	2

Prerequisite Courses at UNH (or approved equivalent from outside institution): DPD Science Courses

All prerequisite courses must have been completed within the past 10 years at a regionally accredited U.S. college or university.

Requirements

The Didactic Program in Dietetics Certificate is a two semester, **21-credit** program that prepares students to enter a dietetic internship.

Certificate Program Coursework:

Code	Title	Credits
NUTR 800	Career Development in Dietetics	1
NUTR 820	Community Nutrition (May be taken fall or spring)	4
NUTR 850	Nutritional Biochemistry	4
NUTR 875	Practical Applications in Medical Nutrition Therapy	4
NUTR 873	Clinical Nutrition	4
NUTR 880	Critical Issues in Nutrition	4
Total Credits		**21**

Occupational Therapy (OT)

Degrees Offered: Clinical Doctorate (OTD), M.S., Graduate Certificate

These programs are offered in Durham.

Occupational therapy enables people to participate successfully in their desired life activities to support leisure, play, work, education, self care, and home management. The Department of Occupational Therapy offers an entry level Master of Science (MS-OT) and an entry-level Clinical Doctorate Degree (OTD) in Occupational Therapy, as well as an online Graduate Certificate in Assistive Technology.

MS Degree in Occupational Therapy

The Master's Degree prepares students for entry level occupational therapy practice. Students gain the knowledge and skills to work with people of all ages to enable their participation in desired activities within their natural environments.

The MS Occupational Therapy Program at the University of New Hampshire is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), 6116 Executive Boulevard, Suite 200, North Bethesda, MD 20852-4929 ACOTE's telephone number is (301) 652-AOTA and its website is www.acoteonline.org.

Graduates of the 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 an occupational therapist, registered (OTR). In addition, all states require licensure in order to practice. State licenses are usually based on the successful results of the NBCOT Certification Examination. A felony conviction may affect a graduate's ability to sit for the NBCOT certification examination or attain state licensure.

Admission Requirements

Professional Master's Program in Occupational Therapy (Duration: 2.5 years)
(This admissions process applies to candidates with completed undergraduate degree(s) and UNH seniors who are not in the BS/MS Occupational Science/Occupational Therapy program.)

Applications are due by January 15 of each year and students are accepted into the program by late spring and will begin the program in the fall. Candidates are encouraged to submit their applications to the Graduate School by the end of December to ensure that their application is complete in time for review. Applicants need a minimum overall grade point of 3.0 in undergraduate coursework and the following prerequisite courses:

- Human anatomy and physiology (two courses with labs)
- Neuroanatomy
- Clinical Kinesiology
- Research Methods (Not required for applicants beginning the program in 2023 and beyond)
- Human development (one lifespan development course that covers infancy to senior adults, or two courses, one child and one adult development course)
- Statistics
- Medical Terminology (only required for applicants beginning the program in 2023)
- Abnormal Psychology (only required for applicants beginning the program in 2023)

Applicants must complete and submit the Prerequisite Verification Form with their application. Priority for admission will be given to applicants with all prerequisite courses completed. Prerequisites must be completed prior to the start of the Professional Master's Program.

Three letters of reference must accompany the application. Two of these must address the applicant's educational abilities/performance, and be from academic faculty. One letter must address the applicant's interpersonal/communication skills as observed in a volunteer or paid--employment setting.

Decisions are made as applications are received. Applicants should periodically review their application status on the Graduate School website and contact the Graduate School about missing items. Admission to the occupational therapy program is a competitive process and not all qualified students are admitted. Applicants will be notified of admission by mid-March.

Clinical Doctorate in Occupational Therapy [OTD]

The entry-level Clinical Doctorate Program in Occupational Therapy is designed for students to graduate with advanced skills in areas of clinical practice, academic teaching, and program development. The program is scheduled to begin in Summer of 2023.

The OTD program at the University of New Hampshire has received candidacy for accreditation from the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), 6116 Executive Boulevard, Suite 200, North Bethesda, MD 20852-4929 ACOTE's telephone number is (301) 652--AOTA and its website is www.acoteonline.org. 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.

Graduates of the 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 an occupational therapist, registered (OTR). In addition, all states require licensure in order to practice. State licenses are usually based on the successful results of the NBCOT Certification Examination. A felony conviction may affect a graduate's ability to sit for the NBCOT certification examination or attain state licensure.

Admission Requirements

Clinical Doctorate in Occupational Therapy [Duration: 3 years including summers]

Applications are due by November 15 of 2022 and students are accepted into the program by early spring for beginning the program in the summer. Candidates are encouraged to submit their applications to the Graduate School by the end of October to ensure that their application is complete in time for review.

Applicants need a minimum overall grade point of 3.0 in undergraduate coursework and the following prerequisite courses:

- Human anatomy and physiology (two courses with labs)
- Neuroanatomy (lab option)
- Clinical Kinesiology
- Human development (one lifespan development course that covers from birth to old age, or two courses, a child and an adult development course)
- Statistics
- Medical Terminology
- Abnormal Psychology

Applicants must complete and submit the Prerequisite Verification Form with their application. Priority for admission will be given to applicants with all prerequisite courses completed, however, applicants will be considered if they have 1-2 remaining prerequisite courses. Prerequisites must be completed prior to the start of the Professional Master's Program.

Three letters of reference must accompany the application. Two of these must address the applicant's educational abilities/performance and come from academic faculty. One letter must address the applicant's interpersonal/communication skills as observed in a volunteer or paid–employment setting.

Decisions are made as applications are received. Applicants should periodically review their application status on the Graduate School website and contact the Graduate School about missing items. Admission to the occupational therapy program is a competitive process and not all qualified students are admitted. Applicants will be notified of admission by early spring.

UNH BS-OT Students Apply to the Advanced Standing MS Program or Advanced Standing Clinical Doctorate (OTD)

Students who are completing the undergraduate portion of our occupational therapy program declare their intent to apply to our Advanced Standing MS Program or the OTD program by the end of their sophomore year. These students take professional courses as part of their baccalaureate degree requirements.

Students applying to the Advanced Standing programs must apply for admission to the Graduate School and meet Graduate School requirements for entry into the graduate portion of their program, and be officially admitted by the Graduate School. This process occurs in the spring semester of the senior year. An overall minimum grade point of 3.0 is required for admission. Students must earn a grade of B- or above in all OT courses at 700 level. However, they may not earn more than 8 credits at B- or lower in OT courses at 700 level or above. They must have passed all level I fieldwork requirements.

Students should speak with their academic advisor regarding specific application requirements for writing a personal statement and letters of recommendation.

Students in the baccalaureate degree program in occupational therapy may also complete a graduate certificate by applying early into the accelerated master's program. Accelerated admission enables students to take graduate certificate courses at the 800 level in the J term and spring semester of their senior year in the BS program, as described below.

UNH BS/MS Students Applying to the Graduate Certificate Program in Assistive Technology and the Advanced Standing MS Program

Students interested in earning a dual degree, an Assistive Technology Graduate Certificate and a Master's in Occupational Therapy, apply in the fall semester of the senior year to the accelerated master's program. Accelerated admission enables students to take graduate certificate courses at the 800-level in the J term and spring semester of their senior year as they complete their BS degree.

Application for admission as an accelerated master's candidate must be completed by the posted deadlines**.** An overall minimum grade point of **3.2** and grades of B or better in all senior-level OT coursework is required for admission.

Two letters of recommendation must accompany the application for BS/MS students:

- one from the student's undergraduate academic adviser
- one from an Occupational Therapy Department faculty member.

Students in the accelerated master's professional program can **only** register in the graduate certificate-related courses at the 800 level; all other senior OT courses must be taken at the 700 level. Students in the Assistive Technology Certificate Program also submit an application to the Advanced Standing MS Program in the spring of their senior year, indicating on that application that they are earning dual degrees.

https://chhs.unh.edu/occupational-therapy

Programs

- Occupational Therapy (OTD) (p. 222)
- Occupational Therapy (Advanced Standing) (OTD) (p. 224)
- Occupational Therapy (M.S.) (p. 226)
- Occupational Therapy (Advanced Standing) (M.S.) (p. 228)
- Assistive Technology (Graduate Certificate) (p. 230)

Faculty

See https://chhs.unh.edu/directory/all for faculty.

Occupational Therapy (OTD)

https://chhs.unh.edu/occupational-therapy/program/otd/occupational-therapy

Description

An entry level doctoral degree in occupational therapy will prepare you for a career supporting people in the daily activities that are important to them from dressing, to cooking, to work or school, to leisure and hobbies. UNH will prepare you to enter a fast-growing field to work with people of all ages in a range of settings by developing strong foundational skills in occupational therapy assessment and intervention, advanced training in clinical skills, leadership and advocacy, clinical research, and program development. Our program emphasizes the understanding that engagement in valued activities fulfills social needs, gives meaning to

life, and is essential to the development, adaptation, and well-being of individuals and populations. You will learn to evaluate, plan and provide intervention, and monitor the outcomes of clients facing a variety of illnesses, injuries, and disabilities such as autism, traumatic brain injury, stroke, substance abuse and musculoskeletal injuries.

When entering the OTD Program you will complete 3 years (9 semesters) of professional courses to prepare you for all areas of occupational therapy practice. Coursework begins in the summer session and continues throughout 3 calendar years, including one January term for a level I fieldwork experience. Courses are primarily in-person, particularly during the academic year, with some distance learning activities. Courses are scheduled during weekdays during the day and into early evening. Some courses require experiential, off-campus learning. The curriculum includes 24 weeks of full-time fieldwork. You may also choose to complete a graduate certificate in assistive technology while in the OTD Program. As an OTD student, you will conclude your education with a 14-week doctoral capstone where you apply and expand your knowledge to take on a leadership role to develop a new program addressing specific client needs, conduct research, promote policy changes, or provide education. After completing your degree, including fieldwork and the doctoral capstone, you will be eligible to sit for the National Board for Certification in Occupational Therapy examination to become a registered occupational therapist (OTR). In addition, all states require licensure in order to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination. Note that a felony conviction may affect your ability to sit for the NBCOT certification examination or attain state licensure.

OTD Program Accreditation Status

The entry-level occupational therapy doctoral degree program has been granted Candidacy Status by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 6116 Executive Boulevard, Suite 200, North Bethesda, MD 20852-4929, (301) 652-AOTA. The program must have a preaccreditation review, complete an on-site evaluation, and be granted Accreditation Status before its graduates will be eligible to sit for the national certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy (NBCOT). The UNH Program is scheduled for on-site evaluation in the fall of 2025, prior to a May 2026 graduation.

Academic Standards and Policies

In addition to the academic standards outlined in the requirements for the program, students must meet professional behavior standards, which are explained in detail in the *OT Department Policy and Procedure Manual*, provided to all occupational therapy students during their first semester

Because curriculum review and revision are undertaken annually, occupational therapy faculty work closely with students during academic advising sessions and share information about any policy and requirement changes during registration periods as well as throughout the academic year. Students are expected to take an active role in verifying expectations and requirements and should check with their departmental advisers each September for updated policies and requirements. Program requirements and policies for retention in the major are posted annually in the *OT Department Policy and Procedure Manual*, which is available on the OT department's organization site on the Learning Management Platform, *MyCourses*.

Students participate in a variety of off-campus and fieldwork experiences throughout the course of study and are covered with basic personal liability insurance through UNH for all practical components of the curriculum. Students are responsible for transportation to fieldwork sites and other off-campus learning experiences. Students are responsible for meeting the health and criminal record clearances established by their fieldwork sites and off-campus learning sites including capstone sites. Proof of immunization such as poliomyelitis, rubella, H1N1, and hepatitis B may also be required. For Level II fieldwork, health insurance and a physical examination, including a tuberculin test, are required. All fieldwork experiences are scheduled in centers approved by the Department of Occupational Therapy and with whom active Memoranda of Understanding with UNH exist. Fieldwork is planned collaboratively with the Academic Fieldwork Coordinator and capstone is planned with guidance from the Capstone Coordinator.

Requirements

Degree Requirements

In order to be awarded an OTD in Occupational Therapy from UNH, students must maintain an overall GPA of 3.0 and earn a minimum of B- in all required occupational therapy courses and may not earn more than 8 credits of B- or lower in OT courses (700 level or above). Students must pass all competency (practical) exams as part of OT courses, pass all level I fieldwork requirements and receive a passing criterion score on the American Occupational Therapy Association Fieldwork Performance Evaluation for the Occupational Therapist in both 12-week Level II fieldwork experiences.

Code	Title	Credits
Required Courses		
OT 810	OT Practice and Professional Roles	3
OT 815	Introduction to Group Process: Theory and Application	2
OT 830 & 830L	Assistive Technology for Enhancing Occupational Performance and Assistive Technology for Enhancing Occupational Performance Lab	4
OT 841	Human Occupation	4
OT 844	Fieldwork and Professionalism - Level 1	1
OT 845	Administration and Management for Occupational Therapy Practice	3
OT 846	Fieldwork and Professionalism-Level II	1
OT 850	Neuro-Occupation: The Relationship Between Occupation and the Brain	3
OT 851	Mind Body Systems/Neurologically-based Function and Dysfunction	3
OT 852 & 852L	Human Movement and Environmental Effects on Everyday Occupations and Human Movement and Environmental Effects on Everyday Occupations Lab	4
OT 854	Level II Fieldwork, I	8
OT 855	Level II Fieldwork Discussion	1
OT 856	Level II Fieldwork, II	8
OT 860 & 860L & 860R	Psychosocial Evaluation and Intervention and Psychosocial Evaluation and Intervention Lab and Psychosocial Evaluation & Intervention Recitation	4
OT 862 & 862L & 862R	OT Evaluation and Intervention for Children and OT Evaluation and Intervention for Children - Lab and OT Evaluation and Intervention for Children Recitation	4
OT 863 & 863L & 863R	Occupational Therapy Intervention for Adults and Occupational Therapy Evaluation and Intervention for Adults - Lab and Adult Evaluation and Intervention Recitation	4
OT 865	Occupational Therapy Practice and Professional Reasoning	3
OT 871 & 871L	Enabling Participation in Community Groups and Enabling Participation in Community Groups Lab	5
OT 881	Introduction to Research and Evidence-Based Practice	3
OT 882	Research Methods and Application	3
OT 892	Level I Fieldwork	1
OT 964	Age Well: Occupational Therapy with Older Adults	3
OT 998	Recent Advances in Neurological Evaluation and Intervention	3
OT 983	Engagement in Research	3
OT 965	Occupational Therapy Practice and Professional Reasoning	3
OT 975	Leadership in OT Systems of Practice	3
OT 901	Introduction to Capstone	2
OT 902	Capstone Preparation	3

OT 903	Capstone: Project Implementation, Evaluation and Dissemination	12
Elective or Graduate Certificate Course		3-4

Student Learning Outcomes

Occupational Therapy OTD Entry-level Program Student Outcomes at the completion of the professional entry-level OTD Program, our graduates will:

Demonstrate commitment and ability to use meaningful occupation for promoting health and well-being.

- Our curriculum emphasizes the idea that engagement in everyday occupations will lead to fulfillment of life roles and the promotion of health and well-being of individuals, communities, and populations. Our graduates are ready and dedicated to apply occupation-based evaluation and intervention techniques, and to share and expand authentic occupational therapy practice.

Demonstrate professional attitudes and behaviors in their interactions with clients and others.

- Our graduates will be dedicated to ethical, client-driven practice demonstrating cultural sensitivity, integrity, honesty, compassion, and fairness. They will demonstrate respect for all persons with whom they work, appreciating and considering individual identities, priorities, abilities, and life experiences. They will be able to collaborate in intraprofessional and interdisciplinary teams within various settings, understanding the roles and expertise of other occupational therapists and other professionals.

Demonstrate entry-level competencies as OT practitioners across diverse practice settings, skilled in the delivery evidence-based, occupation–centered evaluation and intervention techniques.

- Our graduates develop critical thinking skills and the capacity for creative clinical reasoning for providing client-centered, occupation-centered services. Graduates will apply a variety of evaluation methods for understanding a person's occupational history, abilities, challenges and goals. They will apply occupation-centered intervention approaches and innovative technologies to address the needs of individuals and populations in traditional and emerging medical, educational, and other community-based practice settings.

Demonstrate skills for translating research-to-practice and generating new knowledge grounded in occupational therapy practice.

- Our graduates will be skilled in identifying, critiquing, and synthesizing relevant research for delivering evidence-based services. Graduates will demonstrate capacity to translate research evidence to influence practice. They will have skills for contributing to the body of knowledge that supports and advances the profession.

Demonstrate skills to become leaders and innovators as practitioners, researchers, advocates, educators, administrators, policy-makers, and entrepreneurs.

- Our graduates will apply leadership knowledge and skills, ethical reasoning, knowledge of policy and systems to be agents of change in diverse settings. Our graduates will be life-long learners and innovative thinkers committed to ongoing professional development. Our graduates will support and promote occupational justice for individuals, communities, and populations.

Occupational Therapy (Advanced Standing) (OTD)

https://gradschool.unh.edu/program/phd/occupational-therapy-advanced-standing-otd

Description

UNH students who are in the BS program in occupational therapy may apply to enter into the Advanced--Standing OTD Program to complete an OTD Degree in Occupational Therapy to be eligible to enter the profession of occupational therapy. Because they have completed some of the professional courses as an undergraduate student at UNH, they earn their OTD Degree in Occupational Therapy in two full years (6 semesters, including 2 summers).

An entry level doctoral degree in occupational therapy will prepare you to enter the profession with strong foundational skills in occupational therapy assessment and intervention, advanced training in clinical skills, leadership and advocacy, clinical research, and program development. You will learn to evaluate, plan and provide intervention, and monitor the outcomes of clients facing a variety of illnesses, injuries, and disabilities such as autism, traumatic brain injury, stroke, substance abuse and musculoskeletal injuries. At UNH, you will learn and apply occupational therapy principles to traditional and emerging areas of practice, in hospital and community-based settings and for individual clients and population groups. Graduates gain valuable skills to become leaders in their field, advance in their careers, and position themselves as agents of change to influence policy and practice.

You would complete the Advanced-Standing OTD Program in 2 years (6 semesters) of professional courses to prepare for all areas of occupational therapy practice. The curriculum includes 24 weeks of full-time fieldwork. You also may choose to complete a graduate certificate in Assistive Technology to focus your education. Your education concludes with a 14-week doctoral capstone where you apply and expand your knowledge and take on leadership roles to develop a new program addressing specific client needs, conduct research, promote policy changes, or provide education.

After completing your degree, including fieldwork and the doctoral capstone, you will be eligible to sit for the National Board for Certification in Occupational Therapy examination to become a registered occupational therapist (OTR). In addition, all states require licensure in order to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination. Note that a felony conviction may affect your ability to sit for the NBCOT certification examination or attain state licensure.

OTD Program Accreditation Status

The entry-level Occupational Therapy Doctoral Degree Program has been granted **Candidacy Status** by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 6116 Executive Boulevard, Suite 200, North Bethesda, MD 20852-4929, (301) 652-AOTA. The program must have a preaccreditation review, complete an on-site evaluation, and be granted Accreditation Status before its graduates will be eligible to sit for the national certification examination for the occupational therapist administered by the National Board for Certification in Occupational

Therapy (NBCOT). The UNH Program is scheduled for on-site evaluation in the fall of 2025, prior to a May 2026 graduation.

Admissions Information

Students who are completing the undergraduate portion of the UNH occupational therapy program declare their intent to apply to our Advanced Standing OTD program by the end of their sophomore year. They take professional courses as part of their baccalaureate degree requirements enabling them to enter the OTD program with Advanced Standing, with a full year of courses completed. Students officially apply to the Graduate School for the Advanced Standing OTD Program in the spring semester of their senior year, using an abbreviated process. Students should speak with their academic advisor regarding specific application requirements for writing a personal statement and letters of recommendation. An overall minimum grade point of B (3.0) is required for admission. Students must earn grades of B- or above in all OT courses at 700 level, with no more than 8 credits of B- or lower in OT courses (700 level or above).

Academic Standards and Policies

Retention in the OTD program reflects the same grade criteria required for entry and students must meet the professional behavior standards, which are explained in detail in the *OT Department Policy and Procedure Manual*, provided to all occupational therapy students. Because curriculum review and revision are undertaken annually, occupational therapy faculty work closely with students during academic advising sessions and share information about any policy and requirement changes during registration periods as well as throughout the academic year. Students are expected to take an active role in verifying expectations and requirements and should check with their departmental advisers each September for updated policies and requirements. Program requirements and policies for retention in the major are posted annually in the *OT Department Policy and Procedure Manual*, which is available on the OT department's organization site on the Learning Management Platform, *MyCourses*.

The OTD is awarded at the completion of all academic coursework, meeting the above grade requirements, passing all competency (practical) exams as part of OT courses, passing all level I fieldwork requirements and receive a passing criterion score on the *American Occupational Therapy Association Fieldwork Performance Evaluation for the Occupational Therapist* in both 12-week Level II fieldwork experiences as well as successfully completing the doctoral capstone.

Students participate in a variety of off-campus and fieldwork experiences throughout the course of study and are covered with basic personal liability insurance through UNH for all practical components of the curriculum. Students are responsible for transportation to fieldwork sites and other off-campus learning experiences. Students are responsible for meeting the health and criminal record clearances established by their fieldwork sites and off-campus learning sites including capstone sites. Proof of immunization such as poliomyelitis, rubella, H1N1, and hepatitis B may also be required. For Level II fieldwork, health insurance and a physical examination, including a tuberculin test, are required. All fieldwork experiences are scheduled in centers approved by the Department of Occupational Therapy and with whom active Memoranda of Understanding with UNH exist. Fieldwork is planned collaboratively with the Academic Fieldwork Coordinator and capstone is planned with guidance from the Capstone Coordinator.

Requirements

Degree Requirements

The OTD is awarded at the completion of all academic coursework, meeting grade requirements, passing all competency (practical) exams as part of OT courses, passing all level I fieldwork requirements and receive a passing criterion score on the *American Occupational Therapy Association Fieldwork Performance Evaluation for the Occupational Therapist* in both 12-week Level II fieldwork experiences as well as successfully completing the doctoral capstone.

Retention in the OTD program reflects the same grade criteria required for entry. Students must have grades of B- or above in all OT courses at the 700 level, with no more than 8 credits of B- or lower in OT courses (700 level or above).

Code	Title	Credits
Required Courses		
OT 830 & 830L	Assistive Technology for Enhancing Occupational Performance and Assistive Technology for Enhancing Occupational Performance Lab	4
or OT 871 & 871L	Enabling Participation in Community Groups and Enabling Participation in Community Groups Lab	
OT 845	Administration and Management for Occupational Therapy Practice	3
OT 846	Fieldwork and Professionalism-Level II	1
OT 854	Level II Fieldwork, I	8
OT 855	Level II Fieldwork Discussion	1
OT 856	Level II Fieldwork, II	8
OT 862 & 862L & 862R	OT Evaluation and Intervention for Children and OT Evaluation and Intervention for Children - Lab and OT Evaluation and Intervention for Children Recitation	4
or OT 860 & 860L & 860R	Psychosocial Evaluation and Intervention and Psychosocial Evaluation and Intervention Lab and Psychosocial Evaluation & Intervention Recitation	
OT 865	Occupational Therapy Practice and Professional Reasoning	3
OT 964	Age Well: Occupational Therapy with Older Adults	3
OT 998	Recent Advances in Neurological Evaluation and Intervention	3
OT 983	Engagement in Research	3
OT 965	Occupational Therapy Practice and Professional Reasoning	3
OT 975	Leadership in OT Systems of Practice	3
OT 901	Introduction to Capstone	2
OT 902	Capstone Preparation	3
OT 903	Capstone: Project Implementation, Evaluation and Dissemination	12
Elective or Graduate Certificate Course		3-4

Student Learning Outcomes

Occupational Therapy OTD Entry-level Program Student Outcomes at the completion of the professional entry-level OTD Program, our graduates will:

Demonstrate commitment and ability to use meaningful occupation for promoting health and well-being.

- Our curriculum emphasizes the idea that engagement in everyday occupations will lead to fulfillment of life roles and the promotion of health and well-being of individuals, communities, and populations. Our graduates are ready and dedicated to apply occupation-based evaluation and intervention techniques, and to share and expand authentic occupational therapy practice.

Demonstrate professional attitudes and behaviors in their interactions with clients and others.

- Our graduates will be dedicated to ethical, client-driven practice demonstrating cultural sensitivity, integrity, honesty, compassion,

and fairness. They will demonstrate respect for all persons with whom they work, appreciating and considering individual identities, priorities, abilities, and life experiences. They will be able to collaborate in intraprofessional and interdisciplinary teams within various settings, understanding the roles and expertise of other occupational therapists and other professionals.

Demonstrate entry-level competencies as OT practitioners across diverse practice settings, skilled in the delivery evidence-based, occupation–centered evaluation and intervention techniques.

- Our graduates develop critical thinking skills and the capacity for creative clinical reasoning for providing client-centered, occupation-centered services. Graduates will apply a variety of evaluation methods for understanding a person's occupational history, abilities, challenges and goals. They will apply occupation-centered intervention approaches and innovative technologies to address the needs of individuals and populations in traditional and emerging medical, educational, and other community-based practice settings.

Demonstrate skills for translating research-to-practice and generating new knowledge grounded in occupational therapy practice.

- Our graduates will be skilled in identifying, critiquing, and synthesizing relevant research for delivering evidence-based services. Graduates will demonstrate capacity to translate research evidence to influence practice. They will have skills for contributing to the body of knowledge that supports and advances the profession.

Demonstrate skills to become leaders and innovators as practitioners, researchers, advocates, educators, administrators, policy-makers, and entrepreneurs.

- Our graduates will apply leadership knowledge and skills, ethical reasoning, knowledge of policy and systems to be agents of change in diverse settings. Our graduates will be life-long learners and innovative thinkers committed to ongoing professional development. Our graduates will support and promote occupational justice for individuals, communities, and populations.

Occupational Therapy (M.S.)

https://chhs.unh.edu/occupational-therapy/program/ms/occupational-therapy

Description

A master's degree in occupational therapy (OT) will prepare you for a career supporting people in the daily activities that are important to them. A fast-growing field, occupational therapy provides opportunities to work with people of all ages in a range of settings. Our accredited program emphasizes the understanding that engagement in everyday activities fulfills social needs and gives meaning to life, and is essential to the development, adaptation and well-being of individuals and populations. You will learn to evaluate, provide intervention, and monitor the outcomes of clients facing a variety of illnesses, injuries and disabilities such as autism, traumatic brain injury, stroke, substance abuse and musculoskeletal injuries. After completing your degree, you will be eligible to sit for the National Board for Certification in Occupational Therapy examination to become a registered occupational therapist.

The UNH Occupational Therapy Master's Program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 6116 Executive Boulevard, Suite 200, North Bethesda, MD 20852-4929, (301) 652-AOTA.

Academic Standards and Policies

In addition to the academic standards outlined in the requirements for the program, students must meet professional behavioral standards, which are explained in detail in the *OT Department Policy and Procedure Manual*, provided to all occupational therapy students during their first semester.

Because curriculum review and revision is undertaken annually, occupational therapy faculty work closely with students during academic advising sessions and share information about any policy and requirement changes during registration periods as well as throughout the academic year. Students are expected to take an active role in verifying expectations and requirements and should check with their departmental advisers each September for updated policies and requirements. Program requirements and policies for retention in the major are posted annually in the *OT Department Policy and Procedure Manual*, which is available on the OT department's organization site on MyCourses.

Students participate in a variety of off-campus and fieldwork experiences throughout the course of study and are covered with basic personal liability insurance through UNH for all practical components of the curriculum. Students are responsible for transportation to fieldwork sites and other off-campus learning experiences. Students are responsible for meeting the health and criminal record clearances established by their fieldwork sites and off-campus learning sites. Proof of immunization such as poliomyelitis, rubella, H1N1, and hepatitis B may also be required. For Level II fieldwork, health insurance and a physical examination, including a tuberculin test, are required. All fieldwork experiences are scheduled in centers approved by the Department of Occupational Therapy and with whom active Memoranda of Understanding with UNH exist.

After successfully completing all Level II fieldwork requirements and academic work, students are awarded a Master of Science Degree in Occupational Therapy. They are then eligible to sit for the National Board Certification Examination in Occupational Therapy (NBCOT). Consistent with NBCOT expectations, students must sit for the certification examination within two years of completion of coursework and fieldwork. A felony conviction may affect a graduate's ability to sit for the NBCOT certification examination and/or obtain state licensure.

The program includes 2.75 years (6 semesters) of coursework, including fieldwork experiences. After the initial summer, there are no summer course requirements. Most classes will be scheduled during weekdays during the day and into early evening. Some courses require experiential, off-campus learning in addition to the Level II fieldwork experiences which are two twelve-week full time experiences. Level II fieldwork experiences are planned collaboratively with the Academic Fieldwork Coordinator.

Requirements

Occupational Therapy MS Requirements

Students must complete at least **81 graduate-level credits**, including 18 credits of fieldwork.

In order to be awarded a MS in Occupational Therapy from UNH, students must maintain an overall GPA of 3.0 and earn a minimum of B- in all required occupational therapy courses, and may not earn more than 8 credits of B- in OT courses (700 level or above). Students must pass all level I fieldwork requirements and receive a passing criterion score on the American Occupational Therapy Association Fieldwork Performance Evaluation for the Occupational Therapist in both 12-week Level II fieldwork experiences.

Code	Title	Credits
Required Courses		
OT 810	OT Practice and Professional Roles	3
OT 815	Introduction to Group Process: Theory and Application	2
OT 830 & 830L	Assistive Technology for Enhancing Occupational Performance and Assistive Technology for Enhancing Occupational Performance Lab	4
OT 841	Human Occupation	4
OT 844	Fieldwork and Professionalism - Level 1	1
OT 845	Administration and Management for Occupational Therapy Practice	3
OT 846	Fieldwork and Professionalism-Level II	1
OT 850	Neuro-Occupation: The Relationship Between Occupation and the Brain	3
OT 851	Mind Body Systems/Neurologically-based Function and Dysfunction	3
OT 852 & 852L	Human Movement and Environmental Effects on Everyday Occupations and Human Movement and Environmental Effects on Everyday Occupations Lab	4
OT 854	Level II Fieldwork, I	8
OT 855	Level II Fieldwork Discussion	1
OT 856	Level II Fieldwork, II	8
OT 860 & 860L & 860R	Psychosocial Evaluation and Intervention and Psychosocial Evaluation and Intervention Lab and Psychosocial Evaluation & Intervention Recitation	4
OT 862 & 862L & 862R	OT Evaluation and Intervention for Children and OT Evaluation and Intervention for Children - Lab and OT Evaluation and Intervention for Children Recitation	4
OT 863 & 863L & 863R	Occupational Therapy Intervention for Adults and Occupational Therapy Evaluation and Intervention for Adults - Lab and Adult Evaluation and Intervention Recitation	4
OT 865	Occupational Therapy Practice and Professional Reasoning [1]	3
OT 871 & 871L	Enabling Participation in Community Groups and Enabling Participation in Community Groups Lab	5
OT 875	Leadership in Occupational Therapy Systems of Practice	3
OT 881	Introduction to Research and Evidence-Based Practice	3
OT 882	Research Methods and Application	3
OT 883	Engagement in Research	3
OT 892	Level I Fieldwork	1
Electives		
Select 3 credits of graduate-level elective course(s)		3
Total Credits		**81**

[1] Course requirements for OT 865 Occupational Therapy Practice and Professional Reasoning, include a capstone experience in which students synthesize knowledge from academic coursework and fieldwork experiences to develop an innovative occupational therapy program that addresses the needs of a specific population or program.

Code	Title	Credits
Electives		
OT 831	Introduction to Assistive Technology Principles	2
OT 832	Introduction to Assistive Technology Practices	2
OT 833	Assistive Technology for Physical Access I: Electronic Technologies	2
OT 834	Assistive Technology for Physical Access II: Mobility, Seating, and Transportation	2
OT 835	Assistive Technology for Communication and Cognition	2
OT 836	Assistive Technology for Vision and Hearing	2
OT #866	AMPS Training	4
OT 887	Upper Extremity Rehabilitation and Splinting	4
OT 888	Application of Physical Agent Modalities in Occupational Therapy Practice	3
OT 889	Using iPads to Support Children with Disabilities	2
OT 890	Occupational Therapy and Sensory Integration	4
OT 895	Readings and Research in Occupational Therapy	1-6

Degree Plan

Occupational Therapy M.S.

Course	Title	Credits
First Year		
Summer		
OT 850	Neuro-Occupation: The Relationship Between Occupation and the Brain	3
OT 815	Introduction to Group Process: Theory and Application	2
OT 810	OT Practice and Professional Roles	3
	Credits	**8**
Fall		
OT 841	Human Occupation	4
OT 851	Mind Body Systems/Neurologically-based Function and Dysfunction	3
OT 852	Human Movement and Environmental Effects on Everyday Occupations	3
OT 881	Introduction to Research and Evidence-Based Practice	3
OT 852L	Human Movement and Environmental Effects on Everyday Occupations Lab	1
	Credits	**14**
January Term		
OT 892	Level I Fieldwork	1
	Credits	**1**
Spring		
OT 871L	Enabling Participation in Community Groups Lab	2
OT 863R	Adult Evaluation and Intervention Recitation	0
OT 882	Research Methods and Application	3
OT 863L	Occupational Therapy Evaluation and Intervention for Adults - Lab	1
OT 860L	Psychosocial Evaluation and Intervention Lab	1
OT 860R	Psychosocial Evaluation & Intervention Recitation	0
	Credits	**7**
Second Year		
Fall		
OT 854	Level II Fieldwork, I	8
OT 855	Level II Fieldwork Discussion	1
OT 856	Level II Fieldwork, II	8
	Credits	**17**
Spring		
OT 854	Level II Fieldwork, I	8
OT 855	Level II Fieldwork Discussion	1
OT 856	Level II Fieldwork, II	8
	Credits	**17**
Third Year		
OT 865	Occupational Therapy Practice and Professional Reasoning	3

OT 875	Leadership in Occupational Therapy Systems of Practice	3
OT 886	Engagement in Research	3
Choose additional graduate level electives		3
	Credits	**12**
Fall		
OT 865	Occupational Therapy Practice and Professional Reasoning	3
OT 875	Leadership in Occupational Therapy Systems of Practice	3
Elective or Grad Cert Course		
	Credits	**6**
	Total Credits	**82**

Student Learning Outcomes

The OT Department has identified five student outcomes for our Professional OT Program, MSOT graduates as follows:

Our graduates will:

Demonstrate professional attitudes and behaviors in their work and interactions with clients, and others with whom they work.

- Our graduates will be dedicated to ethical, client-driven, OT practice, demonstrating integrity, honesty, compassion, and fairness. They will demonstrate respect for all clients with whom they work, which is grounded in an appreciation and consideration of individual priorities and life experience. Our graduates will be life-long learners, and innovative thinkers committed to ongoing professional development, and state-of-the-art, evidence-based practices. They will be able to collaborate well with other professionals as committed team players and have a solid understanding of the many roles and expertise of other professionals with whom they commonly work, along with clarity of their roles as occupational therapists. They will aspire to and be prepared to assume leadership roles in their professional lives as practitioners, researchers, advocates, and educators.

Understand that engagement in meaningful occupations is essential to one's health and well-being, and be prepared and committed to promote occupation-based occupational therapy practice.

- Our curriculum emphasizes the idea that engagement in everyday activities to fulfill social roles and give meaning to life is essential to the development, adaptation, and well being of individuals, societies and populations. Our graduates are ready and committed to apply occupation-based evaluation and intervention techniques, and to share and expand authentic occupational therapy practices.

Be competent entry-level OT practitioners across diverse practice settings, skilled in the delivery occupation–based evaluation and intervention techniques.

- Our graduates will have developed critical thinking skills, and the capacity for high-level clinical reasoning preparing them to deliver client-centered, occupation-based, services in traditional and emerging practice areas. Graduates will know a variety of evaluation methods for understanding a person's occupational history, abilities, challenges and goals. They will apply occupation-based intervention approaches, and assistive technologies to address the needs of individuals, and populations in traditional and emerging medical, education, and other community-based practice arenas.

Apply evidence-based practices in their work.

- Our graduates will be skilled in identifying and interpreting relevant research and other data sources for delivering evidence-based, clinical services for promoting occupational participation and life satisfaction. Furthermore, they will have research skills for contributing to the body of knowledge that supports and advances occupational science, and occupational therapy.

Demonstrate skills necessary to advance occupational justice so that all persons can fully participate in desired occupations.

- Our graduates will apply critical thinking skills, ethics, policy, and awareness of the context in which occupational therapy may be of benefit, to help advance the OT profession's goal of meeting the occupational needs of individuals, populations and societies. Our graduates will also be able to generate new ideas to support and promote occupational justice for individuals, populations, and societies.

Occupational Therapy (Advanced Standing) (M.S.)

https://chhs.unh.edu/occupational-therapy/program/ms/occupational-therapy-advanced-standing

Description

UNH students who are in the BS program in occupational therapy enter into the Advanced--Standing MS Program to complete a MS Degree in Occupational Therapy to be eligible to enter the profession of occupational therapy. Because they have completed some of the professional courses, they earn their MS Degree in Occupational Therapy in three semesters, including fieldwork. The Occupational Therapy Master's Program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 6116 Executive Boulevard, Suite 200, North Bethesda, MD 20852-4929. Their phone number is (301) 652-AOTA.

An entry level master's degree in occupational therapy will prepare you to enter the profession with strong foundational skills in occupational therapy assessment and intervention in all areas of practice, and skills in leadership and advocacy, clinical research, and program development. You will learn to evaluate, plan and provide intervention, and monitor the outcomes of clients facing a variety of illnesses, injuries, and disabilities such as autism, traumatic brain injury, stroke, substance abuse and musculoskeletal injuries. At UNH, you will learn and apply occupational therapy principles to traditional and emerging areas of practice, in hospital and community-based settings and for individual clients and population groups.

After successfully completing all Level II fieldwork requirements and academic work, you will be awarded a Master of Science Degree in Occupational Therapy. You are then eligible to sit for the National Board Certification Examination in Occupational Therapy (NBCOT). Consistent with NBCOT expectations, you must sit for the certification examination within two years of completion of coursework and fieldwork. A felony

conviction may affect your ability to sit for the NBCOT certification examination and/or obtain state licensure.

Most classes will be scheduled during weekdays during the day and into early evening. Some courses require experiential, off-campus learning in addition to required off-campus level II fieldwork experiences. The level II fieldwork experiences are full time for a total of 24 weeks and are planned collaboratively with the Academic Fieldwork Coordinator.

Academic Standards and Policies

In addition to the academic standards outlined in the requirements for the program, students must meet professional behavioral standards, which are explained in detail in the *OT Department Policy and Procedure Manual*, provided to all occupational therapy students during their first semester.

Because curriculum review and revision is undertaken annually, occupational therapy faculty work closely with students during academic advising sessions and share information about any policy and requirement changes during registration periods as well as throughout the academic year. Students are expected to take an active role in verifying expectations and requirements and should check with their departmental advisers each September for updated policies and requirements. Program requirements and policies for retention in the major are posted annually in the *OT Department Policy and Procedure Manual*, which is available on the OT department's organization site on MyCourses.

Students will participate in a variety of off-campus and fieldwork experiences throughout the course of study and are covered with basic personal liability insurance through UNH for all practical components of the curriculum. Students are responsible for transportation to fieldwork sites and other off-campus learning experiences. Students are responsible for meeting the health and criminal record clearances established by their fieldwork sites and off-campus learning sites. Proof of immunization such as poliomyelitis, rubella, H1N1, and hepatitis B may also be required. For Level II fieldwork, health insurance and a physical examination, including a tuberculin test, are required. All fieldwork experiences are scheduled in centers approved by the Department of Occupational Therapy and with whom active Memoranda of Understanding with UNH exist.

Requirements

Degree Requirements

In order to be awarded a MS degree in Occupational Therapy from UNH, students must maintain an overall GPA of 3.0, earn a minimum of B- in all required occupational therapy courses, with no more than 8 credits of B- or lower in OT courses (700 level or above). Students must also pass all competency (practical) exams as part of OT courses, pass all level I fieldwork requirements and receive a passing criterion score on the American Occupational Therapy Association Fieldwork Performance Evaluation for the Occupational Therapist for both 12-week Level II fieldwork experiences.

Code	Title	Credits
Undergraduate Courses		
OT 710	OT Practice and Professional Roles	4
OT 730 & 730L	Assistive Technology for Enhancing Occupational Performance and Assistive Technology for Enhancing Occupational Performance Lab	4
OT 741	Human Occupation	4
OT 744	Fieldwork and Professionalism - Level 1	1
OT 745	Administration and Management for Occupational Therapy Practice	4
OT 746	Fieldwork & Prof Level II	1
OT 752 & 752L	Human Movement and Environmental Effects on Everyday Occupations and Human Movement Lab	4
OT 753	Mind Body Systems: Neurologically-based Function and Dysfunction--Pediatric Conditions	4
OT 757	Mind Body Systems: Neurologically-based Function and Dysfunction--Adult Conditions	4
OT 760 & 760L & 760R	Psychosocial Evaluation and Intervention and Psychosocial Evaluation and Intervention Lab and Psychosocial Evaluation & Intervention Recitation	4
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	4
OT 763 & 763L & 763R	Occupational Therapy Evaluation and Intervention for Adults and Occupational Therapy Evaluation and Intervention for Adults Lab and Occupational Therapy Evaluation and Intervention for Adults Recitation	4
OT 771 & 771L	Enabling Participation in Community Groups and Enabling Participation in Community Groups Lab	5
OT 785	Research Methods and Application to Practice	4
Total Credits		**51**

Code	Title	Credits
Graduate Courses		
Advanced-standing students are required to earn 30 graduate credits, which includes 16 credits of fieldwork, in addition to 50 undergraduate credits that includes 2 credits of fieldwork, taken as part of the occupational science degree.		
OT 854 & OT 855	Level II Fieldwork, I and Level II Fieldwork Discussion	9
OT 856 & OT 855	Level II Fieldwork, II and Level II Fieldwork Discussion	9
OT 865	Occupational Therapy Practice and Professional Reasoning [1]	3
OT 875	Leadership in Occupational Therapy Systems of Practice	3
OT 886	Engagement in Research	3
Select at least 3 credits of graduate-level elective course(s)		3
Total Credits		**30**

[1] Course requirements for OT 865 Occupational Therapy Practice and Professional Reasoning, include a capstone experience in which students synthesize knowledge from academic coursework and fieldwork experiences to develop an innovative occupational therapy program that addresses the needs of a specific population or program.

Code	Title	Credits
Elective Courses		
OT 887	Upper Extremity Rehabilitation and Splinting	4
OT 888	Application of Physical Agent Modalities in Occupational Therapy Practice	3
OT 890	Occupational Therapy and Sensory Integration	4
OT 831	Introduction to Assistive Technology Principles	2
OT 832	Introduction to Assistive Technology Practices	2
OT 833	Assistive Technology for Physical Access I: Electronic Technologies	2
OT 834	Assistive Technology for Physical Access II: Mobility, Seating, and Transportation	2
OT 835	Assistive Technology for Communication and Cognition	2
OT 836	Assistive Technology for Vision and Hearing	2
OT 889	Using iPads to Support Children with Disabilities	2
OT #866	AMPS Training	4
OT 895	Readings and Research in Occupational Therapy	1-6

Degree Plan

Advanced-Standing M.S.

Course	Title	Credits
First Year		
Fall		
OT 854	Level II Fieldwork, I	8
OT 855	Level II Fieldwork Discussion	1
	Credits	**9**

Spring		
OT 865	Occupational Therapy Practice and Professional Reasoning	3
OT 875	Leadership in Occupational Therapy Systems of Practice	3
OT 886	Engagement in Research	3
Graduate elective 3 credits		3
	Credits	**12**
Second Year		
Fall		
OT 856	Level II Fieldwork, II	8
OT 855	Level II Fieldwork Discussion	1
	Credits	**9**
	Total Credits	**30**

Student Learning Outcomes

The OT Department has identified five student outcomes for our Professional OT Program, MSOT graduates as follows:

Our graduates will:

Demonstrate professional attitudes and behaviors in their work and interactions with clients, and others with whom they work.

- Our graduates will be dedicated to ethical, client-driven, OT practice, demonstrating integrity, honesty, compassion, and fairness. They will demonstrate respect for all clients with whom they work, which is grounded in an appreciation and consideration of individual priorities and life experience. Our graduates will be life-long learners, and innovative thinkers committed to ongoing professional development, and state-of-the-art, evidence-based practices. They will be able to collaborate well with other professionals as committed team players and have a solid understanding of the many roles and expertise of other professionals with whom they commonly work, along with clarity of their roles as occupational therapists. They will aspire to and be prepared to assume leadership roles in their professional lives as practitioners, researchers, advocates, and educators.

Understand that engagement in meaningful occupations is essential to one's health and well-being, and be prepared and committed to promote occupation-based occupational therapy practice.

- Our curriculum emphasizes the idea that engagement in everyday activities to fulfill social roles and give meaning to life is essential to the development, adaptation, and well being of individuals, societies and populations. Our graduates are ready and committed to apply occupation-based evaluation and intervention techniques, and to share and expand authentic occupational therapy practices.

Be competent entry-level OT practitioners across diverse practice settings, skilled in the delivery occupation–based evaluation and intervention techniques.

- Our graduates will have developed critical thinking skills, and the capacity for high-level clinical reasoning preparing them to deliver client-centered, occupation-based, services in traditional and emerging practice areas. Graduates will know a variety of evaluation methods for understanding a person's occupational history, abilities, challenges and goals. They will apply occupation-based intervention approaches, and assistive technologies to address the needs of individuals, and populations in traditional and emerging medical, education, and other community-based practice arenas.

Apply evidence-based practices in their work.

- Our graduates will be skilled in identifying and interpreting relevant research and other data sources for delivering evidence-based, clinical services for promoting occupational participation and life satisfaction. Furthermore, they will have research skills for contributing to the body of knowledge that supports and advances occupational science, and occupational therapy.

Demonstrate skills necessary to advance occupational justice so that all persons can fully participate in desired occupations.

- Our graduates will apply critical thinking skills, ethics, policy, and awareness of the context in which occupational therapy may be of benefit, to help advance the OT profession's goal of meeting the occupational needs of individuals, populations and societies. Our graduates will also be able to generate new ideas to support and promote occupational justice for individuals, populations, and societies.

Assistive Technology (Graduate Certificate)

https://chhs.unh.edu/occupational-therapy/program/certificate/assistive-technology

Description

The online graduate certificate in assistive technology is available to students who have completed a bachelor's degree or higher. The program provides training in the application of AT for individuals of all ages who experience physical, sensory, or cognitive impairments that affect participation at home, school, or work. Coursework includes basic principles of assessment, selection, fabrication, and training in the use of AT. Graduates of the program are prepared to provide a wide variety of AT services including: conducting AT evaluations and consultations; designing, fabricating, modifying, customizing, and maintaining devices; and AT service coordination.

Graduates of the program are prepared to work in collaborative teams and to become leaders in assistive technology. This online graduate certificate program is appropriate for individuals pursuing or engaged in the following careers: occupational, physical, speech, or recreation therapy; rehabilitation counseling; engineering; education; special education; or nursing. The online program includes optional ways to obtain hands-on interaction with AT, including one intensive AT day, on campus, interacting with technology related to each course offered in fall and spring.

For additional program information, please visit our website at the link above.

Requirements

The online graduate certificate in assistive technology is a 12-credit program.

Certificate Requirements

Code	Title	Credits
Core Courses [1]		
OT 831	Introduction to Assistive Technology Principles	2
OT 832	Introduction to Assistive Technology Practices	2
Select 4 additional courses from the below: [2]		*8*
OT 833	Assistive Technology for Physical Access I: Electronic Technologies	
OT 834	Assistive Technology for Physical Access II: Mobility, Seating, and Transportation	
OT 835	Assistive Technology for Communication and Cognition	
OT 836	Assistive Technology for Vision and Hearing	
OT 889	Using iPads to Support Children with Disabilities	
Any approved assistive technology elective course		
Total Credits		**12**

1. OT 830 and OT 830L can be used to fulfill the core courses for students in the Occupational Therapy Program and entering the Accelerated Certificate program.
2. OT 833, OT 834, OT 835 & OT 836 are recommended for students interested in the Assistive Technology Practitioner ATP Certification Exam.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Ocean Engineering (OE)

Degrees Offered: Ph.D., M.S., Graduate Certificate

This program is offered in Durham.

Ocean engineering (OE) offers programs leading to the master of science and doctor of philosophy degree in ocean engineering. Programs in OE are by definition interdisciplinary and require students to interact with the ocean science community, as well as the traditional engineering disciplines. Students are exposed to the broad--based issues of working engineering problems in the ocean environment, as well as discipline specifics. In these programs they will be trained to develop responsible solutions to problems that will lead to sustainable activity and life in the ocean.

A master of science in ocean engineering with an option in ocean mapping is available. This is a more structured path through the program, which is approved by the International Hydrographic Organization (IHO) and incorporates all aspects of hydrography as required by the IHO. Focus is on the engineering aspects of hydrography. The general purpose of these programs is to prepare engineering students for professional careers in ocean-related fields.

Additionally, graduate certificates in ocean mapping and acoustics are offered.

Admission Requirements

Applicants should have completed a baccalaureate degree in either chemical, civil, electrical, or mechanical engineering, or have an equivalent background.

https://ceps.unh.edu/ocean-engineering/academics

Programs

- Ocean Engineering (Ph.D.) (p. 231)
- Ocean Engineering (M.Eng.) (p. 232)
- Ocean Engineering (M.S.) (p. 232)
- Ocean Engineering: Ocean Mapping (M.S.) (p. 233)
- Acoustics (Graduate Certificate) (p. 233)
- Ocean Mapping (Graduate Certificate) (p. 234)

Faculty

See https://ceps.unh.edu/ocean-engineering/faculty-staff-directory for faculty.

Ocean Engineering (Ph.D.)

https://ceps.unh.edu/ocean-engineering/program/phd/ocean-engineering

Description

Students admitted to the ocean engineering Ph.D. program come from traditional engineering degree programs including physics, mathematics, computer science, and in some cases, marine science programs. Those entering the Ph.D. program with a B.S. degree from an engineering program should be prepared to begin the Ph.D. program directly. Those coming from a B.S. in physics, mathematics, or computer science will have their transcripts more carefully reviewed on an individual basis, as additional courses may be required.

Requirements

Degree Requirement

The full course requirements below are for students entering with a relevant B.S. degree.

Students entering with a relevant M.S. degree with comparable content must take a minimum of six of the listed courses (exclusive of dissertation research and Ocean Seminars), of which at least three must be at the 900 level. Students entering with an M.S. must either take the listed core courses or demonstrate equivalent knowledge from other programs to be able to successfully pass the OE Ph.D. qualifying exam. As part of preparation for their research, students often take additional, dissertation-specific courses. Additional graduate courses may also be required based on recommendations by the supervisor or dissertation committee.

Code	Title	Credits
Core Courses		**2**
OE 990 & OE 991	Ocean Seminars I and Ocean Seminars II	

Select one of the following courses in oceanography or ocean science:		**3-4**
BIOL 855	Biological Oceanography	
ESCI 852	Chemical Oceanography	
ESCI 858	Introduction to Physical Oceanography	
ESCI 859	Geological Oceanography	
Complete the following core courses in ocean engineering:		**18**
ESCI 820	Ocean Measurements Lab	
OE 853	Ocean Hydrodynamics	
OE 854	Ocean Waves and Tides	
OE 864	Spectral Analysis of Geophysical Time Series Data	
OE 865	Underwater Acoustics	
Select two 900 level courses from the following list:		**6-8**
ME 910	Turbulence	
OE 965	Advanced Underwater Acoustics	
OE 972	Hydrographic Field Course	
OE 995	Graduate Special Topics	
Select two 800 or 900 level courses from MATH or IAM or select both:		**6-8**
ME 886	Introduction to Finite Element Analysis	
ME 986	Advanced Finite Element Analysis	
Select an additional two CEPS electives (one at the 800 level; one at the 900 level):		**6-8**
Total Credits		**41-48**

The general progress of a student through this program is expected to follow the time frame below:

- **Year 1:** Coursework
- **Year 2:** Coursework, qualifier by the end of the year, form graduate dissertation committee
- **Year 3:** Research, dissertation proposal defense
- **Year 4:** Research
- **Year 5:** Research, dissertation defense

The course selection and sequencing will be established in consultation with the student's guidance committee. There will be a qualifying examination on the core courses by the end of the second year. The goal of this exam is to test the breadth of a student's knowledge in topic areas essential to ocean engineering. A formal dissertation proposal defense will include a written proposal, a public presentation and an oral exam. After successful completion of the qualifying exam and dissertation proposal defense, the student will be advanced to candidacy. The dissertation will be defended in a public forum when completed.

Student Learning Outcomes

- Can conduct original research and develop new technologies in ocean engineering.
- Communicate research results through peer-reviewed publications and public presentations.

Ocean Engineering (M.Eng.)

https://gradschool.unh.edu/program/meng/ocean-engineering

Description

Programs in Ocean Engineering are by definition interdisciplinary and require students to interact with the ocean science community as well as the traditional engineering disciplines. In this context, students are exposed to the broad-based issues of working engineering problems in the ocean environment. They are trained to develop responsible solutions to problems that will lead to sustainable activity and life in the ocean. The Ocean Engineering M.Eng. degree includes both coursework and a M.Eng. project as a capstone experience.

Requirements

Degree Requirements

The Master of Engineering in Ocean Engineering requires the completion of at least **30 graduate credits**.

Code	Title	Credits
Core Courses		**2**
OE 990 & OE 991	Ocean Seminars I and Ocean Seminars II	
Select one of the following:		**3-4**
BIOL 855	Biological Oceanography	
ESCI 852	Chemical Oceanography	
ESCI 858	Introduction to Physical Oceanography	
ESCI 859	Geological Oceanography	
Select four courses from the following:		**13-16**
ESCI 820	Ocean Measurements Lab	
OE 854	Ocean Waves and Tides	
OE 857	Coastal Engineering and Processes	
OE 858	Design of Ocean Structures	
OE 864	Spectral Analysis of Geophysical Time Series Data	
OE 865	Underwater Acoustics	
OE 874	Integrated Seabed Mapping Systems	
Three additional 800-900 CEPS Courses		**9-12**
Complete Master's Project		**3**
OE 892	Master's Project	
Total Credits		**30-37**

Student Learning Outcomes

Students graduating with a MS or MEng in Ocean Engineering should be able to :

- Use their ocean engineering graduate education for success in technical careers in industry, academia, government, or for advanced ocean-related research in engineering and the physical sciences.
- Rigorously apply fundamentals of science and engineering to professional practice that enhances our understanding of and/or contributes to the sustainable development of the oceans.
- Contribute their ocean engineering problem solving skills to society through participation and leadership in groups dedicated to serving both professional associations and the public interest.

Ocean Engineering (M.S.)

https://ceps.unh.edu/ocean-engineering/program/ms/ocean-engineering

Description

Programs in Ocean Engineering are by definition interdisciplinary and require students to interact with the ocean science community as well as the traditional engineering disciplines. In this context, students are exposed to the broad-based issues of working engineering problems in the ocean environment. They are trained to develop responsible solutions to problems that will lead to sustainable activity and life in the ocean.

Requirements

Degree Requirements

The Master of Science in Ocean Engineering requires the completion of at least **30 graduate credits**.

Code	Title	Credits
Core Courses		**2**
OE 990 & OE 991	Ocean Seminars I and Ocean Seminars II	
Select one of the following:		**3-4**
BIOL 855	Biological Oceanography	
or ESCI 852	Chemical Oceanography	
or ESCI 858	Introduction to Physical Oceanography	
or ESCI 859	Geological Oceanography	
or ESCI 868 & ESCI 869	Applied Physical Oceanography for Hydrographic Surveyors and Marine Geology and Geophysics for Hydrographic Surveyors	
Select four courses from the following:		**13-16**
ESCI 820	Ocean Measurements Lab	
OE 817	Marine Robotics and Applications	
OE 853	Ocean Hydrodynamics	
OE 854	Ocean Waves and Tides	
OE 857	Coastal Engineering and Processes	
OE 858	Design of Ocean Structures	
OE 864	Spectral Analysis of Geophysical Time Series Data	
OE 865	Underwater Acoustics	
OE 874	Integrated Seabed Mapping Systems	
Select an additional two 800-900 level CEPS courses		**6-8**
Complete a master's thesis:		**6**
OE 899	Master's Thesis	
Total Credits		**30-36**

Student Learning Outcomes

Students graduating with a MS or MEng in Ocean Engineering should be able to :

- Use their ocean engineering graduate education for success in technical careers in industry, academia, government, or for advanced ocean-related research in engineering and the physical sciences.
- Rigorously apply fundamentals of science and engineering to professional practice that enhances our understanding of and/or contributes to the sustainable development of the oceans.
- Contribute their ocean engineering problem solving skills to society through participation and leadership in groups dedicated to serving both professional associations and the public interest.

Ocean Engineering: Ocean Mapping (M.S.)

https://ceps.unh.edu/ocean-engineering/program/ms/ocean-engineering-ocean-mapping

Description

The MS option in ocean mapping is offered in conjunction with the Joint Hydrographic Center/Center for Coastal and Ocean Mapping. Students follow a more structured path through this program, which incorporates all aspects of hydrography as required by the Interntational Hydrogrpahic Organization (IHO).

Students may also fulfill the Category A (professional) International Federation of Surveyors/International Hydrographic Organization/ International Cartographic Association (FIG/IHO) Standards of Competence for Hydrographic Surveyors by completing specialized requirements in addition to the MS-option program requirements. More information is available on the Center for Coastal and Ocean Mapping website.

Requirements

Degree Requirements

Code	Title	Credits
Core Courses		
OE 990 & OE 991	Ocean Seminars I and Ocean Seminars II	2
ESCI 820	Ocean Measurements Lab	4
OE 865	Underwater Acoustics	3
OE 871	Geodesy and Positioning for Ocean Mapping	4
OE 874	Integrated Seabed Mapping Systems	4
OE 875	Advanced Topics in Ocean Mapping	4
OE 972	Hydrographic Field Course	4
Electives		
Select at least 3 additional credits from the following courses:		**3-4**
OE 854	Ocean Waves and Tides	
OE 857	Coastal Engineering and Processes	
OE 864	Spectral Analysis of Geophysical Time Series Data	
OE 895	Special Topics	
ECE 814	Introduction to Digital Signal Processing	
ESCI 858	Introduction to Physical Oceanography	
ESCI 868	Applied Physical Oceanography for Hydrographic Surveyors	
ESCI 869	Marine Geology and Geophysics for Hydrographic Surveyors	
ESCI 896	Topics	
Thesis Requirement		
OE 899	Master's Thesis	6
Total Credits		**34-35**

Student Learning Outcomes

Students graduating with a MS or MEng in Ocean Engineering should be able to :

- Use their ocean engineering graduate education for success in technical careers in industry, academia, government, or for advanced ocean-related research in engineering and the physical sciences.
- Rigorously apply fundamentals of science and engineering to professional practice that enhances our understanding of and/or contributes to the sustainable development of the oceans.
- Contribute their ocean engineering problem solving skills to society through participation and leadership in groups dedicated to serving both professional associations and the public interest.

Acoustics (Graduate Certificate)

https://gradschool.unh.edu/program/graduate-certificate/acoustics

Description

The UNH Graduate Certificate in Acoustics offers students the opportunity to develop competencies in acoustic signal processing, animal bioacoustics, and underwater acoustics. This interdisciplinary

graduate certificate is appropriate for students with professional interests in acoustics that have backgrounds in mathematical or applied sciences, and the courses that populate the program can be applied toward a UNH graduate degree. Three combinations of required and elective courses can be taken to earn a digital badge in three micro-credential technical areas: bioacoustics, digital signal processing, and underwater acoustics. The program curriculum consists of two required online courses (Advances in Acoustics and Introduction to Digital Signal Processing), and students then select two additional electives from six possible course choices.

Contact Dr. Jennifer Miksis-Olds (j.miksisolds@unh.edu), or Dr. Anthony Lyons (anthony.lyons@unh.edu) for more information.

Requirements

The Graduate Certificate in Acoustics requires the completion of four courses: two required courses and two electives.

Code	Title	Credits
Core Required Courses		
EOS 808	Acoustics Essentials	3
ECE 814	Introduction to Digital Signal Processing	4
Select two courses from the following:		
BIOL 827	Animal Communication	4
BIOL 828	Marine Bioacoustics	3
ECE 941	Digital Signal Processing	3
OE 865	Underwater Acoustics	3
OE 874	Integrated Seabed Mapping Systems	4
OE 965	Advanced Underwater Acoustics	3

Ocean Mapping (Graduate Certificate)

https://ceps.unh.edu/ocean-engineering/program/certificate/ocean-mapping

Description

The program goal is to provide advanced graduate training to working professionals in the area of ocean mapping. These professionals will come from a variety of backgrounds ranging from earth science, geology, and biology to engineering. The graduate certificate in ocean mapping is awarded for completion of the core courses and associated practicum. The graduate certificate program fulfills the Category A International Federation of Surveyors/International Hydrographic Organization/ International Cartographic Association (FIG/IHO/ICA) Standards of Competence for Hydrographic Surveyors.

For more information, please visit the ocean mapping website or contact the Center for Coastal and Ocean Mapping/Joint Hydrographic Center at info@ccom.unh.edu.

Applying

Please visit the Graduate School website for instructions about applying to the certificate program.

Requirements

Certificate Requirements

Code	Title	Credits
ESCI/OE 871	Geodesy and Positioning for Ocean Mapping	4
ESCI 872	Applied Tools for Ocean Mapping	2
ESCI/OE 874	Integrated Seabed Mapping Systems	4
ESCI/OE 875	Advanced Topics in Ocean Mapping	4
ESCI 896	Topics (for the optional Remote Sensing specialty)	3
ESCI 972	Hydrographic Field Course	4
MATH 896	Topics in Mathematics and Statistics	3
OE 677	Seamanship and Marine Weather for Ocean Engineers and Scientists	
Total Credits		**24**

Oceanography (OCE)

Degrees Offered: Ph.D., M.S.

This program is offered in Durham.

The Department of Earth Sciences (ESCI) in the College of Engineering and Physical Sciences (CEPS) offers M.S. and Ph.D. degrees in oceanography that include the study of biological oceanography, chemical oceanography, marine geology and geophysics, and physical oceanography. The OCE program also supports focused research in coastal and estuarine processes.

Admission Requirements

Applicants should have completed an undergraduate major related to one of the oceanography disciplines, including biology, chemistry, engineering, geology, physics, or mathematics, or an appropriate array of science and engineering courses within their major field. Applicants are expected to have completed one year each of calculus and chemistry and two semesters of physics and/or biology. It is not necessary to have had previous coursework in oceanography.

https://marine.unh.edu/academics

Programs

- Oceanography (Ph.D.) (p. 234)
- Oceanography (M.S.) (p. 237)

Faculty

See https://marine.unh.edu/directory/all for faculty.

Oceanography (Ph.D.)

https://ceps.unh.edu/earth-sciences/program/phd/oceanography

Description

The Oceanography (OCE) graduate program has a diverse set of faculty, staff, and students who examine ocean processes in broad fields of physical, biological, chemical, and geological oceanography and geophysics Basic and applied research of an experimental, numerical, and analytical nature is conducted in oceanic settings that range from

shallow nearshore and estuarine waters to the deep ocean and span all ocean basins on earth including the Arctic.

OCE offers programs leading to M.S. and Ph.D. degrees. These interdisciplinary programs prepare students for professional careers in ocean-relate fields. In addition, students can also pursue an ocean mapping option within the Department of Earth Sciences and carried out within the Center for Coastal and Ocean Mapping.

Research and Facilities

The oceanography graduate program within the Department of Earth Sciences and the School of Marine Science and Ocean Engineering (SMSOE) is enhanced by the ocean engineering and marine biology graduate programs, and by other departments and institutes at UNH, including the civil and mechanical engineering and biology departments; the Institute for the Study of Earth, Oceans, and Space (EOS); the Center for Coastal and Ocean Mapping (CCOM); and the Ocean Processes Laboratory (OPAL). Other related programs include the N.H. Sea Grant Program, the Center for Collaborative Science, and the Atlantic Marine Aquaculture Center, Coastal Response Research Center (CRRC), Northeast Consortium (NEC), and the Piscataqua Region Estuaries Partnership (PREP). Oceanographic laboratories at UNH include the Shoals Marine Laboratory (SML) on Appledore Island, the Coastal Marine Laboratory (CML) in Newcastle, the Jackson Estuarine Laboratory (JEL) at Adams Point on the Great Bay, and the Chase Ocean Engineering Laboratory (COEL) on the main UNH campus. Additional laboratories for the oceanography faculty are located on campus in James, Morse, Rudman, and Spaulding Halls. The SMSOE operates a marine support facility and two UNH research vessels moored in Portsmouth Harbor at the UNH pier, the R/V Gulf Challenger and the R/V Gulf Surveyor, as well as a number of small boats. The SMSOE also supports the UNH Diving Program and oversees a shared use Instrumentation Pool for student and faculty use.

Admission Requirements

Applicants should have completed an undergraduate major related to one of the oceanography disciplines, including biology, chemistry, engineering,geology, physics, or mathematics, or an appropriate array of science and engineering courses within their major field. Applicants are expected to have completed one year each of calculus and chemistry and two semesters of physics and/or biology. It is not necessary to have had previous coursework in oceanography.

Requirements

Degree Requirements

Students plan a program of study in conjunction with a faculty guidance committee (FGC). Students entering the program without a master's degree are expected to complete a minimum of 36 credit hours. Students with an M.S. degree in oceanography or related field in physical science from UNH or another university should first demonstrate (through accredited transcript or the qualifying examination) acceptable mastery in the basic core areas. Those deficient in any discipline will be required to complete the respective course.

All students must complete all four core oceanography courses, and at least one course from each of the following categories: methods, ethics/policy/law, and seminar. Please see below for a list of courses that meet these specifications (other courses may qualify and should be approved by the FGC). Additional credit hours are determined by the FGC (typically 15 credit hours). Foreign language requirement is determined by the FGC. Students must complete a Coursework Approval Form, which summarizes all courses to be taken, and obtain signatures from their adviser, committee members, and the OCE program coordinator once the coursework is completed.

Students wishing to be admitted to doctoral candidacy will undergo a qualifying examination by the guidance committee designed to test the student's in-depth knowledge in their major field and their ability to conduct independent and original research in oceanography. Qualifying students will present to the guidance committee a research proposal in which the soundness, originality, and feasibility of the investigation are clearly stated, and which when approved based on a proposal examination by the committee, will form the basis for the doctoral dissertation.

Students are advanced to candidacy after successfully completing the comprehensive exam, proposal exam, and all coursework required by the guidance committee. Students must complete a dissertation, present their results at a public seminar, and pass an oral examination by the thesis committee.

Although not a strict requirement, all graduate students are encouraged to obtain teaching experience, preferably as a teaching assistant.

All students are required to spend time in the field, even if their research project and interests are primarily based on analytical research, modeling studies, or laboratory experiments. The field requirement could include extended time at sea onboard one of the UNH, UNOLS, NOAA, or similar oceanographic research vessels, or include field experiments at locations in New Hampshire, the U.S., or around the globe, and includes possible nearshore and estuarine studies, Antarctic expeditions, or other land--based studies related to oceanography. Successful completion of the field requirement will be determined by the guidance committee.

Code	Title	Credits
Core Oceanography Courses		
BIOL 855	Biological Oceanography	
ESCI 852	Chemical Oceanography	
ESCI 858	Introduction to Physical Oceanography	
ESCI 859	Geological Oceanography	

Code	Title	Credits
Methods Courses		
CHEM 862	Advanced Chemical Analysis Instrumentation	
ESCI 801	Quantitative Methods in Earth Sciences	
ESCI 820	Ocean Measurements Lab	
ESCI 871	Geodesy and Positioning for Ocean Mapping	
ESCI 864	Spectral Analysis of Geophysical Time Series Data	
ESCI 874	Integrated Seabed Mapping Systems	
ESCI 875	Advanced Topics in Ocean Mapping	
ESCI 972	Hydrographic Field Course	
ESCI 996	Advanced Topics (Ocean Modelling)	
IAM 940	Asymptotic and Perturbation Methods	
ME 807	Analytical Fluid Dynamics	
MATH 835	Statistical Methods for Research	
MATH 839	Applied Regression Analysis	
MATH 845	Foundations of Applied Mathematics I	
MATH 853	Introduction to Numerical Methods	

Code	Title	Credits
Ethics, Policy, and Law Courses		
ECON 908	Environmental Economics: Theory and Policy	
MARI 805	Introduction to Coastal and Marine Policy: Understanding US Ocean, Coastal, and Great Lakes Policy	
NR 820	International Environmental Politics and Policies for the 21st Century	

NR 824	Resolving Environmental Conflicts	
GRAD 930	Ethics in Research and Scholarship	

Code	Title	Credits
Seminar and Proposal Development Courses		
OE 990	Ocean Seminars I	
OE 991	Ocean Seminars II	
ESCI 997	Seminar in Earth Sciences	
ESCI 998	Proposal Development	
BIOL 901	Introductory Graduate Seminar	

Code	Title	Credits
Other Relevant Graduate Courses		
BIOL 828	Marine Bioacoustics	
CEE 822	Introduction to Marine Pollution and Control	
ESCI 834	Geophysics	
ESCI 841	Geochemistry	
ESCI 845	Isotope Geochemistry	
ESCI 847	Aqueous Geochemistry	
ESCI 854	Sedimentology	
ESCI 856	Geotectonics	
ESCI 860	Paleoceanography	
ESCI 862	Glacial Geology	
ESCI 865	Paleoclimatology	
ESCI 895	Topics (Ocean Biogeochemistry)	
ESCI 896	Topics (Nearshore Processes)	
ESCI 995	Advanced Topics (Geophysical Fluid Mechanics)	
ESCI 996	Advanced Topics (Nearshore Hydrodynamics)	
ME 807	Analytical Fluid Dynamics	
ME 812	Waves in Fluids	
ME 910	Turbulence	
MEFB 872	Fisheries Biology: Conservation and Management	
OE 853	Ocean Hydrodynamics	
NR 844	Biogeochemistry (or ESCI 896 Topics/Biogeochemistry)	
OE 854	Ocean Waves and Tides	
OE 857	Coastal Engineering and Processes	
OE 895	Special Topics (Underwater Acoustics)	
OE 995	Graduate Special Topics (Coastal Sediment Transport)	
ZOOL 810	Sharks and Bony Fishes	

Student Learning Outcomes

Students graduating with a Ph.D. in Oceanography should achieve the following learning outcomes:

Core Knowledge

- Demonstrate a foundation of knowledge in all 4 of the main branches of oceanography: Geological, Biological, Physical, or Chemical.
- Geological Oceanography: An understanding marine geology and geophysics, including major geological features and history of the world's oceans, processes of the ocean floor, composition and structure of the Earth, plate tectonic theory, marine sedimentology, and paleoceanography.
- Biological Oceanography: An understanding of marine ecosystems, primary and secondary productivity, trophodynamics, plankton diversity, zooplankton ecology, global ocean dynamics, and the physical and chemical processes that govern nutrient and light availability, the concept of food webs, role of microbes, and fisheries and anthropogenic interactions with fish stocks.
- Physical Oceanography: An understanding of the physics of the ocean, including general wind-driven and thermohaline circulation, geostrophic flow, upwelling, waves and tides, continental and nearshore processes. the effect of the earth's rotation on large scale global ocean circulation, and instrumentation and methods used in obtaining observations.
- Chemical Oceanography: An understanding of the physical and biogeochemical process that determine the composition of seawater, including biological effects on chemistry, ocean nutrient cycles, air-sea gas exchange, radiogenic and stable isotopes as tracers of ocean properties, sediment and trace metal chemistry.
- Demonstrate basic knowledge of how the processes within the main branches of oceanography interact with each other.
- Demonstrate specialized knowledge of a field within oceanography sufficient to conduct and lead substantive independent research.

Research Methods and Analysis

- Identify and demonstrate knowledge of a range of qualitative and quantitative methodologies typically used in oceanographic research and critically evaluate research that uses these methods.
- Discover and critically read published research articles in oceanographic and related fields of the Earth Sciences, mathematics, statistics, physics, chemistry, and biology.
- Frame empirical research and/or theory guided by prior knowledge.
- Implement rigorous theoretical, numerical, field, or laboratory studies using appropriate methods, measurements, and/or techniques.
- Critically evaluate and systematically analyze data to reach appropriate findings and interpretations.

Research Independence

- Develop and implement independent research projects that meet high standards of theoretical and methodological rigor.
- Formulate and propose new hypotheses to test present understanding and discuss directions for future research with broad international audiences.

Scholarly Communication

- Structure a coherent argument that rigorously presents and evaluates evidence to support claims.
- Review and cogently synthesize relevant literature.
- Write at a level and in a style of English consistent with that found in leading academic journals.
- Understand and properly use styles of citing, referencing, and formatting found in leading academic journals.
- Clearly convey research findings through oral presentation supported by appropriate digital media.
- Cogently summarize research and its significance to non-specialist audiences.

Professionalism and Pedagogy

- Prepare and submit manuscripts that meet the standards of academic and research journals and respond appropriately to recommendations for revision that lead to publication.
- Be able to prepare and submit research proposals to funding agencies to secure extramural funding.
- Communicate through oral and media presentation to effectively convey knowledge to students, colleagues, and the community in academic lecture, public outreach, and national and international conference settings.

- Demonstrate collaboration, leadership and teamwork with colleagues, peers, and the public.
- Create a welcoming environment that is supportive, inclusive and equitable.
- Make effective contributions to university, community and professional service and be able to lead discussions with both experts and non-experts in the field.

Oceanography (M.S.)

https://ceps.unh.edu/earth-sciences/program/ms/oceanography

Description

The Oceanography (OCE) graduate program has a diverse set of faculty, staff, and students who examine ocean processes in broad fields of physical, biological, chemical, and geological oceanography and geophysics. Basic and applied research of an experimental, numerical, and analytical nature is conducted in oceanic settings that range from shallow nearshore and estuarine waters to the deep ocean and span all ocean basins on earth including the Arctic.

OCE offers programs leading to M.S. and Ph.D. degrees. These interdisciplinary programs prepare students for professional careers in ocean-relate fields. In addition, students can also pursue an ocean mapping option within the Department of Earth Sciences and carried out within the Center for Coastal and Ocean Mapping.

Research and Facilities

The oceanography graduate program within the Department of Earth Sciences and the School of Marine Science and Ocean Engineering (SMSOE) is enhanced by the ocean engineering and marine biology graduate programs, and by other departments and institutes at UNH, including the civil and mechanical engineering and biology departments; the Institute for the Study of Earth, Oceans, and Space (EOS); the Center for Coastal and Ocean Mapping (CCOM); and the Ocean Processes Laboratory (OPAL). Other related programs include the N.H. Sea Grant Program, the Center for Collaborative Science, and the Atlantic Marine Aquaculture Center, Coastal Response Research Center (CRRC), Northeast Consortium (NEC), and the Piscataqua Region Estuaries Partnership (PREP). Oceanographic laboratories at UNH include the Shoals Marine Laboratory (SML) on Appledore Island, the Coastal Marine Laboratory (CML) in Newcastle, the Jackson Estuarine Laboratory (JEL) at Adams Point on the Great Bay, and the Chase Ocean Engineering Laboratory (COEL) on the main UNH campus. Additional laboratories for the oceanography faculty are located on campus in James, Morse, Rudman, and Spaulding Halls. The SMSOE operates a marine support facility and two UNH research vessels moored in Portsmouth Harbor at the UNH pier, the R/V Gulf Challenger and the R/V Gulf Surveyor, as well as a number of small boats. The SMSOE also supports the UNH Diving Program and oversees a shared use Instrumentation Pool for student and faculty use.

Admission Requirements

Applicants should have completed an undergraduate major related to one of the oceanography disciplines, including biology, chemistry, engineering, geology, physics, or mathematics, or an appropriate array of science and engineering courses within their major field. Applicants are expected to have completed one year each of calculus and chemistry and two semesters of physics and/or biology. It is not necessary to have had previous coursework in oceanography.

Requirements

Degree Requirements

Students must complete a minimum of **30 credits for the thesis option** or **34 credits for the non-thesis option**.

Code	Title	Credits
Required Courses		
ESCI 997	Seminar in Earth Sciences	1
ESCI 998	Proposal Development	1
Select two of the following core courses:		6-8
BIOL 855	Biological Oceanography	
ESCI 852	Chemical Oceanography	
ESCI 858	Introduction to Physical Oceanography	
ESCI 859	Geological Oceanography	
Select one of the following:		**6 or 2**
Thesis Option:		
OCE 899	Master's Thesis (acceptable to the thesis-examining committee and must pass a thesis defense)	
Non-Thesis Option:		
ESCI 898	Directed Research	
or OCE 898	Directed Research	
Other Relevant Graduate Courses		**16-22**
BIOL 828	Marine Bioacoustics	
CEE 822	Introduction to Marine Pollution and Control	
ESCI 801	Quantitative Methods in Earth Sciences	
ESCI 820	Ocean Measurements Lab	
ESCI 834	Geophysics	
ESCI 841	Geochemistry	
ESCI 845	Isotope Geochemistry	
ESCI 847	Aqueous Geochemistry	
ESCI 854	Sedimentology	
ESCI 856	Geotectonics	
ESCI 860	Paleoceanography	
ESCI 862	Glacial Geology	
ESCI 864	Spectral Analysis of Geophysical Time Series Data	
ESCI 865	Paleoclimatology	
ESCI 871	Geodesy and Positioning for Ocean Mapping	
ESCI 874	Integrated Seabed Mapping Systems	
ESCI 875	Advanced Topics in Ocean Mapping	
ESCI 895	Topics (Ocean Biogeochemistry)	
ESCI 896	Topics (Nearshore Processes)	
ESCI 972	Hydrographic Field Course	
ESCI 995	Advanced Topics (Geophysical Fluid Dynamics)	
ESCI 996	Advanced Topics (Ocean Modeling)	
ESCI 996	Advanced Topics (Nearshore Hydrodynamics)	
IAM 940	Asymptotic and Perturbation Methods	
MATH 835	Statistical Methods for Research	
MATH 839	Applied Regression Analysis	
MATH 845	Foundations of Applied Mathematics I	
MATH 846	Foundations of Applied Mathematics II	
MATH 853	Introduction to Numerical Methods	
ME 807	Analytical Fluid Dynamics	
ME 910	Turbulence	
ME 812	Waves in Fluids	
MEFB 825	Marine Ecology	
MEFB 872	Fisheries Biology: Conservation and Management	
NR 844	Biogeochemistry (or ESCI 896 Topics (Biogeochemistry))	
OE 853	Ocean Hydrodynamics	
OE 854	Ocean Waves and Tides	
OE 857	Coastal Engineering and Processes	
OE 865	Underwater Acoustics	

OE 995	Graduate Special Topics (Coastal Sediment Transport)	
ZOOL 810	Sharks and Bony Fishes	
Total Credits		**30-34**

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Students graduating with a MS in Oceanography should achieve the following learning outcomes:

Core Knowledge

- Demonstrate a foundation of knowledge in at least 2 of the main branches of oceanography: Geological, Biological, Physical, or Chemical.
- Geological Oceanography: An understanding marine geology and geophysics, including major geological features and history of the world's oceans, processes of the ocean floor, composition and structure of the Earth, plate tectonic theory, marine sedimentology, and paleoceanography.
- Biological Oceanography: An understanding of marine ecosystems, primary and secondary productivity, trophodynamics, plankton diversity, zooplankton ecology, global ocean dynamics, and the physical and chemical processes that govern nutrient and light availability, the concept of food webs, role of microbes, and fisheries and anthropogenic interactions with fish stocks.
- Physical Oceanography: An understanding of the physics of the ocean, including general wind-driven and thermohaline circulation, geostrophic flow, upwelling, waves and tides, continental and nearshore processes. the effect of the earth's rotation on large scale global ocean circulation, and instrumentation and methods used in obtaining observations.
- Chemical Oceanography: An understanding of the physical and biogeochemical process that determine the composition of seawater, including biological effects on chemistry, ocean nutrient cycles, air-sea gas exchange, radiogenic and stable isotopes as tracers of ocean properties, sediment and trace metal chemistry.
- Demonstrate basic knowledge of how the processes within the main branches of oceanography interact with each other.
- Demonstrate specialized knowledge of a field within oceanography sufficient to conduct substantive supervised research.

Research Methods and Analysis

- Identify and demonstrate knowledge of a range of qualitative and quantitative methodologies typically used in geochemistry research.
- Discover and critically read published research in the Earth sciences and related fields of mathematics, statistics, physics, chemistry, and biology.
- Frame empirical research and/or theory guided by prior knowledge.
- Implement a rigorous study using appropriate methods, measures and techniques.
- Critically evaluate and systematically analyze data to reach appropriate findings and interpretations.

Scholarly Communication

- Structure a coherent argument that rigorously presents and evaluates evidence to support claims.
- Review and cogently synthesize relevant literature.
- Write at a level and in a style of English consistent with that found in leading academic journals.
- Understand and properly use styles of citing, referencing, and formatting found in leading academic journals.
- Clearly convey research findings through oral presentation supported by appropriate digital media.
- Cogently summarize research and its significance to non-specialist audiences.

Professionalism and Pedagogy

- Prepare manuscripts that meet the standards of academic and research journals and respond appropriately to recommendations for revision.
- Demonstrate collaboration, leadership and teamwork.
- Create a welcoming environment that is supportive, inclusive and equitable.
- Make effective contributions to university, community and professional service.
- Communicate effectively to groups in a lecture format.

Operations Management (CPSO)

Programs: Graduate Certificate

Offered Online

The College of Professional Studies-Online, Business and Technology Academic Center offers a Graduate Certificate in Operations Management.

Admission Requirements

Graduate Certificates

Admission requirements include a bachelor's degree, and official transcripts.

Programs

- Operations Management (Graduate Certificate) (p. 239)

Learning Outcomes

Outcomes-Based Learning

Our greatest concern is that our graduates develop a specific set of skills and abilities.

The College's outcome-based degree programs and curriculum:

- Provide standards to be met in demonstrating competence
- Form a base from which to design and pursue learning activities
- Foster the ability to demonstrate self-directed learning

In addition to individual student assessment and grading, learning outcomes assessment is conducted in all programs to ensure the quality of our programs and to prompt ongoing improvements in teaching and learning.

Graduate Degree Learning Outcomes

Based in our commitment to our students through our mission, vision and values, every graduate degree program at the College of Professional Studies - Online provides students with opportunities to learn and demonstrate their abilities to do the following:

Communicate, particularly

- Communicate effectively—orally and written—with respect to theories, arguments, methods, and concepts, using supplemental materials and technology as appropriate.
- Disaggregate, reformulate and adapt principle ideas, techniques or methods when completing a paper or project.
- Contribute to, expand, evaluate or refine the scholarship within the field of study.
- Collaborate with diverse people and teams using elements of effective team dynamics to effectively and appropriately structure team work.

Think critically and comprehensively, particularly

- Demonstrate analytical skills needed to gather and assess information to influence data-driven decision making.
- Exhibit a conceptual understanding of the most widely applicable methodologies of decision-making; for example, employ creative problem solving for strategic planning.
- Demonstrate critical thinking, appropriate analytical models, and critical reasoning processes to evaluate evidence, select among alternatives, and generate creative options in furtherance of effective decision making.

Apply knowledge to workplace and community, particularly

- Display competency and appropriate skills for working effectively with people from diverse backgrounds and orientations.
- Effectively engage in one's broader community through various forms of outreach.
- Design and implement a project that requires the application of advanced knowledge to a practical challenge and articulate the insights gained from the experience.[1]

Gain specialized knowledge, particularly

- Demonstrate proficiency in specialized skills and technologies needed to participate in the intellectual and organizational aspects of one's profession.

[1] *Not applicable to Graduate Certificate programs.*

Operations Management (Graduate Certificate)

https://cps.unh.edu/online/program/graduate-certificate/operations-management

Description

This Operations Management Graduate Certificate program is designed to provide an interdisciplinary approach to operations management, ranging from manufacturing to health care. Participants will gain an understanding and appreciation of the functions an operations manager provides to their organization. They will acquire knowledge of the essentials of business operations, including project management and supply chain management. We recognize the differences in quality management between business and health care by providing students a choice of quality management courses.

Students will have the opportunity to:

1. Acquire new skills in support of managing an organization's operational functions;
2. Demonstrate the application of new knowledge of operations management functions and their support to an organization;
3. Establish themselves as a credible professional in operations management.

Requirements

Certificate Requirements

Graduate credit is only granted for courses completed with a grade of B-- or higher
Minimum GPA Requirement: 3.0

Code	Title	Credits
Operations Management-Graduate Certificate		
OPS 800	Principles of Operations Management	3
PM 800	Project Management Seminar	3
Complete three credits from the following:		*3*
HLTC 810	Health Care Quality and Safety	
PM 819	Total Quality Management	
Choose three credits from the following:		*3*
SCM 805	Supply Chain Management	
PM 820	Introduction to Lean Management	
PM 821	Introduction to Theory of Constraints	
Total Credits		**12**

Physics (PHYS)

Degrees Offered: Ph.D., M.S.

These programs are offered in Durham.

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.

The mission of the Department of Physics is two-fold: to prepare students for a variety of career opportunities in business, industry, government and education/academia, and to conduct world-class research in various fields, including space and astrophysics, nuclear physics, high-energy physics, gravity, and solid state physics. The department has currently 28 teaching faculty, 11 research faculty, 105 undergraduate students and 60

graduate students. It houses state-of-the-art educational and laboratory facilities; the affiliated UNH Observatory is open to the public.

The Department of Physics offers the degrees of Master of Science and Doctor of Philosophy. Interested students are encouraged to contact the department for further information. More detailed information is also on the physics department web page at www.physics.unh.edu.

Admission Requirements

Applicants to the master of science and doctor of philosophy programs are expected to have a bachelor's degree in science, with at least 24 credits in physics and closely allied fields. Applicants must submit current scores (within five years) from the general test of the Graduate Record Examination (GRE), and from the GRE physics subject test.

Interdisciplinary Research

The department encourages research in areas related to physics or applied physics. If students desire to do research in a field related to physics, special provisions may be made. Contact the department chairperson or graduate adviser for details.

https://physics.unh.edu/

Programs

- Physics (Ph.D.) (p. 240)
- Physics (M.S.) (p. 240)

Faculty

See http://physics.unh.edu/people/faculty for faculty.

Physics (Ph.D.)

https://ceps.unh.edu/physics/program/phd/physics

Description

The Physics Ph.D. program prepares students for a career in industry, education, research or academia. Students will progress from studying a core curriculum encompassing fundamental areas of physics to taking elective classes in their area of interest. They will then conduct original research in a particular research area, leading to their PhD dissertation and defense.

For more details, please consult the physics graduate student handbook.

Applying

Please visit the Graduate School website for detailed instructions about applying to the program.

Cognate in College Teaching

The Cognate in College Teaching is essentially a minor in college level teaching; this minor is given in association with a PhD degree only (not with a Master's); it is not a stand-alone degree. The purpose of the Cognate is to prepare future faculty for their role as teachers. For more information please see the College Teaching (p. 67) program page in this catalog.

Requirements

Degree Requirements

Code	Title	Credits
PHYS 805	Experimental Physics (or equivalent demonstrated experimental proficiency)	4
PHYS 931	Mathematical Physics	3
PHYS 935	Statistical Physics	3
PHYS 939	Classical Mechanics	3
PHYS 941 & PHYS 942	Electromagnetic Theory I and Electromagnetic Theory II	6
PHYS 943 & PHYS 944	Quantum Mechanics I and Quantum Mechanics II	6
PHYS 806	Introduction to Physics Research and Teaching (two semesters, taken during the first year in the program)	1
Select four additional 3+ credit elective courses, of which 2 may be at the 800 level [1]		12
Total Credits		**38**

[1] For Space Science students, these courses must include Plasma Physics (PHYS 951), Magnetohydrodyamics of the Heliosphere (PHYS 953), and one of Magnetospheres (PHYS 987), Heliospheric Physics (PHYS 954).

Students are required to

- demonstrate proficiency in teaching,
- pass the written comprehensive exam, and
- pass an oral qualifying exam on a thesis proposal.

Degree candidates are required to

- register for a minimum of two semesters of PHYS 999 Doctoral Research,
- pass the oral dissertation defense, and
- successfully submit the final dissertation to the Graduate School.

Student Learning Outcomes

- Students will master the theoretical concepts in advanced mechanics, electromagnetism, quantum mechanics and statistical mechanics at the graduate level.
- Students will have an advanced understanding of the mathematical methods, both analytical and computational, required to solve complex physics problems at the graduate level.
- Students will be proficient in experimental physics.
- Students will develop and demonstrate proficiency in teaching at the undergraduate level.
- Students will have a specialized knowledge of their chosen field of advanced research in physics.
- Students will be able to present advanced scientific ideas effectively in both written and oral form.
- Students will be well prepared for postgraduate study in physics and related disciplines, as well as advanced careers in a multitude of fields ranging from scientific and technical to financial.

Physics (M.S.)

https://ceps.unh.edu/physics/program/ms/physics

Description

The Physics M.S. program prepares students for a career in industry, education, or government. The curriculum encompassing core areas of physics as well as elective classes that can be chosen to match their area of interest. The M.S. degree includes a capstone experience, which can be a Master's Thesis or a Master's project (for students in the PhD program, the oral thesis proposal satisfies the capstone requirement).

For more details, please consult the physics graduate student handbook.

Applying

Please visit the Graduate School website for detailed instructions about applying to the program.

Requirements

Degree Requirements

To obtain the degree, students must complete a minimum of **30 credits** as outlined below.

Code	Title	Credits
Required Courses		
PHYS 805	Experimental Physics (or equivalent demonstrated experimental proficiency)	4
PHYS 931	Mathematical Physics	3
PHYS 939	Classical Mechanics	3
PHYS 941	Electromagnetic Theory I	3
PHYS 943	Quantum Mechanics I	3
PHYS 806	Introduction to Physics Research and Teaching (two semesters)	2
Select one of the following options:		**12**
Option A-Thesis: 12 additional credits including a 6 credit Master's Thesis PHYS 899 with oral defense		
Option B-Project: 12 additional credits including a Master's Project PHYS 895 (up to 4 credits) with a seminar presentation		
Option C-Exam: 12 additional credits of coursework and passing the written comprehensive and oral qualifying exams (for students in the PhD program only)		

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Students will master the theoretical concepts in advanced mechanics, electromagnetism, quantum mechanics and statistical mechanics at the graduate level.
- Students will have an advanced understanding of the mathematical methods, both analytical and computational, required to solve complex physics problems at the graduate level.
- Students will be proficient in experimental physics.
- Students will have a specialized knowledge of their chosen field of research in physics at the level of a Masters degree.
- Students will be well prepared for further graduate study in physics and related disciplines.
- Students will be well prepared for advanced careers in a multitude of fields ranging from scientific and technical to financial.
- Students will be able to present advanced scientific ideas effectively in both written and oral form.

Political Science & International Affairs (PSIA)

Degrees Offered: M.A.

This program is offered in Durham.

The Department of Political Science at UNH offers a Master of Arts in Political Science (MA). The MA program provides advanced study in international relations, comparative politics, and American politics. The program serves students interested in working in government, public service, nonprofit management, electoral politics, government relations, education and research, and in preparing for Ph.D. programs. This program gives students the flexibility to tailor their coursework to individual interests within a curriculum that ensures a strong foundation in international and domestic politics, and research methods. Faculty engage in teaching and research activities encompassing the fields of international, comparative and American politics.

This program is offered to full- and part-time students.

Admission Requirements

For the MA program, applicants are expected to have majored in political science or a related discipline in the social sciences or humanities. All applicants must possess a bachelor's degree from an accredited institution. The Graduate Record Examination (GRE) general test is required.

https://cola.unh.edu/political-science

Programs

- Political Science (M.A.) (p. 241)

Faculty

See https://cola.unh.edu/political-science/faculty-staff-directory for faculty.

Political Science (M.A.)

https://cola.unh.edu/political-science/program/ma/political-science

Description

Since 1948, the Graduate Program of the Department of Political Science has been educating students, scholars and civic leaders in all domains of political life. Encompassing a range of research fields, our graduate program allows students to explore the nature and distribution of political power and resources at the individual and community levels, as well as federal, state and local governments, electoral politics, and in the international arena.

The Department of Political Science at UNH offers the **Master of Arts in Political Science**. The program provides advanced study in international relations and American and comparative politics. The program serves students interested in working in government, public service, nonprofit management, electoral politics, education and research, and in preparing for Ph.D. programs. It gives students the flexibility to tailor their coursework to individual interests within a curriculum that ensures a strong foundation in international and domestic politics, research methods, and analysis. Faculty engage in teaching and research activities encompassing the fields of international and comparative politics, American politics, and political thought.

The program is offered to full- and part-time students.

Requirements

Degree Requirements

Students may choose between the Thesis option and Non-Thesis option. Both options require a minimum of **40 graduate credits**.

M.A. with Thesis Option

Master's degree students must complete a minimum of **40 credits** for the degree: ten courses, two of which may be thesis credits (POLT 899 Master's Thesis). Of the ten courses, two are required seminars: Pro Seminar (POLT 800 Political Science Pro-Seminar) and an introductory statistical analysis course (e.g., PPOL 908), and are to be taken during the student's first year.

Students are encouraged to work with the MA program director to identify relevant courses of interest across the College of Liberal Arts graduate offerings. The MA program director must provide course approval for courses offered outside the department. Successful completion and defense of a 8-credit master's thesis is required.

Code	Title	Credits
POLT 800	Political Science Pro-Seminar [1]	4
Select one introductory course on statistical analysis		
PPOL 908	Quantitative Methods for Policy Research	3
Thesis		
POLT 899	Master's Thesis	8
Select six additional courses from the following:		24
POLT 801	Courts and Public Policy	
POLT 805	Elections in the United States	
POLT 809	Reforming American Government	
POLT 821	Feminist Political Theory	
POLT 840	States and Societies in the Middle East	
POLT 842	Politics of Afghanistan, Pakistan, and India	
POLT 848	Food and Wine Politics	
POLT 850	Politics of Poverty	
POLT 851	Comparative Environmental Politics and Policy	
POLT 860	Theories of International Relations	
POLT 862	International Political Economy	
POLT #865	Security Intelligence Study	
POLT 878	International Organization	
POLT 897B	Seminar in American Politics	
POLT 897C	Seminar in Comparative Politics	
POLT 897E	Seminar in International Politics	
POLT #897I	Seminar in Political Thought	
POLT 898B	Seminar in American Politics	
POLT 996	Independent Study	

[1] To be taken during the student's first year

M.A. Non-Thesis Option

Master's degree students must complete ten courses totaling a minimum of **40 credits** for the degree. Of the ten courses, two are required: Pro Seminar (POLT 800 Political Science Pro-Seminar) and an introductory statistical analysis course (e.g., PPOL 908), and are to be taken during the student's first year. In their final semester, students will enroll in a capstone course, and may choose from POLT 995 Capstone Research Project or POLT 990 Internship Capstone. Students should consult with their faculty mentors to select the capstone experience that will best align with their long-term professional goals.

Students are encouraged to work with the MA program director to identify relevant courses of interest across the College of Liberal Arts graduate offerings. The MA program director must provide course approval for elective courses offered outside the department.

Code	Title	Credits
POLT 800	Political Science Pro-Seminar [1]	4
Select one introductory course on statistical analysis		
PPOL 908	Quantitative Methods for Policy Research	3
Select seven additional courses from the following:		28
POLT 801	Courts and Public Policy	
POLT 805	Elections in the United States	
POLT 809	Reforming American Government	
POLT 821	Feminist Political Theory	
POLT 840	States and Societies in the Middle East	
POLT 842	Politics of Afghanistan, Pakistan, and India	
POLT 848	Food and Wine Politics	
POLT 850	Politics of Poverty	
POLT 851	Comparative Environmental Politics and Policy	
POLT 860	Theories of International Relations	
POLT 862	International Political Economy	
POLT #865	Security Intelligence Study	
POLT 878	International Organization	
POLT 897B	Seminar in American Politics	
POLT 897C	Seminar in Comparative Politics	
POLT 897E	Seminar in International Politics	
POLT #897I	Seminar in Political Thought	
POLT 898B	Seminar in American Politics	
POLT 996	Independent Study	
Capstone Experience		*4*
POLT 995	Capstone Research Project	
or POLT 990	Internship Capstone	

[1] To be taken during the student's first year

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Building advanced skills in analyzing, processing, and communicating complex information, using qualitative and quantitative approaches.

- Effectively and persuasively presenting analysis and findings in written, oral, and graphical form.
- Facilitating student exploration of thematic, regional, and methodological areas of specialization and interest. Areas of strength include the study of public opinion, international politics and international relations, political economy, environmental politics, Latin American politics, Middle Eastern politics, Asian politics, and American politics.

Project Management (CPSO)

Programs: M.S., Graduate Certificate

Offered Online

The College of Professional Studies-Online, Business and Technology Academic Center offers a Master of Science and Graduate Certificate in Project Management.

Admission Requirements

Graduate Certificates

Admission requirements include a bachelor's degree, and official transcripts.

Master's Degrees

Admission requirements include:

- Bachelor's degree with a 3.0 GPA average in the last 60 credit hours, or Graduate Degree completed from a regionally accredited college or university with a 3.0 GPA minimum overall.
- Official transcripts for all previous college work.
- Transcripts from other countries will need to be translated and evaluated prior to full acceptance.
- 500-1000 word statement which includes professional goals and aspirations, motivation for applying for the degree, and relevant formal or informal experiences. The statement is evaluated on applicant's writing and its content alignment with the program's purpose and outcomes.
- Two (2) Professional or academic references.
- Contact information for references is submitted via the admissions application. This will generate an email inviting references to complete a short questionnaire to assess candidacy. A formal letter of recommendation is not required; however, references are welcome to upload one within the questionnaire.
- Current résumé.

Programs

- Project Management (Graduate Certificate) (p. 243)
- Project Management (M.S.) (p. 244)

Learning Outcomes

Outcomes-Based Learning

Our greatest concern is that our graduates develop a specific set of skills and abilities.

The College's outcome-based degree programs and curriculum:

- Provide standards to be met in demonstrating competence
- Form a base from which to design and pursue learning activities
- Foster the ability to demonstrate self-directed learning

In addition to individual student assessment and grading, learning outcomes assessment is conducted in all programs to ensure the quality of our programs and to prompt ongoing improvements in teaching and learning.

Graduate Degree Learning Outcomes

Based in our commitment to our students through our mission, vision and values, every graduate degree program at the College of Professional Studies - Online provides students with opportunities to learn and demonstrate their abilities to do the following:

Communicate, particularly

- Communicate effectively—orally and written—with respect to theories, arguments, methods, and concepts, using supplemental materials and technology as appropriate.
- Disaggregate, reformulate and adapt principle ideas, techniques or methods when completing a paper or project.
- Contribute to, expand, evaluate or refine the scholarship within the field of study.
- Collaborate with diverse people and teams using elements of effective team dynamics to effectively and appropriately structure team work.

Think critically and comprehensively, particularly

- Demonstrate analytical skills needed to gather and assess information to influence data-driven decision making.
- Exhibit a conceptual understanding of the most widely applicable methodologies of decision-making; for example, employ creative problem solving for strategic planning.
- Demonstrate critical thinking, appropriate analytical models, and critical reasoning processes to evaluate evidence, select among alternatives, and generate creative options in furtherance of effective decision making.

Apply knowledge to workplace and community, particularly

- Display competency and appropriate skills for working effectively with people from diverse backgrounds and orientations.
- Effectively engage in one's broader community through various forms of outreach.
- Design and implement a project that requires the application of advanced knowledge to a practical challenge and articulate the insights gained from the experience.[1]

Gain specialized knowledge, particularly

- Demonstrate proficiency in specialized skills and technologies needed to participate in the intellectual and organizational aspects of one's profession.

[1] *Not applicable to Graduate Certificate programs.*

Project Management (Graduate Certificate)

https://cps.unh.edu/online/program/graduate-certificate/project-management

Description

The Graduate Certificate in Project Management is designed for individuals seeking professional development or foundational knowledge in project management.

Students will have the opportunity to:

1. Develop new skills in support of planning and leading projects;
2. Acquire a credential and foundational knowledge in project management;
3. Establish themselves as a knowledgeable project manager.

Requirements

Certificate Requirements

Graduate credit is only granted for courses completed with a grade of B-- or higher
Minimum GPA Requirement: 3.0

Code	Title	Credits
Project Management-Graduate Certificate		
PM 800	Project Management Seminar	3
PM 811	Project Chartering and Planning	3
PM 813	Delivering Business Value	3
LD 804	Leading Teams	3
Total Credits		**12**

Project Management (M.S.)

https://cps.unh.edu/online/program/ms/project-management

Description

The Master of Science in Project Management (MSPM) is a practice-oriented program ideal for managers who want to enhance their ability to plan and lead complex projects, motivate people, and deliver the desired business value associated with the project.

Requirements

Degree Requirements

Minimum Credit Requirement: 30 credits
Minimum Residency Requirement: 30 credits must be taken at UNH
Minimum GPA: 3.0

Code	Title	Credits
Major in Project Management [1]		
PM 800	Project Management Seminar	3
PM 811	Project Chartering and Planning	3
PM 813	Delivering Business Value	3
PM 815	Negotiation, Contracting, and Procurement	3
PM 817	Managing Project Portfolios	3
PM 819	Total Quality Management	3
LD 804	Leading Teams	3
Elective Course(s)		
Complete 6 credits from the following:		6
LD 810	Change Management and Communication	
LD 821	Ethical Decision-Making	
LD 832	Building Diverse & Multicultural Organizations	
OPS 800	Principles of Operations Management	
PM 820	Introduction to Lean Management	
PM 821	Introduction to Theory of Constraints	
SCM 805	Supply Chain Management	
Integrative Capstone:		
PM 850	Project Management Integrative Capstone	3
Total Credits		**30**

[1] Graduate credit is only granted for courses completed with a grade of B- or higher.

Student Learning Outcomes

Students will have the opportunity to:

- Effectively employ strategies for managing projects through the entire project cycle;
- Acquire, deploy, and monitor resources to maximum benefit;
- Determine and manage risk for strategic and ethical decision-making;
- Manage changing project management environments including human resources, cost, timelines, and workflow;
- Lead people and teams to excellence in projects and organizational settings;
- Communicate effectively throughout the project management cycle;
- Assess and evaluate project management processes to continuously improve;
- Apply project management knowledge for quality assurance in real-world settings;
- Attain competency in the components of project management required for certification as a Certified Associate in Project Management (CAPM®) or Project Management Professional (PMP®).

Psychology (PSYC)

Degree Offered: Ph.D., M.A.

This program is offered in Durham.

Department of Psychology offers a four- or five-year program of study leading to the doctor of philosophy degree. The basic goal of the program is the development of behavioral scientists who have a broad knowledge of psychology, can teach and communicate effectively, and can carry out sound research in an area of specialization. Although some students seek employment outside academia, the program is oriented toward developing the skills required by the research psychologist who intends to become a college or university teacher.

The Department of Psychology also offers an accelerated B.A to M.A in experimental psychology that can be accomplished in a total of 5 years. The basic goal of the program is the development of behavioral scientists who have a broad knowledge of psychology and can carry out sound research in an area of specialization. Although some students seek employment outside academia, the program is oriented toward developing the skills required by the research psychologist who intends to seek admission to a Ph.D. program.

Areas in which the student may specialize are brain, behavior, and cognition; developmental psychology; or social psychology/personality. The department does not offer training in clinical or counseling psychology.

Distinctive Features

All psychology graduate students in the Ph.D. program receive a stipend and a full tuition waiver for up to five years. A low graduate student/faculty ratio provides opportunities to work closely with one or more faculty mentors. Graduates typically acquire tenure-track academic or postdoctoral positions at colleges and universities across the U.S.

The Department of Psychology is a national model for preparing future faculty. All graduate students teach Introduction to Psychology while taking a year-long seminar in the teaching of psychology, as well as one or two undergraduate survey courses in statistics and/or the student's area of specialization.

There are active research laboratories in all areas represented in the graduate program. The department has strong partnerships with such nationally recognized programs as UNH's Child Study and Development Center and the Family Research Laboratory. UNH also has a Center for Teaching Excellence to help graduate students and faculty improve the quality of their teaching.

The accelerated B.A. to 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.

Admission Requirements

Please see the Graduate School website for detailed admissions requirements: gradschool.unh.edu/programs-of-study

https://cola.unh.edu/psychology

Programs

- Psychology (M.A.) (p. 245)
- Psychology (Ph.D.) (p. 246)

Faculty

See https://cola.unh.edu/psychology/faculty-staff-directory for faculty.

Psychology (M.A.)

https://cola.unh.edu/psychology/program/ma/psychology

Description

The M.A. Psychology is only available as part of the accelerated B.A./M.A. program and thus not open for admission to students outside of UNH.

The Department of Psychology offers an accelerated B.A to M.A in experimental psychology that can be accomplished in a total of 5 years. The basic goal of the program is the development of behavioral scientists who have a broad knowledge of psychology and can carry out sound research in an area of specialization. Although some students seek employment outside academia, the program is oriented toward developing the skills required by the research psychologist who intends to seek admission to a Ph.D. program. Students who wish to apply to this program should submit a complete graduate application to the graduate school during the fall or spring of the student's third year. As well, they should arrange to work with a particular faculty member who will serve as a preceptor for the Paper of Publishable Quality - Thesis project.

Areas in which the student may specialize are brain, behavior and cognition; developmental psychology; or social psychology/personality. The department does not offer training in clinical or counseling psychology.

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 the department at 603-862-2360 or at psychology.dept@unh.edu. (psychology.dept@unh.edu)

Requirements

Degree Requirements

The M.A. requires a minimum of 30 graduate credits to include:

Code	Title	Credits
PSYC 805	Research Methodology and Statistics I	4
PSYC 806	Research Methodology and Statistics II	4
PSYC 907	Research Methods and Statistics III	4
PSYC 894	Advanced Research	8
or PSYC 899	Master's Thesis	
A minimum of two Psychology advanced seminars		8
Elective Courses		

Note: Most students complete the master's research project in the form of a PPQ. Those selecting the thesis option should note that the thesis deadlines for the final oral and submission of the final thesis copy are about three weeks earlier than the deadlines for the PPQ option

Accelerated Master's

The accelerated B.A. to 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 MA requires 30 credits. Twelve credits will count towards both the BA and MA degree. This coursework counts as electives and does not count towards the core requirements for 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.

A total of 30 graduate credits to include:

Code	Title	Credits
PSYC 805	Research Methodology and Statistics I	4
PSYC 806	Research Methodology and Statistics II	4
PSYC 907	Research Methods and Statistics III	4
PSYC 894	Advanced Research	8
or PSYC 899	Master's Thesis	
A minimum of two Psychology advanced seminars		8

Note: Most students complete the master's research project in the form of a PPQ. Those selecting the thesis option should note that the thesis deadlines for the final oral and submission of the final thesis copy are about three weeks earlier than the deadlines for the PPQ option

Example BA/MA Five-year program sequence:

36 credits total in this example.
Only 30 credits are required.
12 credits count both as electives for the BA (out of 36 available in the BA) and toward
the 30 required for the MA:

Course	Title	Credits
Fourth Year		
Fall		
PSYC 805	Research Methodology and Statistics I	4
Advanced seminar or elective		4
Advanced seminar or elective		4
	Credits	**12**
Spring		
PSYC 806	Research Methodology and Statistics II	4
	Credits	**4**
Fifth Year		
Fall		
PSYC 907	Research Methods and Statistics III	4
PSYC 894 or PSYC 899	Advanced Research or Master's Thesis	4
	Credits	**8**
Spring		
Advanced seminar or elective		4
Advanced Seminar or elective		4
PSYC 899 or PSYC 894	Master's Thesis or Advanced Research	4
	Credits	**12**
	Total Credits	**36**

Student Learning Outcomes

- Have a mastery of the field of psychology sufficient to teach introductory courses in psychology.
- Demonstrate an understanding of statistics and research design, and the ability to evaluate the quality and implications of scientific research by completing a research project (supervised by a faculty member).
- Write empirical research reports and literature reviews in American Psychological Association style.
- Demonstrate competence in oral communication and understanding of scholarly research by giving a conference style presentation.
- Assessment: Each student presents an oral defense of their Masters Thesis or paper of publishable quality.

Psychology (Ph.D.)

https://cola.unh.edu/psychology/program/phd/psychology

Description

The Department of Psychology offers a four- or five-year program of study leading to the doctor of philosophy degree. The basic goal of the program is the development of behavioral scientists who have a broad knowledge of psychology, can teach and communicate effectively, and can carry out sound research in an area of specialization. Although some students seek employment outside academia, the program is oriented toward developing the skills required by the research psychologist who intends to become a college or university teacher.

Specialization Areas

The three areas in which a student may specialize are:

- brain, behavior, and cognition
- developmental psychology
- social psychology/personality

Requirements

Degree Requirements

Code	Title	Credits
PSYC 805	Research Methodology and Statistics I	4
PSYC 806	Research Methodology and Statistics II	4
First-year students participate in a noncredit graduate proseminar which indroduces students to the research programs of the faculty.		
PSYC 901 & PSYC 902	Graduate Pro-seminar and Graduate Pro-seminar	0
Required Courses		
PSYC 904	First-year Graduate Seminar	4
PSYC 907	Research Methods and Statistics III	4
PSYC 991 & PSYC 992	Practicum and Seminar in the Teaching of Psychology and Practicum and Seminar in the Teaching of Psychology	12
Select six advanced graduate seminars		

Depth in a particular area is obtained through participation in advanced seminars and by independent reading and research conducted under the supervision of a faculty member.

Prior to the doctoral dissertation, the student carries out original research that culminates in either a master's thesis or a paper of publishable quality. A master's degree is awarded upon the successful completion of a program approved by the department and dean of the Graduate School. This typically takes place by the end of the second year.

The third year of the program is dedicated to the practicum and seminar in the teaching of psychology in conjunction with the teaching of introductory psychology.

Advancement to candidacy for the Ph.D. degree depends on receiving the master's degree, passing a specialist examination in one of the department's areas of specialization, and identifying a topic for doctoral research. Advancement to candidacy is usually accomplished by the end of a student's fourth year in the program. During the fourth year, students typically begin dissertation research and teach an introductory course in

their specialty area. Most students complete the Ph.D. degree in the fifth year.

Student Learning Outcomes

- Demonstrate mastery of existing theory and research.
- Develop the ability to conduct sound, independent ethical research.
- Demonstrate abilities to conduct scholarly and professional activities in an ethical manner.
- Demonstrate teaching abilities.

Public Administration (CSPP)

https://carsey.unh.edu/master-public-administration

Overview

Degree offered: M.P.A.

The Carsey School of Public Policy's public service graduate degrees offer a unique combination of academic rigor and real-life expertise to prepare you for a career with impact.

The online Public Administration master's degree (MPA) will provide you with a practical set of skills and the theoretical foundation needed to be a successful, publicly minded professional. The encompassing MPA curriculum includes courses that bring together concepts from public policy, management, politics and law, providing you with a well-rounded understanding of what it means to run an organization in the public and nonprofit sectors. Public administration is where we see public policy affecting citizens on a personal level, and where public officials fulfill the promise of democracy.

Ideal for working professionals and new graduates, our online MPA program will enable you to achieve your full potential, effect change within your organization, and prepare for the next step in your career. You'll engage in hands-on opportunities during which you'll apply knowledge and skills developed in the program to real issues within your community. Professionals with five or more years of relevant work experience can complete the online Executive MPA option in one year. Grow your network of public service professionals throughout the program and after graduation. Core academic courses for the MPA program are offered entirely online with choices for taking optional elective courses in person on the UNH campuses.

Programs

- Public Administration (M.P.A.) (p. 247)

Faculty

See Carsey School of Public Policy Faculty.

Public Administration (M.P.A.)

https://carsey.unh.edu/master-public-administration

Description

The Online Master of Public Administration program (MPA) offers you the opportunity to learn the skills you need in all aspects of public and nonprofit management including leadership, program evaluation, budgeting, planning, personnel management, collective bargaining, and policy analysis. Professionals with five or more years of relevant work experience can enroll in the 12-month Executive MPA program with reduced degree requirements and lower tuition cost.

Our MPA graduates are prepared to engage with their communities, ensure accountability, and have the administrative skills to achieve their organization's mission in an effective and sustainable manner.

- The MPA program is fully online and is ideal for working professionals
- Study with public service professionals and professors who bring strong analysis and best practices to your learning
- Start in the fall or spring and graduate in as little as 12 months (Executive MPA) or 16 months (MPA)
- Choose your MPA Capstone Experience Track: Management and Leadership or Program Planning and Development
- The GRE is not required to apply for this degree program

Program Delivery & Location: *Core academic courses for the MPA program are offered entirely online with choices for taking optional elective courses in person on the UNH campuses.*

Requirements

Executive MPA Requirements

Students enrolled in the Carsey School's **Executive Master of Public Administration** program are required to complete a thirty (30) credit program, consisting of:

- **Three (3) BASIC Core** Curriculum Courses
- **Three (3) ADVANCED Core** Curriculum Courses
- **MPA CAPSTONE EXPERIENCE Track**:
  - **Management and Leadership Track**: Two (2) Capstone Project Courses + Two (2) Elective Courses
    OR
  - **Program Planning and Development Track:** Four (4) Capstone Project Courses

These provide students with a strong foundation in theory and the applied skills necessary to foster democratic involvement, accountability and administrative competency in the provision and delivery of public services in towns, cities, state agencies, and a wide range of nonprofit and non-governmental organizations. Further opportunities for depth and specialization are provided through a broad range of ADVANCED Core and ELECTIVE courses which vary by semester. For a culminating graduate experience, students choose an MPA capstone experience to match their interests in Management and Leadership or Program Planning and Development, enabling students to directly apply what they've learned throughout their MPA program.

Code	Title	Credits
MPA BASIC Core Curriculum Courses (3 Courses):		
PA 800	Foundations and Theories of Public Administration	3
PA 805	Introduction to Statistical Analysis	3
PA 809	Organization and Management in Public and Non-profit Sectors	3

MPA ADVANCED Core Curriculum Courses: Choose Three (3)		**9**
PA 802	Grant-writing for Public and Non-profit Sectors	
PA #803	Performance Management in Public and Non-Profit Organizations	
PA 808	Administrative Law	
PA 812	Leadership Theory and Practice	
PA 813	Human Resource Management in Public and Non-profit Sectors	
PA 814	Financial Management and Budgeting in the Public Sector	
PA #815	Art of Negotiation	
PA 816	Public Management Techniques	
PA #817	Legal and Policy-Making Environment on Public and Non-Profit Sectors	
PA 818	Non-Profit Management	
PA 819	Managing Conflict and Change in Nonprofit and Public Organizations	
PA 820	Strategic Communications for Public and Non-profit Sectors	
PA 821	Effective Change Management in Nonprofit and Public Organizations	
DPP 902	Economic Analysis for Development	
DPP 905	Fiscal Management for Development Organizations	
DPP 908	Policy Seminar	
DPP #953	Community Medicine and Epidemiology	
DPP 956	Housing Development	
DPP #960	Social Enterprise	
DPP #961	Community Development Finance	
DPP 962	Public Safety and Community Development	
Choose an MPA CAPSTONE EXPERIENCE Track		**12**
Management and Leadership Track: [2]		
PA 804	Policy and Program Evaluation	
PA 908A	Capstone in Public Administration	
Two (2) ELECTIVE Courses [1]		
Program Planning and Development Track: [3]		
DPP 980	Introduction to Community Development Projects	
DPP 981	Project Design and Planning	
DPP 982	Project Implementation and Monitoring	
DPP 983	Project Evaluation	
Total Credits		**30**

1. A range of MPA ADVANCED Core courses are offered each term and vary each year. ADVANCED Core courses can also be taken as ELECTIVE courses. Students may also propose additional ELECTIVE courses if they make sense in terms of the student's interests and academic plan. Discussion with your MPA Graduate Academic Advisor should inform this choice.
2. As a culmination of their graduate work, students in the Master of Public Administration's **Management and Leadership Track** are tasked with reflecting upon the professional applicability of their MPA skillset and drawing from the ePortfolio that they built throughout the program. Students are presented with a real-world problem in public administration and asked to write a paper exploring the problem and proposing recommended solutions.
3. Students in the Master of Public Administration's **Program Planning and Development Track** complete a four-term capstone project as the culmination of their graduate work. This capstone experience is designed to provide an opportunity to directly apply theories learned in the classroom to a major applied project within a community.

MPA Requirements

Students enrolled in the Carsey School's **Master of Public Administration** program are required to complete a thirty-six (36) credit program, consisting of:

- **Three (3) BASIC Core** Curriculum Courses
- **Three (3) ADVANCED Core** Curriculum Courses
- **MPA CAPSTONE EXPERIENCE Track**:
  - **Management and Leadership Track**: Two (2) Capstone Project Courses + Four (4) Elective Courses

    OR
  - **Program Planning and Development Track**: Four (4) Capstone Project Courses + Two (2) Elective Courses

These provide students with a strong foundation in theory and the applied skills necessary to foster democratic involvement, accountability and administrative competency in the provision and delivery of public services in towns, cities, state agencies, and a wide range of nonprofit and non-governmental organizations. Further opportunities for depth and specialization are provided through a broad range of ADVANCED Core and ELECTIVE courses which vary by semester. For a culminating graduate experience, students choose an MPA capstone experience to match their interests in Management and Leadership or Program Planning and Development, enabling students to directly apply what they've learned throughout their MPA program.

Code	Title	Credits
MPA BASIC Core Curriculum Courses (3 Courses)		
PA 800	Foundations and Theories of Public Administration	3
PA 805	Introduction to Statistical Analysis	3
PA 809	Organization and Management in Public and Non-profit Sectors	3
MPA ADVANCED Core Curriculum Courses: Choose Three (3)		**9**
PA 802	Grant-writing for Public and Non-profit Sectors	
PA #803	Performance Management in Public and Non-Profit Organizations	
PA 808	Administrative Law	
PA 812	Leadership Theory and Practice	
PA 813	Human Resource Management in Public and Non-profit Sectors	
PA 814	Financial Management and Budgeting in the Public Sector	
PA #815	Art of Negotiation	
PA 816	Public Management Techniques	
PA #817	Legal and Policy-Making Environment on Public and Non-Profit Sectors	
PA 818	Non-Profit Management	
PA 819	Managing Conflict and Change in Nonprofit and Public Organizations	
PA 820	Strategic Communications for Public and Non-profit Sectors	
PA 821	Effective Change Management in Nonprofit and Public Organizations	
DPP 902	Economic Analysis for Development	
DPP 905	Fiscal Management for Development Organizations	
DPP 908	Policy Seminar	
DPP #953	Community Medicine and Epidemiology	
DPP 956	Housing Development	
DPP #960	Social Enterprise	
DPP #961	Community Development Finance	
DPP 962	Public Safety and Community Development	
Choose an MPA CAPSTONE EXPERIENCE Track		**18**
Management and Leadership Track: [2]		
PA 804	Policy and Program Evaluation	
PA 908A	Capstone in Public Administration	
Four (4) ELECTIVE Courses [1]		
Program Planning and Development Track: [3]		
DPP 980	Introduction to Community Development Projects	
DPP 981	Project Design and Planning	
DPP 982	Project Implementation and Monitoring	
DPP 983	Project Evaluation	
Two (2) ELECTIVE Courses [1]		
Total Credits		**36**

1. A range of MPA ADVANCED Core courses are offered each term and vary each year. ADVANCED Core courses can also be taken as ELECTIVE courses. Students may also propose additional ELECTIVE courses if they make sense in terms of the student's interests and academic plan. Discussion with your MPA Graduate Academic Advisor should inform this choice.
2. As a culmination of their graduate work, students in the Master of Public Administration's **Management and Leadership Track** are tasked with reflecting upon the professional applicability of their MPA skillset and drawing from the ePortfolio that they built throughout the

program. Students are presented with a real-world problem in public administration and asked to write a paper exploring the problem and proposing recommended solutions.

[3] Students in the Master of Public Administration's **Program Planning and Development Track** complete a four-term capstone project as the culmination of their graduate work. This capstone experience is designed to provide an opportunity to directly apply theories learned in the classroom to a major applied project within a community.

Degree Plan

EXECUTIVE MPA Sample Degree Plan (30 Credits)

CAPSTONE TRACK: MANAGEMENT AND LEADERSHIP

Course	Title	Credits
First Year		
Fall		
Term 1		
PA 800	Foundations and Theories of Public Administration	3
MPA ADVANCED Core Course [1]		3
Term 2		
MPA ADVANCED Core Course [1]		3
MPA ADVANCED Core Course [1]		3
	Credits	**12**
Spring		
Term 3		
PA 804	Policy and Program Evaluation [2]	3
PA 809	Organization and Management in Public and Non-profit Sectors	3
Term 4		
PA 805	Introduction to Statistical Analysis	3
PA 908A	Capstone in Public Administration [2]	3
	Credits	**12**
Summer		
Term 5		
MPA ELECTIVE Course [1]		3
MPA ELECTIVE Course [1]		3
	Credits	**6**
	Total Credits	**30**

[1] A range of MPA ADVANCED Core courses are offered each term and vary each year. ADVANCED Core courses can also be taken as ELECTIVE courses. Students may also propose additional ELECTIVE courses if they make sense in terms of the student's interests and academic plan. Discussion with your MPA Graduate Academic Advisor should inform this choice.

[2] As a culmination of their graduate work, students in the Master of Public Administration's **Management and Leadership Track** are tasked with reflecting upon the professional applicability of their MPA skillset and drawing from the ePortfolio that they built throughout the program. Students are presented with a real-world problem in public administration and asked to write a paper exploring the problem and proposing recommended solutions.

EXECUTIVE MPA Sample Degree Plan (30 Credits)

CAPSTONE TRACK: program planning AND development

Course	Title	Credits
First Year		
Fall		
Term 1		
DPP 980	Introduction to Community Development Projects [2]	3
PA 800	Foundations and Theories of Public Administration	3
Term 2		
DPP 981	Project Design and Planning [2]	3
MPA ADVANCED Core Course [1]		3
	Credits	**12**
Spring		
Term 3		
DPP 982	Project Implementation and Monitoring [2]	3
PA 809	Organization and Management in Public and Non-profit Sectors	3
Term 4		
DPP 983	Project Evaluation [2]	3
PA 805	Introduction to Statistical Analysis	3
	Credits	**12**
Summer		
Term 5		
MPA ADVANCED Core Course [1]		3
MPA ADVANCED Core Course [1]		3
	Credits	**6**
	Total Credits	**30**

[1] A range of MPA ADVANCED Core courses are offered each term and vary each year. ADVANCED Core courses can also be taken as ELECTIVE courses. Students may also propose additional ELECTIVE courses if they make sense in terms of the student's interests and academic plan. Discussion with your MPA Graduate Academic Advisor should inform this choice.

[2] Students in the Master of Public Administration's **Program Planning and Development Track** complete a four-term capstone project as the culmination of their graduate work. This capstone experience is designed to provide an opportunity to directly apply theories learned in the classroom to a major applied project within a community.

MPA Sample Degree Plan (36 Credits)

CAPSTONE TRACK: MANAGEMENT AND LEADERSHIP

Course	Title	Credits
First Year		
Fall		
Term 1		

PA 800	Foundations and Theories of Public Administration	3
MPA ADVANCED Core Course [1]		3
Term 2		
MPA ADVANCED Core Course [1]		3
MPA ADVANCED Core Course [1]		3
	Credits	**12**
Spring		
Term 3		
PA 804	Policy and Program Evaluation [2]	3
PA 809	Organization and Management in Public and Non-profit Sectors	3
Term 4		
PA 805	Introduction to Statistical Analysis	3
MPA ELECTIVE Course [1]		3
	Credits	**12**
Second Year		
Fall		
Term 1		
MPA ELECTIVE Course [1]		3
MPA ELECTIVE Course [1]		3
Term 2		
PA 908A	Capstone in Public Administration	3
MPA ELECTIVE Course [1]		3
	Credits	**12**
	Total Credits	**36**

1. A range of MPA ADVANCED Core courses are offered each term and vary each year. ADVANCED Core courses can also be taken as ELECTIVE courses. Students may also propose additional ELECTIVE courses if they make sense in terms of the student's interests and academic plan. Discussion with your MPA Graduate Academic Advisor should inform this choice.
2. As a culmination of their graduate work, students in the Master of Public Administration's **Management and Leadership Track** are tasked with reflecting upon the professional applicability of their MPA skillset and drawing from the ePortfolio that they built throughout the program. Students are presented with a real-world problem in public administration and asked to write a paper exploring the problem and proposing recommended solutions.

MPA Sample Degree Plan (36 Credits)

CAPSTONE TRACK: PROGRAM PLANNING AND DEVELOPMENT

Course	Title	Credits
First Year		
Fall		
Term 1		
DPP 980	Introduction to Community Development Projects [2]	3
PA 800	Foundations and Theories of Public Administration	3
Term 2		
DPP 981	Project Design and Planning [2]	3
MPA ADVANCED Core Course [1]		3
	Credits	**12**
Spring		
Term 3		
DPP 982	Project Implementation and Monitoring [2]	3
PA 809	Organization and Management in Public and Non-profit Sectors	3
Term 4		
DPP 983	Project Evaluation [2]	3
PA 805	Introduction to Statistical Analysis	3
	Credits	**12**
Second Year		
Fall		
Term 1		
MPA ADVANCED Core Course [1]		3
MPA ADVANCED Core Course [1]		3
Term 2		
MPA ELECTIVE Course [1]		3
MPA ELECTIVE Course [1]		3
	Credits	**12**
	Total Credits	**36**

1. A range of MPA ADVANCED Core courses are offered each term and vary each year. ADVANCED Core courses can also be taken as ELECTIVE courses. Students may also propose additional ELECTIVE courses if they make sense in terms of the student's interests and academic plan. Discussion with your MPA Graduate Academic Advisor should inform this choice.
2. Students in the Master of Public Administration's **Program Planning and Development Track** complete a four-term capstone project as the culmination of their graduate work. This capstone experience is designed to provide an opportunity to directly apply theories learned in the classroom to a major applied project within a community.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

***Accelerated Master's Progam Eligible**:* Yes-MPA Only (not applicable for the Executive MPA program)

The **Master of Public Administration's** 36-Credit program (MPA) allows students who are undergraduate seniors to take graduate level courses which count for both their undergraduate and graduate degree programs. Students must apply to the MPP program and be accepted as an Accelerated Master's student. Details on eligibility requirements for admission.

Eligible students who are admitted to the Accelerated Master's program may complete up to 12 credits at the 800-level during their undergraduate

senior year, earning dual credit toward their Bachelor's and MPA degrees. Accelerated Master's students should always consult with their Graduate Academic Advisor for guidance.

Accelerated Master's students may register for a maximum of 12 credits of graduate-level courses prior to completing their bachelor's degree.

The MPA program is approved to be taken on an accelerated basis in articulation with the following undergraduate programs:

CyberSecurity Policy Minor & MPA

Code	Title	Credits
Required Course for the minor		
CPRM 810	Foundations of Cybersecurity Policy (Fall/Spring)	3
MPA/Minor approved electives:		
PA 800	Foundations and Theories of Public Administration	3
PA 809	Organization and Management in Public and Non-profit Sectors	3
PA 812	Leadership Theory and Practice	3
PA 818	Non-Profit Management	3

Global Studies Minor (Manchester) & MPA

Code	Title	Credits
MPA/Minor (Economics and Interdependence pillar) approved electives:		
PA 800	Foundations and Theories of Public Administration	3
PA 809	Organization and Management in Public and Non-profit Sectors	3
PA 812	Leadership Theory and Practice	3
PA 818	Non-Profit Management	3

Political Science (B.A.) & MPA

Code	Title	Credits
MPA/Political Science BA approved electives:		
PA 800	Foundations and Theories of Public Administration	3
PA 809	Organization and Management in Public and Non-profit Sectors	3
PA 818	Non-Profit Management	3

Public Service and Nonprofit Leadership (B.S.) & MPA

Code	Title	Credits
MPA/Public Service and Nonprofit Leadership BS approved electives:		
PA 800	Foundations and Theories of Public Administration	3
PA 809	Organization and Management in Public and Non-profit Sectors	3
PA 812	Leadership Theory and Practice	3
PA 818	Non-Profit Management	3

Student Learning Outcomes

- Develop in-depth understanding of the structure of public sector organizations and common issues faced by public and nonprofit managers
- Communicate effectively with public managers, policymakers, and the general public
- Manage organizations, processes, and people in the public and nonprofit sectors
- Apply critical thinking skills to address public issues and solve problems
- Collect and analyze data to inform public decision-making

Public Health (PHP)

Degrees Offered: Master of Public Health, (MPH) and Public Health Certificate, (PHC)

This program is offered at the *University of New Hampshire Manchester,* (UNHM), campus.

The Department of Health Management and Policy offers a Master of Public Health (MPH) and a certificate of Public Health (PHC). The programs are designed to provide students with an integrated generalist certificate or MPH degree. The MPH program is accredited by the Council on Education for Public Health (CEPH).

The Mission

Through instruction, research and service, the mission of the Master of Public Health (MPH) Program at the University of New Hampshire (UNH) develops public health professionals prepared to enter a collaborative public health workforce, while focusing on improving societal health and health equity.

The Vision

The Vision of the Public Health programs are guided by the overall values of the College of Health and Human Services:

- **Cooperation** in the planning, management, and work of the College.
- **Curiosity** as a core strategic concept.
- **Excellence** both in our individual and collective actions.
- **Integrity** to have ethical behavior in our working relationships, practices and decisions.
- **Leadership** for improving the health of individuals, families, and communities.
- **Openness** in communications and decision-making.
- **Respect** for individuals' roles, diversity, contributions, and viewpoints.
- **Service** to UNH, the public, and others to improve health and health care.
- **Sustainability** of our College as an educational leader.

In addition, the MPH program promotes the development of our students into forward-thinking public health professionals by including curriculum and experience in:

- **Advocacy**: Promoting the health of populations
- **Evidence-based practicing**: Valuing best practices and maximizing faculty expertise through research, shared learning, and practical learning experiences
- **Integration**: Encouraging collaborative and critical thinking of strategies to better incorporate Public Health with health and health care systems.
- **Social Justice**: Health equity, and integrity

The Public Health Certificate Program provides a vehicle for individuals working in public or community health positions with the opportunity to earn a graduate certificate in public health. To enter the certificate program, an applicant must have a baccalaureate degree. Upon completion of the certificate program, students can apply to the MPH program. If admitted into the MPH program, the certificate credits will be applied to the MPH degree program.

The Master of Public Health (MPH) and Public Health Certificate (PHC) seek to enhance the capacity of public health professionals through the 22 competencies of Council on Education for Public Health, (CEPH), to perform the 10 Essential Services of Public Health. The program is a part-time program offered only on the University of New Hampshire Manchester Campus. Academic. Courses are typically offered for four hours once weekly for eight weeks. Working professionals can complete the MPH program in as little as five semesters, but have up to three years to complete the degree requirements.

For the purposes of determining academic standing, grades below the "B--" level in graded courses are considered failing grades. The MPH program director will recommend dismissal of a student to the Graduate School when a failing grade occurs in **six** or more credits, *either* in ***two*** *courses* or in *one course taken* ***twice.*** Repeating a course does *not* remove the original failing grade from the record. Students must have a cumulative grade point average of 3.0 (B), or higher, in order to graduate. Students admitted on a conditional or provisional basis must meet the conditions or provisions as stated in the letter of admission in order to remain in the Graduate School.

Admission Requirements

(*Please note that this part--time program does not meet the full--time study requirements for international applicants requiring an F-1 or J-1 visas.*)

Applications are accepted for fall, spring, and summer semesters. The program encourages applications from persons who hold a minimum of a baccalaureate degree from an accredited college or university. The admission committee uses previous academic records, current public health experience, responses to five essay questions regarding your interest in pursuing graduate education in public health, and recommendations from three individuals as indicators of success. Interviews with the program director are encouraged.

For more information on admission requirements please see the Graduate School website.

https://chhs.unh.edu/health-management-policy/program/mph/public-health

Programs

- Public Health (M.P.H.) (p. 252)
- Public Health (Graduate Certificate) (p. 253)

Faculty

https://chhs.unh.edu/health-management-policy/faculty-staff-directory

Public Health (M.P.H.)

https://chhs.unh.edu/health-management-policy/program/mph/public-health

Description

The MPH curriculum meets the 22 CEPH accreditation competency requirements. This program can be completed in five semesters, and up to three years. During the final semester of the MPH Program, students complete a 100-hour professional field study experience applying public health principles and standards to professional projects within a public health organization. The final course in the curriculum is the integrating seminar in which students work in teams, bringing both their individual and joint perspectives, as well as their expertise together to address a specific public health problem for a public health institution.

To enter the MPH Program, an applicant must have a baccalaureate degree from an accredited college or university. Applications are accepted for fall and spring semesters. Upon completion of the certificate program, students may apply to the MPH program. If admitted into the MPH program, the certificate credits will be applied to the MPH degree program.

Please visit the Graduate School website for detailed instructions about applying to the graduate certificate program.

Requirements

Degree Requirements

The program requires **14 courses**, **(42 credits).**

Code	Title	Credits
Required Courses		
PHP 900	Public Health Care Systems	3
PHP 901	Epidemiology	3
PHP 902	Environmental Health	3
PHP 903	Biostatistics	3
PHP 904	Social and Behavioral Health	3
PHP 905	Public Health Administration	3
PHP 906	Public Health Finance and Budgeting	3
PHP 907	Public Health Policy	3
PHP 908	Public Health Ethics	3
PHP 912	Public Health Law and Negotiation	3
PHP 922	Public Health Economics	3
PHP 926	Evaluation in Public Health	3
PHP 990	Field Study	3
PHP 998	Integrating Seminar	3
Total Credits		**42**

Grading Policy: For the purposes of determining academic standing, grades below the "B--" level in graded courses are considered failing grades. The MPH program director will recommend dismissal of a student to the Graduate School when a failing grade occurs in **six** or more credits, *either* in ***two*** *courses* or in *one course taken* ***twice.*** Repeating a course does *not* remove the original failing grade from the record. Students must have a cumulative grade point average of 3.0 (B), or higher, in order to graduate. Students admitted on a conditional or provisional basis must meet the conditions or provisions as stated in the letter of admission in order to remain in the Graduate School.

Student Learning Outcomes

CEPH Foundational Competencies:

Evidenced-based Approaches to Public Health

- Apply epidemiological methods to the breadth of settings and situations in public health practice.
- Select quantitative and qualitative data collection methods appropriate for a given public health context.

- Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate.
- Interpret results of data analysis for public health research, policy or practice.

Public Health and Health Care Systems

- Compare the organization, structure, and function of health care, public health, and regulatory systems across national and international settings.
- Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels.

Planning and Management to Promote Health

- Assess population needs, assets and capacities that affect communities' health.
- Apply awareness of cultural values and practices to the design or implementation of public health policies or programs.
- Design a population-based policy, program, project or intervention.
- Explain basic principles and tools of budget and resource management.
- Select methods to evaluate public health programs.

Policy in Public Health

- Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence
- Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes
- Advocate for political, social or economic policies and programs that will improve health in diverse populations
- Evaluate policies for their impact on public health and health equity.

Leadership

- Apply principles of leadership, governance and management, which include: creating a vision, empowering others, fostering collaboration and guiding decision-making.
- Apply negotiation and mediation skills to address organizational or community challenges.

Communication

- Select communication strategies for different audiences and sectors.
- Communicate audience-appropriate (i.e., non-academic, non-peer audience) public health content, both in writing and through oral presentation
- Describe the importance of cultural competence in communicating public health content.

Interprofessional and/or Intersectorial Practice

- Integrate perspectives from other sectors and/or professions to promote and advance population health.

Systems Thinking

- Apply a systems thinking tool to visually represent a public health issue in a format other than standard narrative.

UNH Master of Public Health Program Competencies

- Use innovative problem-solving to impact complex public health issues.
- Strengthen leadership skills through reflection and observation to identify areas for personal and professional growth.
- Analyze the impact of determinants of health on public health issues using a social ecological framework.
- Apply basic principles of ethical analysis to improve health equity and policy relevance.
- Incorporate relevant theories to inform and create public health interventions.

Public Health (Graduate Certificate)

https://chhs.unh.edu/health-management-policy/program/certificate/public-health

Description

As part of the Master of Public Health Program's continuing education program, a Public Health Certificate (PHC) is offered. The Public Health Certificate can be completed in one semester in the Fall, on a part--time basis over two semesters, or up to three years. The Public Health Certificate Program provides a vehicle for individuals working in public or community health positions with the opportunity to earn a graduate certificate in public health.

To enter the certificate program, an applicant must have a baccalaureate degree from an accredited college or university. Upon completion of the certificate program, students may apply to the MPH. program. If admitted into the MPH program, the certificate credits will be applied to the MPH degree program.

Please visit the Graduate School website for detailed instructions about applying to the graduate certificate program.

Requirements

Certificate Requirements

The public health certificate is a **12 credit** program that can be completed as quickly one semester in the Fall, or up to three years. All courses must be taken at UNH. To earn the Public Health Certificate, a student must successfully complete the following curriculum consisting of two required courses and two elective courses.

Code	Title	Credits
Required Courses		
PHP 900	Public Health Care Systems	3
PHP 901	Epidemiology	3
Select two elective courses [1]		6
PHP 902	Environmental Health	
PHP 903	Biostatistics	
PHP 904	Social and Behavioral Health	
PHP 905	Public Health Administration	
PHP 906	Public Health Finance and Budgeting	
PHP 907	Public Health Policy	
PHP 908	Public Health Ethics	
PHP 912	Public Health Law and Negotiation	
PHP 922	Public Health Economics	
PHP 926	Evaluation in Public Health	

PHP 995	Independent Study	
Total Credits		**12**

[1] Students can take any listed PHP course as long as prerequisites have been met.

Grading Policy: For the purposes of determining academic standing, grades below the "B--" level in graded courses are considered failing grades. The MPH program director will recommend dismissal of a student to the Graduate School when a failing grade occurs in **six** or more credits, *either* in ***two*** *courses* or in *one course taken* ***twice.*** Repeating a course does *not* remove the original failing grade from the record. Students must earn a cumulative grade--point average of 3.0 (B), or higher, in order to graduate. Students admitted on a conditional or provisional basis must meet the conditions or provisions as stated in the letter of admission in order to remain in the Graduate School.

Public Policy (CSPP)

Degrees Offered: M.P.P., M.P.P./M.S., M.P.P./J.D

This program is offered in Durham.

The Carsey School of Public Policy's public service graduate degrees offer a unique combination of academic rigor and real-life expertise to prepare you for a career with impact. Our Master in Public Policy (MPP) offers you the tools you need to make a difference and create change in the challenging environment of 21st-century policymaking. You'll learn how to develop transformative, sustainable approaches to societal problems through research and analysis, and how to strategically communicate those ideas to bring them to fruition. In addition to equipping you to serve in a variety of public policy jobs, our MPP program will provide you with the skills to address the pressing issues that matter to you -- locally, nationally, and globally.

You can also broaden your expertise by enrolling in the Carsey School's MPP/JD Dual Degree program which combines the Master in Public Policy program with a Juris Doctor of Law (MPP/JD) program offered by UNH's Franklin Pierce School of Law. This combined dual degree confers two degrees (an MPP degree and a JD degree) while shortening the time by one year to complete both degrees if pursued separately.

https://carsey.unh.edu/master-public-policy

Programs

- Public Policy (M.P.P.) (p. 254)
- Public Policy and Juris Doctor Dual Degree (M.P.P./J.D.) (p. 256)

Faculty

See Carsey School of Public Policy Faculty

Public Policy (M.P.P.)

https://carsey.unh.edu/master-public-policy

Description

The Master in Public Policy degree (MPP) offers you the opportunity to learn the skills you need to succeed in today's public policy jobs—analytical expertise, strategic vision, clear and compelling communications, and the tools of leadership. This master's in public policy program is ideal whether you will be completing your bachelor's degree in the near future or are currently working in a policy-related field. Choose a track focused on public policy analysis or strategy and communications—and select from a broad range of electives to personalize your degree plan. Built into the unique curriculum are a variety of experiential learning opportunities to deepen and broaden what you learn in the classroom, such as:

- **Colloquium in Washington, DC**: Immerse yourself in the capital scene – meeting with leaders in Congress, the White House, government agencies, political parties, advocacy groups, think tanks, and more
- **Policy Internship**: Work in a policy-focused organization to gain practical, real-world experience and a valuable perspective on careers in public policy
- **Capstone Project**: Employ the MPP skills you have gained to delve deeply into a specific policy area to produce a comprehensive written report and oral presentation

Earn your MPP degree in as little as 14 months. You can also choose to earn your MPP degree over a longer period by attending part time. Note that the GRE is not required to apply for this degree program.

Program Delivery & Location: *Academic courses are offered in person on the UNH Durham campus with a portion of the experiential learning taking place offsite: in Washington, DC, for the Colloquium and at the Internship site location during the MPP Internship experience.*

Requirements

Degree Requirements

Students enrolled in the Carsey School's Master in Public Policy program (MPP degree) are required to complete a forty (40) credit program, consisting of:

- Five (5) CORE Curriculum Courses
- Four (4) EXPERIENTIAL LEARNING Activities
- Two (2) PUBLIC POLICY TRACK Courses (Strategy and Communication Track or Policy Analysis Track)
- Four (4) ELECTIVE Courses

These provide the foundational analytical, strategic, and communication skills for a successful career in the world of public policy making. Students focus their public policy studies by choosing either the Strategy and Communication Track or the Policy Analysis Track and complete two courses in one of the tracks. Courses in both tracks can also be taken as open electives. Further opportunities for depth and specialization in substantive policy areas are provided by open elective courses which vary by semester. As culminating graduate experiences, students apply what they've learned through an MPP internship at a policy-oriented organization as well as conducting a capstone project by delving deeply into a policy area of interest. Both of these experiences are provided with guidance from faculty mentors.

Students are advised to have taken an introductory level economics class prior to starting the MPP program such as a "principles of economics" (macro or micro). Students should consult with their MPP Graduate Academic Advisor to confirm that the course(s) previously taken are sufficient or for suggestions of which courses could be taken prior to starting the MPP program.

Code	Title	Credits
MPP CORE Curriculum Courses (5 Courses):		
PPOL 806	Fundamentals of Policy Analysis	3
PPOL 810	Policy Across Borders	3
PPOL 902	Strategy and Practice of Public Policy	3
PPOL 904	Economics for Public Policy	3
PPOL 908	Quantitative Methods for Policy Research	3
MPP EXPERIENTIAL LEARNING Activities (4 Courses):		
PPOL 950	Washington DC Colloquium	3
PPOL 990A	Policy Capstone Planning	1
PPOL 990	Policy Capstone	3
PPOL 998A	Policy Internship [1]	0
or PPOL 998	Policy Internship	
PUBLIC POLICY TRACK (2 Courses): [2]		**6**
Two (2) courses are selected based upon the chosen track: Strategy and Communication Track or Policy Analysis Track		
ELECTIVE Courses (4 Courses): [1, 3]		**12**
Four (4) open elective courses are selected in substantive areas approved by the MPP program (or 3 open elective courses if the Policy Internship is taken for credit, PPOL 998) [1]		
Total Credits		**40**

Notes:

1. In special cases and with your MPP Academic Advisor's permission, the Policy Internship may be taken for credit (PPOL 998, 3 credits), supervised by a faculty member who will provide the academic structure to parallel the applied experience. If this is the case, the required number of MPP-approved elective courses is reduced to three (3) courses.
2. Students choose two (2) courses from either the Strategy and Communication Track or the Policy Analysis Track. Courses in both tracks can also be taken as open elective courses.
3. MPP-Approved elective courses are available in many substantive areas. Students may also propose additional electives if they make sense in terms of the student's interests and academic plan. Discussion with your MPP Graduate Academic Advisor should inform this choice.

Degree Plan

SAMPLE 16-MONTH FULL-TIME DEGREE COMPLETION PLAN

Fall Start (Typical)

Course	Title	Credits
First Year		
Fall		
PPOL 806	Fundamentals of Policy Analysis	3
PPOL 904	Economics for Public Policy	3
PPOL 908	Quantitative Methods for Policy Research	3
MPP Public Policy Track Course [2]		3
	Credits	**12**
January Term		
PPOL 950	Washington DC Colloquium	3
	Credits	**3**
Spring		
PPOL 810	Policy Across Borders	3
PPOL 902	Strategy and Practice of Public Policy	3
PPOL 990A	Policy Capstone Planning	1
MPP Public Policy Track Course [2]		3
Elective Course (choose an MPP-Approved Elective Course) [2, 3]		3
	Credits	**13**
Summer		
PPOL 998A or PPOL 998	Policy Internship [1] or Policy Internship	0
	Credits	**0**
Second Year		
Fall		
PPOL 990	Policy Capstone	3
Elective Course (choose an MPP-Approved Elective course) [2, 3]		3
Elective Course (choose an MPP-Approved Elective course) [2, 3]		3
Elective Course (choose an MPP-Approved Elective course) [2, 3]		3
	Credits	**12**
	Total Credits	**40**

Spring Start

Course	Title	Credits
First Year		
Spring		
PPOL 810	Policy Across Borders	3
PPOL 902	Strategy and Practice of Public Policy	3
MPP Public Policy Track Course [2]		3
Elective Course (choose an MPP-Approved elective course) [2, 3]		3
	Credits	**12**
Summer		
PPOL 998A or PPOL 998	Policy Internship [1] or Policy Internship	0
	Credits	**0**
Fall		
PPOL 806	Fundamentals of Policy Analysis	3
PPOL 904	Economics for Public Policy	3
PPOL 908	Quantitative Methods for Policy Research	3
PPOL 990A	Policy Capstone Planning	1
MPP Public Policy Track Course [2]		3
	Credits	**13**
January Term		
PPOL 950	Washington DC Colloquium	3
	Credits	**3**

Second Year		
Spring		
PPOL 990	Policy Capstone	3
Elective Course (choose an MPP-Approved elective course) [3]		3
Elective Course (choose an MPP-Approved elective course) [3]		3
Elective Course (choose an MPP-Approved elective course) [3]		3
	Credits	**12**
	Total Credits	**40**

NOTES:

1 In special cases and with your MPP Advisor's permission, the Policy Internship may be taken for credit (PPOL 998, 3 credits), supervised by a faculty member who will provide the academic structure to parallel the applied experience. If this is the case, the required number of MPP-approved elective courses is reduced to three (3) courses.

2 Students choose two (2) courses from either the Strategy and Communication Track or the Policy Analysis Track. Courses in both tracks can also be taken as open elective courses.

3 MPP-Approved elective courses are available in many substantive areas. Students may also propose additional electives if they make sense in terms of the student's interests and academic plan. Discussion with your MPP Academic Advisor should inform this choice.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

The **Master in Public Policy** program (MPP) allows eligible undergraduate seniors to enroll in graduate level courses which can fulfill requirements for both their undergraduate and graduate degree programs. Students must apply to the MPP program and be accepted as an Accelerated Master's student. Details on eligibility requirements for admission.

Eligible students who are admitted to the Accelerated Master's program may complete up to 12 credits at the 800-level during their undergraduate senior year, earning dual credit toward both their Bachelor's and MPP degree. Accelerated Master's students should always consult with their Graduate Academic Advisor for guidance.

Accelerated Master's students may register for a maximum of 12 credits of graduate-level courses prior to completing their bachelor's degree.

The MPP program is approved to be taken on an accelerated basis in articulation with the following undergraduate programs:

Cybersecurity Policy Minor & MPP:

Code	Title	Credits
Required Course for the minor		
CPRM 810	Foundations of Cybersecurity Policy (Fall/Spring)	3
MPP/Minor approved electives:		
PPOL 806	Fundamentals of Policy Analysis (Fall)	3
PPOL 810	Policy Across Borders (Spring)	3
PPOL 822	Media Strategy and Skills (Spring)	3

Global Studies Minor (Manchester) & MPP

Code	Title	Credits
MPP/Minor (Governance & Conflict pillar) approved electives:		
PPOL 806	Fundamentals of Policy Analysis (Fall)	3
PPOL 810	Policy Across Borders (Spring)	3
PPOL 822	Media Strategy and Skills (Spring)	3

Global Studies Dual Major, Global Studies Minor (Durham) & MPP

Code	Title	Credits
MPP/Global Studies approved elective:		
PPOL 810	Policy Across Borders (Spring)	3

Political Science (B.A.) & MPP

Code	Title	Credits
MPP/Political Science BA approved electives:		
PPOL 806	Fundamentals of Policy Analysis (Fall)	3
PPOL 810	Policy Across Borders (Spring)	3

Public Service and Nonprofit Leadership (B.S.) & MPP

Code	Title	Credits
MPP/Public Service and Nonprofit Leadership BS approved electives:		
PPOL 806	Fundamentals of Policy Analysis (Fall)	3
PPOL 810	Policy Across Borders (Spring)	3
PPOL 822	Media Strategy and Skills (Spring)	3

Student Learning Outcomes

- Apply basic methods of policy development and analysis to design and evaluate public policy
- Demonstrate competency in public speaking and writing related to public policy
- Demonstrate competency in strategic and tactical skills for achieving policy objectives
- Utilize data and research to inform policy design and advocacy
- Understand policy profession norms and ethics
- Apply critical thinking skills to address policy-relevant questions

Public Policy and Juris Doctor Dual Degree (M.P.P./J.D.)

https://carsey.unh.edu/master-public-policy-juris-doctor-dual-degree

Description

The Public Policy and Juris Doctor (MPP/JD) Dual Degree will provide you with a deep understanding of how legal and public policy issues relate and will equip you with the critical skills and knowledge required to tackle a broad range of complex public policy challenges and make a difference in the contemporary world of law and public policy.

You will start this dual degree program in the fall with your first year at the UNH Franklin Pierce School of Law followed by one year at the Carsey School earning your Master in Public Policy. You will then return for a final year and a half at the law school to complete your Juris Doctor degree. In just three and a half years, you will graduate with two highly marketable and sought-after degrees.

Program Delivery & Location: Academic courses for the JD program are offered in person on the UNH Franklin Pierce School of Law campus in Concord, NH. Academic courses for the MPP program are offered in person on the UNH Durham, NH, campus with a portion of the MPP experiential learning taking place offsite: Washington, DC, for the Colloquium and at the Internship site location during the internship experience (or if doing a legal residency, at the externship location).

Requirements

Degree Requirements

Students enrolled in the Master in Public Policy and Juris Doctor (MPP/JD) Dual Degree program are required to earn a minimum of 104 credits to successfully complete the dual degree which confers both an MPP degree and a JD degree. If both degrees are pursued separately, students are required to take a total of 125 Credits: 85 Credits for the JD degree and 40 Credits for the MPP degree, taking approximately four and one half years to complete. With the MPP/JD Dual Degree, the UNH Franklin Pierce School of Law accepts up to 12 credits of approved MPP courses and the Carsey School of Public Policy accepts up to 9 credits of approved JD courses, reducing the total required credits to 104 and time to complete the two degrees to three and one half years.

Students start their dual degree by completing their first year of the Juris Doctor program at the UNH Franklin Pierce School of Law. Students then complete one year of coursework in the MPP program at the Carsey School of Public Policy and return to the law school for their final one and one half years of coursework. Note that students are advised to have taken an introductory level economics class prior to starting the MPP portion of the MPP/JD Dual Degree program such as a "principles of economics" (macro or micro). It is highly recommended that students meet with their Graduate Academic Advisors from both programs prior to starting the Dual Degree to insure they have a clear understanding of each program's pre-requisites, degree requirements, and course schedules.

Students completing the dual degree will graduate with two degrees: Master in Public Policy degree and Juris Doctor degree.

MPP CURRICULUM for MPP/JD Dual Degree

Code	Title	Credits
MPP CORE Curriculum Courses (5 Courses):		
PPOL 806	Fundamentals of Policy Analysis	3
PPOL 810	Policy Across Borders	3
PPOL 902	Strategy and Practice of Public Policy	3
PPOL 904	Economics for Public Policy	3
PPOL 908	Quantitative Methods for Policy Research	3
MPP EXPERIENTIAL LEARNING Activities (4 Courses):		
PPOL 950	Washington DC Colloquium	3
PPOL 990A	Policy Capstone Planning	1
PPOL 990	Policy Capstone	3
PPOL 998	Policy Internship [1]	3
or PPOL 998A	Policy Internship	
PUBLIC POLICY TRACK (2 Courses) [2]		**6**
Two (2) courses are selected based upon the chosen MPP Track: Strategy and Communication Track or Policy Analysis Track		
Total Credits		**31**

JD CURRICULUM for MPP/JD Dual Degree

Code	Title	Credits
First Year Required Courses		
LGP 900	The Legal Profession	1
LGP 909	Civil Procedure	4
LGP 916	Constitutional Law	4
LGP 920	Contracts	4
LGP 952	Property	4
LGP 960	Torts	3
LPI 912	Fundamentals of Law Practice	3
or LIP 944	Fundamentals of Intellectual Property	
LSK 900	Legal Research and Information Literacy	2
LSK 919	Legal Analysis and Writing 1	2
LSK 920	Legal Analysis and Writing 2	3
Third Year Required Courses		
LCR 906	Criminal Procedure I: The Law of Criminal Investigation	3
LGP 903	Administrative Process	3
LGP 951	Professional Responsibility	3
Upper Level Skills Requirement		3
Upper Level Writing Requirement		3
Experiential Learning Requirement		6
JD Elective Course [3]		3
Fourth Year Required Courses		
JD Elective (Bar Prep WTE)		4
JD Elective (Bar Prep - BA)		3
JD Elective [3]		3
JD Elective [3]		3
Total Credits		**67**

For more details on the JD program, visit the Requirements for the Juris Doctor Degree.

MPP/JD Dual Degree Credit Summary

Code	Title	Credits
Master in Public Policy Program Course Credits		**31**
Juris Doctor Program Course Credits [3]		**73**
Total Credits		**104**

Notes:

1. In general, PPOL 998 Policy Internship is credit-bearing, supervised by a faculty member who will provide the academic structure to parallel the applied experience. In some cases, a policy internship may not be appropriate for academic credit or the requirement may be satisfied through the UNH Law School's Legal Residency-Externship (6 credits); in such cases the JD Externship experience fulfills the MPP Internship requirement but does not provide credits (PPOL 998A). If the Internship is not taken for credit (PPOL 998A), students are required to take an additional MPP-approved elective course. It is highly recommended that students consult with their MPP Academic Advisor to determine the best path for the student.
2. Students choose two (2) elective courses from either the MPP Strategy and Communication Track or the MPP Policy Analysis Track list of courses.
3. JD Elective courses chosen for this MPP/JD Dual Degree should have a policy-relevant component to the curriculum. Discussion with your MPP Academic Advisor should inform this choice.

Degree Plan

MASTER IN PUBLIC POLICY/JURIS DOCTOR DUAL DEGREE PLAN

Course	Title	Credits
First Year		
Fall		
LGP 909	Civil Procedure	4
LGP 920	Contracts	3-4
LGP 960	Torts	3
LSK 900	Legal Research and Information Literacy	2
LSK 919	Legal Analysis and Writing 1	2
	Credits	**14-15**
Spring		
LGP 900	The Legal Profession	1
LGP 916	Constitutional Law	4
LGP 952	Property	4
LPI 912 or LIP 944	Fundamentals of Law Practice or Fundamentals of Intellectual Property	3
LSK 920	Legal Analysis and Writing 2	3
	Credits	**15**
Summer		
PPOL 998	Policy Internship [1]	3
	Credits	**3**
Second Year		
Fall		
PPOL 806	Fundamentals of Policy Analysis	3
PPOL 904	Economics for Public Policy	3
PPOL 908	Quantitative Methods for Policy Research	3
MPP Public Policy Track Course [4]		3
	Credits	**12**
January Term		
PPOL 950	Washington DC Colloquium	3
	Credits	**3**
Spring		
PPOL 810	Policy Across Borders	3
PPOL 902	Strategy and Practice of Public Policy	3
PPOL 990A	Policy Capstone Planning	1
MPP Public Policy Track Course [4]		3
	Credits	**10**
Summer		
PPOL 990	Policy Capstone	3
	Credits	**3**
Third Year		
Fall		
Remaining Required Courses in the JD Program's Second or Third Year		18
LCR 906	Criminal Procedure I: The Law of Criminal Investigation	3
LGP 903	Administrative Process	3
LGP 951	Professional Responsibility	3
Upper Level Writing Requirement [2]		3
Experiential Learning Requirement [2]		6
	Credits	**36**
Spring		
Upper Level Skills Requirement [2]		3
Experiential Learning Requirement [2]		6
JD Elective Course [3]		3
	Credits	**12**
Fourth Year		
Fall		
JD Elective (Bar Prep WTE)		4
JD Elective (Bar Prep - BA)		3
JD Elective [3]		3
JD Elective [3]		3
	Credits	**13**
	Total Credits	**121-122**

Notes:

1. In general, the Policy Internship is credit-bearing (PPOL 998), supervised by a faculty member who will provide the academic structure to parallel the applied experience. In some cases, a policy internship may not be appropriate for academic credit or the requirement may be satisfied through the UNH Law School's Legal Residency-Externship (6 credits); in such cases the JD Externship experience fulfills the MPP Internship requirement but does not provide credits (PPOL 998A). If the Internship is not taken for credit (PPOL 998A), students are required to take an additional MPP-approved elective course. It is highly recommended that students consult with their MPP Academic Advisor to determine the best path for the student.
2. Students must complete separate courses to fulfill the Upper-Level Writing and Experiential Learning requirements. A course may be designated as meeting each of the Upper-Level Writing and Experiential Learning requirements, but a student cannot fulfill both requirements by taking a single course.
3. JD Elective courses chosen for this MPP/JD Dual Degree should have a policy-relevant component to the curriculum. Discussion with your MPP Academic Advisor should inform this choice.
4. Students choose two (2) courses from either the MPP Strategy and Communications Track or the MPP Policy Analysis Track. Courses in both tracks can also be taken as open elective courses.

Student Learning Outcomes

- Apply basic methods of policy development and analysis to design and evaluate public policy
- Demonstrate competency in public speaking and writing related to public policy
- Demonstrate competency in strategic and tactical skills for achieving policy objectives
- Utilize data and research to inform policy design and advocacy
- Understand policy profession norms and ethics
- Apply critical thinking skills to address policy-relevant questions
- Legal analysis and reasoning: Graduates will be able to identify, comprehend, and apply the relevant substantive and procedural laws

to solve a legal issue, informed by an understanding of the diversity of viewpoints on and contexts for any issue.
- Written and oral communication: Graduates will be able to present material effectively in these formats for both objective analytical and advocacy purposes across a range of settings, including in the courtroom.
- Professionalism: Graduates will be able to act in an ethical, respectful, and self-aware manner with all other stakeholders, including clients, employers, and the court.
- Legal research: Graduates will be able to navigate and assess relevant legal authorities using appropriate tools.
- Public service: Graduates will be able to contribute productively to strengthening the justice system, with a sensitivity toward the needs of people facing societal barriers.
- Problem solving: Graduates will be able to engage in focused and pragmatic collaboration toward goals.
- Client counseling and management: Graduates will be able to provide trustworthy and responsive action upon clients' matters.
- Factual investigation and analysis: Graduates will be able to implement a strategic plan for information-gathering, which includes the ability to iterate on the plan as needed, and evaluate the results of the information obtained.

Recreation Management and Policy (RMP)

Degree Offered: M.S.

This program is offered in Durham.

The Department of Recreation Management and Policy (RMP) offers the master's of science degree in Recreation Management and Policy with options in **Recreation Administration (30 credits)**, **Therapeutic Recreation Administration (30 credits)**, and **Adaptive Sports (32-33 credits)**.

The department also offers a dual degree in **Social Work and Recreation Management and Policy.** This degree consists of a master in Social Work (M.S.W.), as well as a master of science (M.S.) in Recreation Management and Policy with a concentration in Recreation Administration. In two and a half years students will be able to complete these two graduate degrees with a concentration in Recreation Administration to prepare them for a career in adventure therapy.

The Department is accredited by the National Council on Accreditation of Parks, Recreation, Tourism, and Related Professions (COAPRT), and the Commission on the Accreditation of Recreational Therapy Education (CARTE).

The primary purpose of the RMP Graduate Program is to prepare professionally educated recreation, therapeutic recreation, and adaptive sports administrators to serve their communities and provide leadership that addresses the quality of life issues of an increasingly diverse and complex society. The MS program in RMP provides a foundation in leisure theory, research, and data analysis to conduct applied research within the field, and administration skills for management level positions in practice.

Students from across the three program options can pursue specializations in campus recreation, outdoor education, and leadership through our partnerships with UNH Campus Recreation and The Browne Center. A specialization is available in community-based therapeutic recreation and adaptive sports through our partnership with Northeast Passage.

Applied research opportunities are available through the RMP Department's Collaborative Scholarship Areas, which leverage collective efforts and resources around core Department strengths to produce impactful research, inform public policy and decision-making, and provide innovative education and training to enhance the quality of life of citizens in NH, New England, and beyond. RMP faculty and graduate students conduct research across three Collaborative Scholarship Areas: 1) Community and Economic Development, 2) Recreation Resource Protection and Management, and 3) Health, Wellness, and Active Living.

An atmosphere of collegiality and collaboration fosters interactions between faculty and students. Faculty and students are actively engaged in applied research.

RMP graduate courses are generally offered once a week in three-hour blocks in the afternoon and/or evenings. Some courses are offered in an online format.

Admission Requirements

Individuals seeking a career change to recreation administration, therapeutic recreation administration, or adaptive sports with an undergraduate degree in a related field (e.g., education, psychology, business, special education) may be admitted to the Graduate School as a provisional student, with the expectation that they complete any required prerequisites prior to, or concurrently with, graduate courses. Prerequisite courses will be determined based on professional experience and educational background. A specially designed curriculum is available to provisionally admitted students.

Admission is based on a personal history that demonstrates academic achievement and/or exemplary work experience, as well as the applicant's ability to articulate in the personal statement his or her potential and desire for graduate study in recreation administration, therapeutic recreation administration, or adaptive sports (See the personal statement questions in application portal).

Generally, students must have earned a minimum undergraduate GPA of 3.00 to be considered for admission. Applicants are required to submit copies of prior academic records (official academic transcripts), three professional references, a current resume or curriculum vita, written personal statement (questions provided in application portal), and a complete Graduate School application.

A baccalaureate degree must be conferred prior to beginning the program. Face-to-face, phone, or video call interviews are encouraged but not required for all applicants. Students who wish to apply for a graduate assistantship should contact the department's Graduate Coordinator for an application or obtain it from the department's website (https://chhs.unh.edu/recreation-management-policy/graduate-assistantships). Admission to the program and funding opportunities are selective and limited. It is in the applicant's best interest to apply early.

Students applying to the **dual-degree program** must meet the application requirements for both the Departments of Social Work and Recreation Administration and Policy.

https://chhs.unh.edu/rmp

Programs

- Recreation Management and Policy: Adaptive Sports (M.S.) (p. 260)
- Recreation Management and Policy: Recreation Administration (M.S.) (p. 261)
- Recreation Management and Policy: Therapeutic Recreation Administration (M.S.) (p. 262)
- Social Work and Recreation Management & Policy Dual Degree (M.S.W./M.S.) (p. 269)

Faculty

See the RMP faculty webpage here: https://chhs.unh.edu/recreation-management-policy/faculty-staff-directory

Recreation Management and Policy: Adaptive Sports (M.S.)

https://chhs.unh.edu/recreation-management-policy/program/ms/recreation-management-policy-adaptive-sports

Description

The Adaptive Sports Option prepares professionals for middle to upper-level administrative positions within the adaptive sports sector of the field, including positions within parks and recreation departments, rehabilitation hospitals, Veteran's Administration hospitals and outpatient clinics, non-profits agencies, public school settings, grassroots adaptive sport organizations, national and international adaptive sport organizations, and/or commercial sport and recreation providers.

The Adaptive Sports Option leverages our unique partnership with Northeast Passage, a nationally recognized TR and adaptive sports program associated with the RMP Department, and Chapter of Move United. Graduate students will be exposed to Northeast Passage's Adaptive Sports and Recreation program, which offers a spectrum of services from entry-level instruction to ongoing recreation and competitive sports opportunities for people with disabilities.

Requirements

Degree Requirements

The **32-33 credit** Adaptive Sports option consists of required and elective coursework. In consultation with a faculty adviser, students will select either a thesis or portfolio track. The core curriculum combines courses in adaptive sports and recreation facilitation, program administration in sport and recreation, law and public policy, non-profit administration and leadership, fund development and grant writing, and a supervised fieldwork experience in an adaptive sports setting. Students develop research competencies through a capstone portfolio or thesis specifically tailored to adaptive sport practice. Students also take one elective course to support desired specialization.

Full-time students typically take up to two years and one summer session to progress through the Adaptive Sport option degree requirements. Part-time students may take longer to complete the degree.

Code	Title	Credits
Required Core Competencies		
RMP 820	Adaptive Sport Facilitation for Recreation Therapy and Related Professions	3
RMP 872	Law and Public Policy in Leisure Services	3
RMP 912	Non-Profit Administration and Leadership	3
RMP 924	Fund Development and Grantwriting	3
RMP 963	Graduate Field Practicum	2
Required Research Competencies		
RMP 992	Research Methods in Recreation Management and Policy	3
SW 962	Data Analysis and Statistics	3-4
or EDUC 881	Introduction to Statistics: Inquiry, Analysis, and Decision Making	
Capstone - choose Thesis or Portfolio track		
Thesis Track:		
RMP 899	Master's Thesis (Sections I & II - 6 credits total)	
Elective Course		
Portfolio Track:		
RMP 995	Capstone Seminar	
Elective Course		
Elective Course		
Elective Courses (not an all-inclusive list)		**3-6**
EDUC 856	Advocating for Diverse and Inclusive Family-School-Community Partnerships	
KIN 865	Advanced Topics in Coaching (highly encouraged)	
KIN 881	Inclusion in Physical Education	
SW 812	Understanding Developmental Disabilities	
SW 897	Special Topics in Social Work and Social Welfare (Mental Health Aspects of IDD)	
SW 897	Special Topics in Social Work and Social Welfare (Youth Emotional Behavior)	

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Students will know the roles and interrelationships of diverse leisure service delivery systems, as well as professionalism in the discipline.
- Students will know and apply the psychological, sociological, and social psychological theories and philosophies associated with leisure and recreation behavior.
- Students will develop the ability to translate and apply relevant theory to park and recreation programs and services.
- Students will know the historical and cultural perspectives associated with the park and recreation field, and will apply issues of diversity, equity, and inclusion to park and recreation management.
- Students will apply financial, budgetary, planning, marketing, program evaluation, and human resource knowledge and skills to meet present and future organizational needs and challenges.
- Students will implement leadership skills that advance the park and recreation profession and broader society.
- Students will design and conduct research, analyze and interpret data, and apply research findings to the park and recreation profession.
- Students will explore the interrelationships of allied professions with the park and recreation profession.

- Students will know how to promote the benefits of recreation and leisure to enhance individual, social, economic, and environmental well-being and quality of life.
- Students will demonstrate effective conceptual and technical communication skills, both in oral and written form.

Recreation Management and Policy: Recreation Administration (M.S.)

https://chhs.unh.edu/recreation-management-policy/program/ms/recreation-management-policy-recreation-administration

Description

The Recreation Administration option prepares professionals with advanced knowledge and skills to plan, administer, and evaluate recreation and outdoor recreation programs and services across a variety of sectors, including: sports and fitness, community recreation, campus recreation, nonprofit administration, commercial recreation and events, tourism, camps, outdoor education, adventure programming, outdoor recreation, parks and protected areas, conservation, natural resources, and senior or youth-serving agencies. Postgraduate employment opportunities include working as leaders, directors, planners, and managers of agencies and programs that provide healthy recreation and outdoor activities for people across the lifespan.

Specializations are available in campus recreation, outdoor education, and leadership through our partnerships with UNH Campus Recreation and The Browne Center. A specialization is available in adaptive sports through our partnership with Northeast Passage.

Applied research opportunities are available through our Applied Recreation Research Collaborative (ARRC Lab), which provides public, private, and non-profit recreation resource managers and practitioners with data-driven solutions to inform decision-making and policy.

Requirements

Degree Requirements

The **30 credit** Recreation Administration option consists of required and elective coursework. In consultation with a faculty adviser, students will select either a capstone portfolio or thesis track. Full-time students typically take up to two years to progress through the RA option degree requirements. If a student takes leveling courses, they may need to complete more than two years. Part-time students may take longer to complete the degree.

Code	Title	Credits
Required Core Competencies		
RMP 800	Concepts of Recreation and Leisure	3
RMP 806	Recreation Administration and Organizational Behavior	3
Required Research Competencies		
RMP 992	Research Methods in Recreation Management and Policy	3
SW 962	Data Analysis and Statistics	3
or EDUC 881	Introduction to Statistics: Inquiry, Analysis, and Decision Making	
Capstone - Choose Thesis or Porfolio Track [1]		
Thesis Track:		
RMP 899	Master's Thesis	
4 Elective Courses		
Portfolio Track:		
RMP 995	Capstone Seminar	
6 Elective Courses		
Elective Courses (RMP Dept Courses)		**12-18**
RMP 811	Recreation Resource Management	
RMP 820	Adaptive Sport Facilitation for Recreation Therapy and Related Professions	
RMP 872	Law and Public Policy in Leisure Services	
RMP 875	Entrepreneurial and Commercial Recreation	
RMP 912	Non-Profit Administration and Leadership	
RMP 924	Fund Development and Grantwriting	
RMP 964	Graduate Internship	
RMP 970	Teaching Practicum	
RMP 980	Independent Study	

Code	Title	Credits
Elective Courses (outside RMP Dept): [2]		
ADMN 852	Marketing Research	
ADMN 960	Marketing/Building Customer Value	
ADMN 970	Economics of Competition	
ADMN 982	Creating Winning Strategies	
HMP #812	Health Analytics	
KIN 802	Health Content and Youth Risk Behaviors	
KIN 840	Athletic Administration	
KIN 841	Social Issues in Contemporary Sports	
KIN 865	Advanced Topics in Coaching	
KIN 880	Psychological Factors in Sport	
KIN 881	Inclusion in Physical Education	
PHP 902	Environmental Health	
PHP 904	Social and Behavioral Health	
PHP 922	Public Health Economics	
PHP 924	Policy and Practice of Community Health Assessment	
RAM 867	Social Impact Assessment	
SW #814	Introduction to Addiction: Assessment and Intervention	
SW 840	Implications of Race, Culture, and Oppression for Social Work Practice	

1 **Thesis track choose 4 electives; Portfolio track choose 6 electives. Both tracks may also choose electives outside Dept.**

2 This is not an all inclusive list.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Students will know the roles and interrelationships of diverse leisure service delivery systems, as well as professionalism in the discipline.
- Students will know and apply the psychological, sociological, and social psychological theories and philosophies associated with leisure and recreation behavior.
- Students will develop the ability to translate and apply relevant theory to park and recreation programs and services.
- Students will know the historical and cultural perspectives associated with the park and recreation field, and will apply issues of diversity, equity, and inclusion to park and recreation management.

- Students will apply financial, budgetary, planning, marketing, program evaluation, and human resource knowledge and skills to meet present and future organizational needs and challenges.
- Students will implement leadership skills that advance the park and recreation profession and broader society.
- Students will design and conduct research, analyze and interpret data, and apply research findings to the park and recreation profession.
- Students will explore the interrelationships of allied professions with the park and recreation profession.
- Students will know how to promote the benefits of recreation and leisure to enhance individual, social, economic, and environmental well-being and quality of life.
- Students will demonstrate effective conceptual and technical communication skills, both in oral and written form.

Recreation Management and Policy: Therapeutic Recreation Administration (M.S.)

https://chhs.unh.edu/recreation-management-policy/program/ms/recreation-management-policy-therapeutic-recreation-administration

Description

The Therapeutic Recreation Administration option prepares advanced personnel for administrative responsibilities in clinical-based practice & administrative leadership in community-based recreation services that meet the needs of individuals with disabilities. Graduate education serves Therapeutic Recreation Specialists who wish to move into administrative positions such as supervisor/manager/director, senior therapist, treatment coordinator, assisted-living manager, and senior center supervisor.

A specialization in community-based TR is also available through our partnership with Northeast Passage, including coursework and practice experiences related to in-home/community health promotion programming, TR service delivery in the school system, and adaptive sports (recreational and competitive).

Students without an academic or clinical background in therapeutic recreation may use the M.S. program to satisfy the academic requirements for the national credentialing examination used by the National Council on Therapeutic Recreation Certification (NCTRC) and for New Hampshire state licensure. While the graduate program does not require prerequisite courses to qualify for admission, the credentialing examination does require coursework outside the M.S. curriculum requirements and the department requires leveling coursework upon acceptance to the M.S. program.

Requirements

Degree Requirements

The **30 credit** Therapeutic Recreation Administration option consists of required and elective coursework. In consultation with a faculty adviser, students will select either a thesis or portfolio track. Full-time students with a TR undergraduate degree take up to two years to progress through the degree requirements; full-time students without a TR undergrad degree need more than two years. Part-time students take longer to complete the degree.

Code	Title	Credits
Required Core Competencies		
RMP 800	Concepts of Recreation and Leisure	3
RMP 806	Recreation Administration and Organizational Behavior	3
Required Research Competencies		
RMP 992	Research Methods in Recreation Management and Policy	3
SW 962	Data Analysis and Statistics	3-4
or EDUC 881	Introduction to Statistics: Inquiry, Analysis, and Decision Making	
Capstone - Choose Thesis or Porfolio Track		
Thesis Track:		
RMP 899	Master's Thesis	
4 Elective Courses		
Portfolio Track:		
RMP 995	Capstone Seminar	
6 Elective Courses		
Elective Courses (RMP Dept Courses) [1]		**12-18**
RMP 806	Recreation Administration and Organizational Behavior	
RMP 811	Recreation Resource Management	
RMP 820	Adaptive Sport Facilitation for Recreation Therapy and Related Professions	
RMP 840	Therapeutic Recreation Service Delivery in Community Settings	
RMP 872	Law and Public Policy in Leisure Services	
RMP 875	Entrepreneurial and Commercial Recreation	
RMP 912	Non-Profit Administration and Leadership	
RMP 924	Fund Development and Grantwriting	
RMP 964	Graduate Internship	
RMP 970	Teaching Practicum	
RMP 980	Independent Study	

Code	Title	Credits
Elective Courses (outside RMP Dept) [2]		
HDFS 843	Families, Schools, and Community	
HDFS 846	Human Sexuality	
HDFS 857	Race, Class, Gender, and Families	
HDFS 876	Children, Adolescents and the Law	
HDFS 894	Families and the Law	
HDFS 993	Theoretical Approaches to Human Development and Family Studies	
KIN 802	Health Content and Youth Risk Behaviors	
KIN 881	Inclusion in Physical Education	
KIN 882	Therapeutic Applications of Adventure Programming	
KIN 883	Psych Factors of Adventure Ed	
KIN 884	Historical Foundations of Outdoor Experiential Education	
NUTR 873	Clinical Nutrition	
NUTR 880	Critical Issues in Nutrition	
OT 830	Assistive Technology for Enhancing Occupational Performance	
OT 830L	Assistive Technology for Enhancing Occupational Performance Lab	
OT 889	Using iPads to Support Children with Disabilities	
PHP 900	Public Health Care Systems	
PHP 904	Social and Behavioral Health	
PHP 905	Public Health Administration	
PHP 907	Public Health Policy	
PHP 908	Public Health Ethics	
PHP 912	Public Health Law and Negotiation	
PHP 922	Public Health Economics	
PHP 924	Policy and Practice of Community Health Assessment	
RAM 867	Social Impact Assessment	
SW 805	Child and Adolescent Risks and Resiliency: Program, Policy and Practice	
SW #814	Introduction to Addiction: Assessment and Intervention	
SW 820	Social Welfare Policy I	
SW 840	Implications of Race, Culture, and Oppression for Social Work Practice	
SW 850	Human Behavior and the Social Environment I	
SW 865	Adventure Therapy: Facilitation and Processing of the Experience	
SW 897	Special Topics in Social Work and Social Welfare	

[1] Thesis track choose 4 electives; Porfolio track choose 6 electives. Both track may also choose electives outside Dept.

[2] Not an all inclusive list.

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

- Students will know the roles and interrelationships of diverse leisure service delivery systems, as well as professionalism in the discipline.
- Students will know and apply the psychological, sociological, and social psychological theories and philosophies associated with leisure and recreation behavior.
- Students will develop the ability to translate and apply relevant theory to park and recreation programs and services.
- Students will know the historical and cultural perspectives associated with the park and recreation field, and will apply issues of diversity, equity, and inclusion to park and recreation management.
- Students will apply financial, budgetary, planning, marketing, program evaluation, and human resource knowledge and skills to meet present and future organizational needs and challenges.
- Students will implement leadership skills that advance the park and recreation profession and broader society.
- Students will design and conduct research, analyze and interpret data, and apply research findings to the park and recreation profession.
- Students will explore the interrelationships of allied professions with the park and recreation profession.
- Students will know how to promote the benefits of recreation and leisure to enhance individual, social, economic, and environmental well-being and quality of life.
- Students will demonstrate effective conceptual and technical communication skills, both in oral and written form.

Social Work (SW)

Degrees Offered: M.S.W., M.S.W./M.S., M.S.W./J.D., Graduate Certificate

This program is offered in Durham and Online.

The Department of Social Work offers a master of social work (M.S.W.) degree. The M.S.W. program develops advanced professional knowledge and skills for persons interested in pursuing careers in the field of social work.

The M.S.W. program is accredited by the Council on Social Work Education (CSWE). It requires two years of full-time study or three-to-four years of extended-time study. All programs require classroom work and two year long field internships.

Program Options

The Durham Campus Program is our traditional model with classes held on campus. It takes two years to complete the full time program, with part time course of study of three and four years. Required first year courses are scheduled Monday-Wednesday leaving Thursdays and Fridays open for first year field internships. Second year courses are scheduled Wednesdays and Thursdays leaving Monday, Tuesday, and Friday for internships. The Durham program admits once a year in the fall.

The M.S.W Online Program allows students to earn their Master of Social Work degree online in 28 months. M.S.W online students are required to complete two field internships at a program or agency in their local community and work with Social Work Department field office to identify acceptable field sites. Field and Practice classes will have weekly synchronous online classes held on Monday or Wednesday evenings. The online program admits three times a year (fall, spring, summer). No campus visits are required at any time.

Advanced Standing (p. 266) is an option for eligible students who have graduated from an accredited B.S.W. program within five years. This option is available in Durham or online. Admission to this program is every summer for Durham and every fall for online.

Dual Degree Programs

The Social Work and Recreation Management and Policy Dual Degree consists of a master in Social Work (M.S.W.), as well as a master of science (M.S.) in Recreation Management and Policy with a concentration in Recreation Administration. In two and a half years students will be able to complete these two graduate degrees with a concentration in Recreation Administration to prepare them for a career in adventure therapy.

The Social Work and Law Dual Degree consists of a master in social work (M.S.W.) as well as JD law degree from the School of Law at the University of New Hampshire (UNH) (**JD/M.S.W**.). In four years, students will be able to complete two graduate degrees, a master in social work (M.S.W.) and a Juris Doctor to prepare them for a career in law and social work.

Admission Requirements

The department encourages applications from those who hold a baccalaureate degree from an accredited college or university; have attained an overall grade-point average of "B" or better in undergraduate coursework; and have completed courses in a broad range of liberal arts and science disciplines.

- Applicants should include a resume of two pages or less, which lists educational, work, and volunteer experiences, as well as any special skills or attributes.
- Applicants must submit professional recommendations from three individuals, and it is strongly recommended to include a reference from academic faculty. Professional letters of reference should describe the applicant's volunteer or work duties, skills and values relevant to social work practice with diverse populations, ability to collaborate with others, and overall strengths and challenges relevant to graduate study. The department does not accept personal references.
- Applicants should complete a personal statement of interest in pursuing graduate education in the field. Significant volunteer and/or work experience in the field is strongly recommended.

- Application expectations include graduation from an accredited undergraduate institution with a broad liberal arts background. Applicants who do not meet these requirements may fulfill them after admissions but before their second year of study. All applicants are encouraged to contact departments directly to discuss program specific application questions. Standardized graduate examinations are not required, but results of such tests may be submitted to supplement other admission materials. **To apply to all programs, go to http://www.gradschool.unh.edu/.**

Students applying to the **online M.S.W. program** must meet the application requirements shown above. The Online M.S.W. Program provides the same quality education that the campus-based programs offer. The Online program admits students every fall, spring, and summer. Students can complete their coursework and field practicum work at home and in their own community. No campus visits are required at any time.

Students applying for **advanced standing** must hold a hold a Bachelor's degree from an accredited Social Work program with a minimum 3.2 cumulative GPA or 3.3 Social Work major GPA(4.0 scale). This coursework must have been completed within five years of the date of M.S.W. matriculation. Advanced-standing applicants must also submit a reference from a B.S.W. faculty member and the undergraduate field supervisor or field coordinator.

Students applying to the **dual-degree programs** must meet the application requirements for both the Departments of Social Work and Recreation Administration and Policy or the UNH School of Law. See RMP and the UNH School of Law for their admission requirements.

Graduate Certificates

The department offers graduate certificates in **Intellectual and Developmental Disabilities** (IDD), **Child Welfare** and **Substance Use Disorders**.

The **IDD certificate** emphasizes an interdisciplinary, collaborative approach to providing holistic, family-centered services to children and families.

The **Child Welfare** certificate is designed to educate individuals interested in improving the quality of life for children and families vulnerable to abuse and neglect. For training programs, the Title IVE Child Welfare Program is available for eligible M.S.W. students interested in a career in child protective services. Program information and application materials can be found at https://chhs.unh.edu/social-work/child-welfare-partnerships-training.

The **Substance Use Disorder** certificate provides students with general and specific knowledge as well as skill building towards the development of this important practice specialty. Areas of study include: intake, assessment, treatment planning, case management, referral, crisis intervention, and the counseling of individuals, groups and families.

https://chhs.unh.edu/sw

Programs

Faculty

See https://chhs.unh.edu/directory/all for faculty.

Child Welfare (Graduate Certificate)

https://chhs.unh.edu/social-work/program/certificate/child-welfare-graduate-certificate

Description

About the Program

The Child Welfare Graduate Certificate Program is designed to educate individuals interested in improving the quality of life for children and families vulnerable to abuse and neglect. In addition, the certificate will provide additional pathways of preparation for students interested in careers in public child welfare and will aid in increasing valuable resources toward supporting children and families vulnerable to child abuse and neglect.

Who should apply?

- Individuals interested in improving the quality of life for children and families vulnerable to abuse and neglect
- Individuals receiving the Title IV-E grant
- Individuals interested in taking graduate courses at UNH with the option of applying credit toward a graduate degree in social work
- Individuals interested in advancing their career options or in developing a new career focus

Contact Information

Email Christie Davis (christie.davis@unh.edu) or call 603-862-2704.

Requirements

Certificate Requirements

Students complete four courses for a total of 12 credits.

Code	Title	Credits
Select two required courses from the following:		**6**
SW 805	Child and Adolescent Risks and Resiliency: Program, Policy and Practice	
SW 807	Child Maltreatment	
SW 897	Special Topics in Social Work and Social Welfare (Leadership in Child Welfare)	
SW 897	Special Topics in Social Work and Social Welfare (Trauma Informed Child Welfare Practice)	
Select two elective courses from the following:		**6**
SW 803	Social Work and Spirituality	
SW 804	Adolescents with Emotional and Behavioral Challenges	
SW 808	Mental Health Aspects of Intellectual & Developmental Disabilities	
SW 813	School Social Work	
SW 817	Understanding Suicide	
SW 860	Research Methods in Social Work (Current students are able to substitute SW 965 if they've already completed SW 860) [1]	

SW 870	Intimate Partner Violence
SW 897	Special Topics in Social Work and Social Welfare (Forensic Mental Health)
SW 974	Social Work Supervision
SW 975	Theory and Practice of Family Therapy
SW 979	Social Work and the Law
Total Credits	**12**

[1] Students who use either SW 860 Research Methods in Social Work or SW 965 Program and Practice Evaluation for the certificate have to focus their assignments on CW topics and they have to complete a course designation form outlining those assignments.

Intellectual and Developmental Disabilities (Graduate Certificate)

https://chhs.unh.edu/social-work/program/certificate/intellectual-developmental-disabilities-graduate-certificate

Description

About the Program

The College of Health and Human Services, Department of Social Work at the University of New Hampshire (UNH) and the New Hampshire/Maine-Leadership Education in Neurodevelopmental and Related Disabilities (NH/ME-LEND) training program at the Institute on Disability co-sponsor the Intellectual and Developmental Disabilities Graduate Certificate program. The needs of individuals with intellectual and developmental disabilities extend beyond the boundaries of any one discipline. Therefore, this 12-credit-hour program emphasizes an interdisciplinary, collaborative approach to providing holistic, family-centered services to individuals with IDD and their families. Students enrolled in the certificate program will benefit from collaboration and interaction with faculty and students from many departments within the university. This 12-credit hour Graduate Certificate program will allow you to take graduate-level courses at a leading public university while also giving you the option to apply credits toward a graduate degree program. Additionally, students will benefit from working with staff and faculty associated with the Institute on Disability (IOD) and the NH/ME-LEND program which focuses on developing educational excellence related to: a) current knowledge regarding neurodevelopmental disabilities, b) interdisciplinary practice, and c) strategies for effective leadership.

Who Should Apply

- Individuals interested in improving the quality of life for individuals with IDD and their families
- Trainees enrolled in the New Hampshire/Maine-Leadership in Education in Neurodevelopmental Disabilities (NH/ME-LEND) training program
- Individuals interested in taking graduate level courses at a leading university, with the option of applying credit toward a graduate degree in their respective disciplines
- Individuals interested in working with an interdisciplinary group of faculty and students
- Individuals interested in advancing their careers or in developing new career options

Application Information

Individuals holding a bachelor's degree from an accredited institution are eligible to apply. Applicants much submit:

1. an application form,
2. official transcripts, and
3. a $25 processing fee (this fee is waived for currently enrolled graduate students).

Applications are available by contacting the Program Coordinator. Applications will be accepted anytime, and admissions decisions made promptly.

New students, who are not enrolled in any other graduate program, should apply online through the online application system.

Students who are already enrolled in a graduate program and wish to add a certificate as a secondary degree should fill out the secondary certificate application.

Any students who have admission questions can contact Sarah.mantegari@unh.edu in the Social Work Department.

Contact Information

Patrick Shannon (Patrick.Shannon@unh.edu), MSW. Ph.D.
Pronouns: He/him/his
Associate Professor and IDD Grad Certificate Coordinator
Department of Social Work
55 College Rd., 311 Pettee Hall
Durham, NH 03824
(603) 970-0870 (Office)

Requirements

Certificate Requirements

There are two separate tracks for this program. **Track 1** is for students enrolled in the New Hampshire-Leadership Education in Neurodevelopmental Disabilities (NH-LEND) training program. **Track 2** is for all other students. The program of study consists of two required courses (6 credit hours), and two (2) electives (6 credit hours) or one (1) elective and one (1) three(3)credit hour independent study. Below is a detailed description of each track.

Track 1 (NH-LEND Trainees)

Code	Title	Credits
Required courses		
HHS 898	Special Topics (LEND Seminar – Fall Semester)	3
HHS 898	Special Topics (LEND Seminar – Spring Semester)	3
Electives		
Select one of the following options:		6-8
Two electives [1]		
One elective and one three-credit hour independent study (SW 992) [2]		
Total Credits		**12-14**

[1] Electives with a focus on Developmental Disabilities may be accepted upon approval from the Graduate Certificate Coordinator. This includes

but not limited to HDFS 897, EDUC 856, OT 890, OT 862, SW 860, EDUC 850, SW 851, SW 813

2 Related to disability and/or special health care needs focused on children, youth, and/or families.

An independent study can focus on leadership, policy, practice, or research that supports individuals with intellectual and developmental disabilities. For example, students could conduct a policy analysis, research, program evaluation, advocacy, training, or other systems change related activity (3 credits).

Track 2 (All Other Students)

Code	Title	Credits
Required Courses		
Select two of the following:		6-7
SW 812	Understanding Developmental Disabilities (Spring)	
EDUC 850	Introduction to Disability in Inclusive Schools and Communities (Fall)	
COMM 842	Autism Spectrum Disorders	
SW 897	Special Topics in Social Work and Social Welfare (Mental Health Aspects of IDD)	
Electives		
Select one of the following options:		6-8
Two electives [1]		
or		
One elective and one three credit hour independent study (SW 992) [2]		
Total Credits		**12-15**

1 Electives with a focus on Developmental Disabilities may be accepted upon approval from the Graduate Certificate Coordinator. This includes but not limited to HDFS 897, EDUC 856, OT 890, OT 862, SW 860, EDUC 850, SW 851, SW 813.

2 Related to disability and/or special health care needs focused on children, youth, and/or families.

An independent study can focus on leadership, policy, practice, or research that supports individuals with intellectual and developmental disabilities. For example, students could conduct a policy analysis, research, program evaluation, advocacy, training, or other systems change related activity (3 credits).

All coursework for the certificate must be completed within three years. Students who successfully complete the program will receive an official student certificate from the University of New Hampshire Graduate School.

Courses completed during the certificate program may be applied toward degree requirements upon the approval of the appropriate graduate program coordinator and the Graduate School. Tuition is equal to the rates for resident graduate degree students. Tuition for nonresident students will be 10 percent above the resident rate.

Social Work (Advanced Standing) (M.S.W.)

https://chhs.unh.edu/social-work/program/msw/social-work-advanced-standing

Description

Advanced Standing Program

The M.S.W. program considers advanced standing for exceptional students with undergraduate degrees from accredited baccalaureate social work programs. This program option is offered in Durham and online. Applicants must have graduated from the B.S.W. program within five years of matriculation into the M.S.W. program with a 3.2 cumulative GPA or a 3.3 Social Work major GPA. Advanced standing students complete required coursework including a 10-week summer practicum and seminar, which students must take prior to their advanced practice and field placement.

Requirements

MSW Program Advanced Standing (post B.S.W./B.S.S.W.) Courses

Complete a minimum of 35 credits.

Code	Title	Credits
Required Courses		
SW 840	Implications of Race, Culture, and Oppression for Social Work Practice	3
SW 900	Advanced Standing Practice and Field Seminar	3
SW 926	Social Welfare Policy II (unless completed in B.S.W./B.S.S.W., then an elective)	3
SW 930	Advanced General Practice III: Clinical Assessment and Intervention	3
SW 931	Advanced Generalist Practice IV: Community and Administrative Practice	3
SW 952	Human Behavior and the Social Environment III	3
SW 962	Data Analysis and Statistics	3
SW 965	Program and Practice Evaluation	3
SW 982	Field Internship III (seminar and concurrent internship)	4
SW 983	Field Internship IV (Seminar & Concurrent Internship)	4
One Elective Course		3
Total Credits		**35**

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 (M.S.W.)

https://chhs.unh.edu/social-work/program/msw/social-work

Description

The University of New Hampshire's M.S.W. program provides a quality educational experience that prepares graduates for Advanced Generalist practice consistent with the purposes of the social work profession. It concentrates on strengths and empowerment models that encourage individuals and families, and communities and organizations to realize their full potential.

Fields of Practice

MSW students will be able to select three electives in one or more of the following:

1. Health and mental health;
2. Addictions and substance abuse;
3. Children, youth, and families,
4. Disabilities; or a self-designed field of practice.

Program Options

The Durham Campus Program is our traditional model with classes held on campus. It takes two years to complete the full time program, with part time course of study of three and four years. Required first year courses are scheduled Monday-Wednesday leaving Thursdays and Fridays open for first year field internships. Second year courses are scheduled Wednesdays and Thursdays leaving Monday, Tuesday, and Friday for internships. The Durham program admits once a year in the fall.

The M.S.W Online Program allows students to earn their Master of Social Work degree online in 28 months. M.S.W online students are required to complete two field internships at a program or agency in their local community and work with Social Work Department field office to identify acceptable field sites. Field and Practice classes will have weekly synchronous online classes help on Monday or Wednesday evenings. The online program admits three times a year (fall, spring, summer). No campus visits are required at any time.

Advanced Standing is an option for eligible students who have graduated from an accredited B.S.W. program within five years. This option is available in Durham or online. Admission to this program is every summer for Durham and every fall for online.

Requirements

M.S.W. Degree Requirements

An M.S.W. candidate must complete 62 credit hours of 800- or 900-level courses including two, two-semester field internships, comprising a total of 1,240 hours in the field. Grades below the B level in a graded course or a "fail" in a credit/fail course are considered failing grades for the purposes of determining academic standing. Repeating a course does not remove the original failing grade from the record. Graduate students receiving failing grades in 9 or more credits, received either in three courses or in any combination of courses taken twice, will be dismissed from the M.S.W. program.

Although a significant portion of the curriculum is required, students will be able to complete three elective courses. At least one of these must be taken from among Department of Social Work course offerings.

Core MSW Program Advanced Generalist Courses

Code	Title	Credits
Core courses		
SW 820	Social Welfare Policy I	3
SW 830	Social Work Practice I	3
SW 831	Social Work Practice II: Practice in Small Groups and Community Organizations	3
SW 840	Implications of Race, Culture, and Oppression for Social Work Practice	3
SW 850	Human Behavior and the Social Environment I (HBSE I)	3
SW 851	Human Behavior and the Social Environment II (HBSE II)	3
SW 860	Research Methods in Social Work	3
SW 880	Field Internship I [1]	3
SW 881	Field Internship II [2]	3
SW 926	Social Welfare Policy II	3
SW 930	Advanced General Practice III: Clinical Assessment and Intervention	3
SW 931	Advanced Generalist Practice IV: Community and Administrative Practice	3
SW 952	Human Behavior and the Social Environment III	3
SW 962	Data Analysis and Statistics	3
SW 965	Program and Practice Evaluation	3
SW 982	Field Internship III [3]	4
SW 983	Field Internship IV [4]	4
Electives		
Select three 3-credit elective courses of social work (other graduate programs with permission):		9
SW 802	Aging and Society	
SW 803	Social Work and Spirituality	
SW 804	Adolescents with Emotional and Behavioral Challenges	
SW 805	Child and Adolescent Risks and Resiliency: Program, Policy and Practice	
SW #806	Social Action in the Dominican Republic	
SW 807	Child Maltreatment	
SW 808	Mental Health Aspects of Intellectual & Developmental Disabilities	
SW 809	First Responders	
SW 810	SW and the Digital Age	
SW 812	Understanding Developmental Disabilities	
SW 813	School Social Work	
SW #814	Introduction to Addiction: Assessment and Intervention	
SW 815	Affirming Practice with Lesbian, Gay, Bisexual, Transgender, Queer+ People	
SW 817	Understanding Suicide	
SW 818	SW & Creative Arts	
SW 957	Fund Development and Grantwriting	
SW 865	Adventure Therapy: Facilitation and Processing of the Experience	
SW 870	Intimate Partner Violence	
SW 897	Special Topics in Social Work and Social Welfare	
SW 974	Social Work Supervision	
SW 975	Theory and Practice of Family Therapy	
SW 979	Social Work and the Law	
Total Credits		**62**

1. Seminar and concurrent two-day/week internship/academic year
2. Seminar and two-day/week internship continued from SW 880 Field Internship I
3. Seminar and concurrent three-day/week internship/academic year
4. Seminar and three-day/week internship continued from SW 982 Field Internship III

Degree Plan

Durham Two Year Program

Course	Title	Credits
First Year		
Fall		
SW 820	Social Welfare Policy I	3
SW 830	Social Work Practice I	3
SW 840	Implications of Race, Culture, and Oppression for Social Work Practice	3
SW 850	Human Behavior and the Social Environment I	3
SW 880	Field Internship I	3
	Credits	**15**
Spring		
SW 831	Social Work Practice II: Practice in Small Groups and Community Organizations	3

SW 851	Human Behavior and the Social Environment II	3
SW 860	Research Methods in Social Work	3
SW 881	Field Internship II	3
SW 926	Social Welfare Policy II	3
	Credits	**15**
Second Year		
Fall		
SW 930	Advanced General Practice III: Clinical Assessment and Intervention	3
SW 952	Human Behavior and the Social Environment III	3
SW 962	Data Analysis and Statistics	3
SW 982	Field Internship III	4
Elective		3
	Credits	**16**
Spring		
SW 931	Advanced Generalist Practice IV: Community and Administrative Practice	3
SW 965	Program and Practice Evaluation	3
SW 983	Field Internship IV	4
Elective		3
Elective		3
	Credits	**16**
	Total Credits	**62**

Please refer to our MSW Handbook listed on our website for 3 year and 4 year Durham degree plan options.

Online MSW Degree Plan - Example below is Fall cohort course of study

Course	Title	Credits
First Year		
Fall		
Term 1		
SW 820	Social Welfare Policy I	3
SW 850	Human Behavior and the Social Environment I	3
Term 2		
SW 840	Implications of Race, Culture, and Oppression for Social Work Practice	3
SW 860	Research Methods in Social Work	3
	Credits	**12**
Spring		
Term 3		
SW 851	Human Behavior and the Social Environment II	3
SW 926	Social Welfare Policy II	3
Term 4		
SW 830	Social Work Practice I	3
SW 880	Field Internship I [1]	3
	Credits	**12**
Summer		
Elective		3
Continuation of SW 880: Field 1		
	Credits	**3**
Second Year		
Fall		
Term 1		
SW 831	Social Work Practice II: Practice in Small Groups and Community Organizations	3
SW 881	Field Internship II [2]	3
Term 2		
SW 952	Human Behavior and the Social Environment III	3
Continuation of SW 881: Field 2		
	Credits	**9**
Spring		
Term 3		
Elective		3
SW 962	Data Analysis and Statistics	3
Term 4		
SW 930	Advanced General Practice III: Clinical Assessment and Intervention	3
SW 982	Field Internship III [3]	4
	Credits	**13**
Summer		
SW 965	Program and Practice Evaluation	3
Continuation of SW 982: Field 3		
	Credits	**3**
Third Year		
Fall		
Term 1		
SW 931	Advanced Generalist Practice IV: Community and Administrative Practice	3
SW 983	Field Internship IV [4]	4
Term 2		
Elective		3
Continuation of SW 983: Field 4		
	Credits	**10**
	Total Credits	**62**

1. Goes through Terms 4 and 5
2. Goes through Terms 1 and 2
3. Going through Terms 4 and 5
4. Goes through Terms 1 and 2

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

The Accelerated Masters (also referred to as early entry) program allows you to take graduate credit course senior year and have greater access to MSW elective options. It also provides students with the option of completing graduate certificates, such as the Child Welfare or Substance Use Disorder Certificates.

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 and Juris Doctor Dual Degree (M.S.W./J.D.)

https://chhs.unh.edu/social-work/program/mswjd/social-work-juris-doctor-dual-degree

Description

Social Work and UNH School of Law

The Department of Social Work and the School of Law at the University of New Hampshire (UNH) also offer a dual degree resulting in the JD/M.S.W. In four years, students will be able to complete two graduate degrees, a master in social work (M.S.W.) and a Juris Doctor to prepare them for a career in law and social work.

Contact Information

For additional information regarding the social work/law dual degree course requirements, contact coordinator Sheryl Thompson (sheryl.thompson@unh.edu), or our admissions team at unh.socialwork@unh.edu.

Requirements

Social Work and Law JD/MSW Courses

JD Course Requirements

Code	Title	Credits
Social Work Required Courses		
SW 820	Social Welfare Policy I	3
SW 830	Social Work Practice I	3
SW 831	Social Work Practice II: Practice in Small Groups and Community Organizations	3
SW 840	Implications of Race, Culture, and Oppression for Social Work Practice	3
SW 850	Human Behavior and the Social Environment I (HBSE I)	3
SW 851	Human Behavior and the Social Environment II (HBSE II)	3
SW 860	Research Methods in Social Work	3
SW 880	Field Internship I [1]	3
SW 881	Field Internship II [2]	3
SW 926	Social Welfare Policy II	3
SW 930	Advanced General Practice III: Clinical Assessment and Intervention	3
SW 931	Advanced Generalist Practice IV: Community and Administrative Practice	3
SW 952	Human Behavior and the Social Environment III	3
SW 962	Data Analysis and Statistics	3
SW 965	Program and Practice Evaluation	3
SW 982	Field Internship III [3]	4
Capstone:		
SW 983	Field Internship IV [4]	4

1 Seminar and concurrent two-day/week internship/academic year
2 Seminar and two-day/week internship continued from SW 880 Field Internship I
3 Seminar and concurrent three-day/week internship/academic year
4 Seminar and three-day/week internship continued from SW 982 Field Internship III In Field IV (SW 983 Field Internship IV), students will complete an assignment that will highlight their ability to demonstrate all 9 social work competencies.

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 and Recreation Management & Policy Dual Degree (M.S.W./M.S.)

https://chhs.unh.edu/social-work/program/msmsw/social-work-recreation-management-policy-dual-degree

Description

Social Work and Recreation Management and Policy

Dual-degree Social Work and Recreation Management and Policy (RMP) students take classes simultaneously over the course of two-and-and-half years in both Social Work and RMP and complete a minimum of 80-83 credits for graduation. This includes two internships, one during their first year of study, and a second specialized block placement internship over the summer following the second year of study, which concentrates on the utilization and application of adventure therapy in an agency setting. This block placement internship may occur in New England or in other appropriate settings across the U.S. Students should

be prepared to travel to their internships if needed. Students are also required to complete a project focusing on a topic of their choice and supervised by faculty in RMP and Social Work.

Admission Requirements

Dual Degree applicants in Social Work and RMP must meet the requirements for admission in the MSW program and the MS in RMP-Recreation Administration. Applicants should check each program for their independent requirements which may be different; however, it is important to note that Dual Degree students are required for admission to have a minimum of 2 years of experience (post undergraduate) in the field of outdoor education, outdoor recreation, adventure education, and/or therapeutic recreation with evidence of considerable leadership time with individual and/or groups in outdoor settings, preferably with therapeutic populations. Applicants do not need to apply separately to each program but are instructed to apply online via the graduate school for the "MSW and MS-RMP Dual Degree" option. Applicants only need to provide one well-constructed double-spaced essay of 3-pages maximum (APA format). Please respond to the following questions:

1. Why are you seeking to earn an MS in the SW/RMP Dual Degree program?
2. How does your previous academic background or work experience contribute to the SW/RMP Dual Degree program as a graduate student? Please note specific personal, academic, organizational, volunteer, and/or paid work experiences.
3. What are your future career goals? What do you plan to do after completing the SW/RMP Dual Degree program? How will the SW/RMP Dual Degree help you obtain your career goals?
4. Briefly discuss a current social justice issue that impacts your desired professional goals. How will the SW/RMP Dual Degree enhance your abilities to affect change amongst clients whom you will serve?

Minimum GPA Required: 3.0

No GREs required for admission.

For additional information regarding the Social Work/RMP Dual Degree admission requirements, contact Dr. Anita Tucker in Social Work or Dr. Michael Ferguson in RMP.

Requirements

Social Work and Recreation Management and Policy Program MSW/MS Courses

Code	Title	Credits
SW 820	Social Welfare Policy I	3
SW 824	Positive Youth Development Through Sport Social Work and Recreation (Or RMP 998 Theories of YD)	3
SW 830	Social Work Practice I	3
SW 831	Social Work Practice II: Practice in Small Groups and Community Organizations	3
SW 840	Implications of Race, Culture, and Oppression for Social Work Practice	3
SW 850	Human Behavior and the Social Environment I (HBSE I)	3
SW 851	Human Behavior and the Social Environment II (HBSE II)	3
SW 865	Adventure Therapy: Facilitation and Processing of the Experience	3
SW 880	Field Internship I (seminar and concurrent twoday/week internship/academic year)	3
SW 881	Field Internship II	3
SW 926	Social Welfare Policy II	3
SW 930	Advanced General Practice III: Clinical Assessment and Intervention	3
SW 931	Advanced Generalist Practice IV: Community and Administrative Practice	3
SW 952	Human Behavior and the Social Environment III	3
SW 962	Data Analysis and Statistics	3
SW 982	Field Internship III	4
SW 983	Field Internship IV	4
SW 897	Special Topics in Social Work and Social Welfare (Advanced Topics in Social Work)	3
RMP 800	Concepts of Recreation and Leisure	3
RMP 806	Recreation Administration and Organizational Behavior	3
RMP 820	Adaptive Sport Facilitation for Recreation Therapy and Related Professions	3
RMP 876	Human Dimensions of Natural Environments	3
RMP 992	Research Methods in Recreation Management and Policy	3
RMP 995	Capstone Seminar	3
Select Two RMP Electives		**6**
RMP 811	Recreation Resource Management	
RMP 872	Law and Public Policy in Leisure Services	
RMP 840	Therapeutic Recreation Service Delivery in Community Settings	
RMP 912	Non-Profit Administration and Leadership	
RMP 924	Fund Development and Grantwriting	
RMP 963	Graduate Field Practicum	
RMP 970	Teaching Practicum	
RMP 980	Independent Study	
RMP 998	Special Topics	
Total Credits		**80**

Student Learning Outcomes

Social Work (M.S.W) 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.

RMP - Recreation Administration (M.S.) Student Learning Outcomes:

- Demonstrates mastery of major theories, approaches, concepts, and both current and classical theoretical findings within their selected field of study.
- Compiles and critiques current peer-reviewed research, practice of industry standards, and theoretical foundations to produce a paper or project of publishable quality that enhances existing knowledge or creates new knowledge in a specific area within the option.
- Demonstrates proficiency and mastery of specific skills within the profession, which is grounded in evidence-based practice.
- Displays professionally appropriate behaviors, ethical standards, sensitivity, compassion, tolerance of individual differences, and demonstrates the ability to work in a diverse and interprofessional work environment.

Substance Use Disorders (Graduate Certificate)

https://chhs.unh.edu/social-work/program/certificate/substance-use-disorders-graduate-certificate

Description

About the Program

The Substance Use Disorders Graduate Certificate provides students with general and specific knowledge as well as skill building towards the development of this important practice specialty. Areas of study include: intake, assessment, treatment planning, case management, referral, crisis intervention, and the counseling of individuals, groups and families.

For additional information regarding the substance use disorder course requirements, contact our admissions team at unh.socialwork@unh.edu.

Who Should Apply?

- Graduate students attending the University of New Hampshire Durham, Manchester, or Online.
- Students from other disciplines and other universities, and non-matriculated students.
- Students placed in a substance use disorders treatment program for their internship or practicum, and needing further knowledge and skills.
- Individuals pursuing continuing education units (CEU) for a variety of state licenses.
- Social service workers from substance use disorder and co-occurring disorder treatment agencies, hospitals, schools, judicial/correctional facilities, military/veteran programs.
- Individuals interested in increasing their knowledge in substance use disorders and developing specialized practice skills.

Contact Information

For additional information regarding the substance use disorder course requirements, contact our Substance Use Disorder certificate coordinator, Meredith Young. meredith.young@unh.edu

Requirements

Certificate Requirements

The Substance Use Disorders Graduate Certificate consists of 12 credit hours acquired through two required courses covering assessment, treatment and system theory and strengths perspectives of addiction and two other electives listed below.

Students are required to complete the following social work courses in no particular order.

Code	Title	Credits
SW 816	Addiction Assessment	3
SW 819	Addiction Treatment	3
Choose from two pre-approved electives below:		**6**
SW 817	Understanding Suicide	
SW 860	Research Methods in Social Work [1]	
SW 870	Intimate Partner Violence	
SW 871	Trauma-Informed Practice in School Settings	
SW 897	Special Topics in Social Work and Social Welfare (Leadership in Child Welfare)	
SW 897	Special Topics in Social Work and Social Welfare (Social Work and the Military)	
SW 897	Special Topics in Social Work and Social Welfare (Forensic Mental Health)	
Total Credits		**12**

[1] Please note that if a student already completed SW 860 Research Methods in Social Work, that student will be allowed to substitute SW 965 Program and Practice Evaluation. For students taking a Research Methods course, their completion will be tracked through the Certificate Designation Form.

* Other substance use disorder related electives may be considered with the approval from the certificate coordinator.

Sociology (SOC)

Degrees Offered: Ph.D., M.A.

This program is offered in Durham.

The Department of Sociology offers M.A. and Ph.D. degrees in sociology. The master's degree program emphasizes theory and methodology. Students in the doctoral program are expected to select one major area for intensive study and examination. There are five major substantive areas for possible specialization: crime and conflict, family, social stratification, health and illness, and community and environment. Students may pursue specialties within or across the major areas of specialization or propose to the graduate committee other major areas of specialization that fall within the faculty's competence.

Admission Requirements

In addition to meeting the general Graduate School requirements, applicants must submit current scores (within five years) from the general test of the Graduate Record Examination (GRE). All international applicants must take the TOEFL or IELTS exam.

Undergraduate majors in other fields may be admitted. However, if the student's undergraduate work has not included introductory courses in sociological theory, research methods, and statistics, these courses must be taken, or equivalent knowledge demonstrated, in addition to the requirements outlined above.

All students entering the program must complete the M.A. before admission to the Ph.D. program. The department welcomes applicants who plan to continue for the Ph.D. as well as students planning for the M.A. only.

https://cola.unh.edu/sociology

Programs

- Sociology (Ph.D.) (p. 272)
- Sociology (M.A.) (p. 272)

Faculty

See https://cola.unh.edu/sociology/people for faculty.

Sociology (Ph.D.)

https://cola.unh.edu/sociology/program/phd/sociology

Description

Our department has strengths in crime and conflict, sociology of the family, social stratification, health and illness, and community and the environment. Students in the doctoral program in sociology may select one of these areas of specialization for intensive study, or they may pursue a different area if two sociology faculty have appropriate expertise.

Requirements

Degree Requirements

Students must complete a minimum of three years in residence and take a minimum of sixteen courses in sociology (at least eight as seminars) other than dissertation research.

Code	Title	Credits
SOC 900	Pro-seminar	2
SOC 911	Sociological Theory I	4
SOC 901	Sociological Methods I: Intermediate Social Statistics	4
SOC 902	Sociological Methods II: Research Design	4
SOC 903	Sociological Methods III: Advanced Social Statistics	4
SOC 904	Sociological Methods IV: Qualitative and Historical Research Methods	4
SOC 905	Research Practicum	4
Select three courses in a major area		
Select six electives		

Students must pass a written examination in the major area of sociological specialization and write and defend the doctoral dissertation.

Student Learning Outcomes

After completing the Ph.D. program, students should be able to:

- Transition from knowledge consumers to knowledge producers.
- Interpret and evaluate quantitative and qualitative data.
- Synthesize primary theoretical debates in the discipline of sociology.
- Conduct original research using advanced quantitative analyses.
- Demonstrate depth of knowledge in a substantive field in sociology.
- Design and conduct sociological research that makes an original contribution to the discipline.
- Write a professional publication that communicates research results.
- Deliver effective oral presentations about their research.

Sociology (M.A.)

https://cola.unh.edu/sociology/program/ma/sociology

Description

The master's program emphasizes Sociological theory and methods. Some students earn the M.A. to prepare for positions as applied sociologists. Their work often includes field experience. Others view the M.A. degree as preparation for Ph.D. studies. An M.A. thesis or publishable paper describes results from the student's own original research.

Requirements

Degree Requirements

Completion of the degree requires a **minimum of 32 graduate credits**. Students must complete at least 26 credit hours (seven courses) of graduate-level coursework in sociology. In addition, students must complete 6-10 credits of Master's Thesis work.

Code	Title	Credits
SOC 900	Pro-seminar	2
SOC 901	Sociological Methods I: Intermediate Social Statistics	4
SOC 902	Sociological Methods II: Research Design	4
SOC 911	Sociological Theory I	4
Select three graduate seminars		
SOC 899	Master's Thesis	6-10

Successful completion of the thesis constitutes the capstone experience for the M.A. degree.

Student Learning Outcomes

- Outcome 1: Students will learn to interpret quantitative and qualitative data in a value-neutral way.
- Outcome 2: Students will learn to run advanced quantitative analyses.
- Outcome 3: Students will learn to communicate effectively in writing from a sociological.
- Outcome 4: Students will learn to produce original sociological research.
- Outcome 5: Students will learn to deliver effective oral presentations about their sociological research.

Spanish (SPAN)

Degree Offered: M.A., Graduate Certificate

This program is offered in Durham.

The program in Spanish in the Department of Languages, Literatures, and Cultures offers a Master of Arts degree in Spanish with courses in the following areas: Topics in Second Language Acquisition, Pedagogy and Methodology# Topics in Hispanic Literature and Cultural Studies# and Topics in Hispanic Linguistics and Cultural Studies. The program also supports work in interdisciplinary Hispanic studies and offers a Graduate Certificate in Spanish.

Admission Requirements

Applicants shall have received a bachelor's degree from an accredited institution with an undergraduate major in Spanish or its equivalent. The personal statement for the graduate application should be written in Spanish. Two of the three letters of recommendation should come from current or former professors. Graduate Record Examination (GRE) scores are not required.

Financial Aid

Applicants whose permanent residence is in Maine or Vermont are eligible for the New England Regional Program for which tuition is assessed at the in–state New Hampshire rate plus 50%.

You may wish to visit the financial aid section of the Graduate School website for more information about graduate assistantships and other types of aid available to graduate students.

https://cola.unh.edu/languages-literatures-cultures/program/ma/spanish

Programs

- Spanish (M.A.) (p. 273)
- Spanish (Graduate Certificate) (p. 274)

Faculty

See https://cola.unh.edu/languages-literatures-cultures/faculty-staff-directory for faculty.

Spanish (M.A.)

https://cola.unh.edu/languages-literatures-cultures/program/ma/spanish

Description

The Program in Spanish in the Department of Languages, Literatures, and Cultures offers a Master of Arts degree in Spanish with courses in the following areas: Second Language Acquisition, Pedagogy and Methodology; Hispanic Literature and Cultural Studies; and Hispanic Linguistics and Cultural Studies. The program also supports work in interdisciplinary Hispanic studies.

Requirements

Degree Requirements

To obtain the degree, the candidate must complete a minimum of **30 credits**. To satisfy the course requirements, the candidate must successfully complete ten graduate courses, eight of which should be from the offerings below. Two of the ten courses can be taken in allied fields approved by the department.

Code	Title	Credits
Choose 8 courses from the following:		
SPAN 890	Topics in Second Language Acquisition/Pedagogy/Methodology	3
LLC 891	Methods of Foreign Language Teaching	3
SPAN 897	Topics in Hispanic Literature and Cultural Studies	3
SPAN 898	Topics in Hispanic Linguistics and Cultural Studies	3
SPAN 995	Independent Study	1-3
Final Project [1]		
Non-thesis option		
Present seminar paper or project at conference		
Thesis option		
SPAN #899	Master's Thesis (6 credits total)	

[1] The MA in Spanish offers two options to fulfill the concluding experience of the program:
1) Non-thesis option (30 credits, ten classes). Students who select this option will present a seminar paper or project at a local, regional, or national conference. Presentation at the UNH Graduate Research Conference is acceptable to fulfill this requirement.
2) Thesis option (30 credits, eight classes plus thesis). Enrollment in SPAN #899 Master's Thesis (6 credits) counts for two of the ten required courses for the M.A. The thesis option involves the preparation of a Master's Thesis directed by a faculty advisor. This research track is specifically designed for those students interested in pursuing a Ph.D. in Spanish or in a related field. Students must follow the format requirements and submission procedures as noted in the Graduate School's Thesis Manual.

Examples of Past Seminar Titles:

- Econovels of Central America
- Contemporary Spanish Literature
- Second Language Acquisition: Technology
- El Camino de Santiago
- Cultures of Spain: Basque, Catalan, and Galician
- Baroque Literature: Sor Juana
- Latin American Lit. & the Border
- Spanish Phonetics & Dialectology
- Latin American Afro Caribbean Lit.
- The Baroque: Siglo de Oro
- Structure & Applied Linguistics
- Baroque to Surrealism & Beyond
- Spanish Sociolinguistics
- Literatura comparada
- Literatura y cultura argentinas
- La nueva mirada del cine femenino español
- Mood, Tense & Pronouns: Structure, Meanings, & Variation in Spanish Syntax
- Literary & Cultural Trends of Contemporary Central America
- Digital Media in Second Language Acquisition
- The World of Salvador Dalí
- Hispanic Literature and Culture in the Digital Age

Student Learning Outcomes

- Linguistic proficiency Students will be able to demonstrate a minimum of an Advanced-Mid level of proficiency (as defined in ACTFL Proficiency Guidelines) in the target language in speaking, writing, listening and reading.
- Students can express themselves fully on a variety of topics related to home/family; social/community life; school/academic life; current events/issues of public interest; and employment/professional life.
- Students can deliver organized and detailed oral presentations and produce well-organized and coherent written papers on a wide variety of topics, but particularly around linguistics, literary, and cultural studies.
- Students have well-developed interpretive skills, both in listening and reading. They are able to understand narrative, descriptive, and argumentative texts, identify main points and supporting details, and understand variations of register, dialect, tone and style.
- Intercultural and transcultural competence In addition to being able to communicate in the language, students will be able to interact with an awareness of and sensitivity to the perspectives of others.

- Students will have knowledge of and be able to think critically about cultural differences, and the uniqueness of other cultures and peoples.
- By the time they complete the M.A., students will be able to: Recognize and describe the major historical, social, economic, and political forces that shape society in the various target cultures that they have directly studies, with a broader base of knowledge in one or more area that was the focus of their thesis.
- Analyze and critique cultural and social products of the target culture(s), such as film, literature, art, popular culture, media, etc. within their context, including determining appropriate theoretical approach or critical lens.
- Articulate the value of cultural diversity and locate the place of the self as an individual culturally situated within the global context of the twenty-first century.
- Interrogate the validity of their own cultural beliefs, behaviors and norms, by contrasting and comparing them with those of the target culture.

Spanish (Graduate Certificate)

https://cola.unh.edu/languages-literatures-cultures/program/certificate/spanish-graduate

Description

Through advanced study of Hispanic languages, literatures, and cultures, the Graduate Certificate in Spanish strives to expose students to various forms of authentic cultural production from numerous regions of the Spanish-speaking world, including the United States. It is designed to provide teachers, professionals, and graduate students from other disciplines with additional language training in Spanish as well as advanced analytical skills in the fields of literature, linguistics, and cultural studies. Coursework is offered in face-to-face, online, and hybrid classroom environments in the following areas: Second Language Acquisition, Pedagogy and Methodology; Hispanic Literature and Cultural Studies; and Hispanic Linguistics and Cultural Studies. The program also supports work in interdisciplinary Hispanic studies.

Program goals include

- Improving students' proficiency in oral and written Spanish.
- Fostering skills required to analyze linguistic, literary, and cultural texts and objects produced in the Hispanic world. The acquisition and mastery of these skills is the core of the Graduate Certificate in Spanish; whereas the specific material studied varies from course to course, students will develop linguistic (interpretive reading and listening, presentational writing and speaking), cultural (intercultural competence), and analytical (textual analysis) skills that will complement their primary programs of study.
- Promoting cultural understanding and awareness of regional, national and international Hispanic-language communities.

Admissions Requirements

Students applying for the Graduate Certificate in Spanish must have a bachelor's degree from an accredited institution with a minimum grade point average of 3.0 (on a 4.0 scale). If the B.A./B.S. degree did not include a major or concentration in Spanish, students must have completed advanced-level conversation, composition or advanced language course(s), or equivalent. Study abroad in a Spanish-speaking country is highly recommended. Degree and course equivalency is determined on a case-by-case basis, in consultation with the Graduate Coordinator (who serves as the administrator for the Certificate Program).

The Graduate Certificate application consists of: 1) An online application for admission (available through the UNH Graduate School website; 2) Undergraduate transcripts; 3) Two letters of recommendation are required and may come from current or former professors or colleagues; 4) Graduate Record Examination (GRE) scores are not required.

Requirements

Program Requirements

Completion of the graduate certificate requires five three-credit courses in Spanish, organized in logical manner to provide knowledge and expertise relevant to a specific aspect of professional and/or personal development. These five courses may include any combination of online, hybrid, or face-to-face classroom environments. Only courses completed with a grade of B- or higher may be used to fulfill certificate requirements. A student who receives more than one grade below B- will be required to withdraw from the certificate program. All course work for the certificate must be completed within 3 years from the date of enrollment in the program after admission.

Program Courses

The graduate course offerings in Spanish are, with the exception of the two pedagogy courses (SPAN 890 and LLC 891), always special topics classes. These classes are not occasionally offered 'extras', but rather the core of the program. The flexibility of the specific topics allow faculty to teach classes closely related to their research interests, while still fitting within several core areas, as indicated by the letters/topics specified in the catalog descriptions. For SPAN 897, the core areas are: Spanish literature, film, and cultural studies; Latin American literature, film, and cultural studies; and U.S. Latino literature, film, and cultural studies. For SPAN 898, these core areas are: structures of the Spanish language; variation of the Spanish language; and history of the Spanish language.

Code	Title	Credits
SPAN 890	Topics in Second Language Acquisition/Pedagogy/Methodology	
SPAN 897	Topics in Hispanic Literature and Cultural Studies	
SPAN 898	Topics in Hispanic Linguistics and Cultural Studies	
LLC 891	Methods of Foreign Language Teaching	

Systems Design (ENGR)

Degree Offered: Ph.D

This program is offered in Durham.

The systems design doctoral degree is an interdepartmental program that addresses contemporary engineering and scientific technical problems that can be solved only through the cooperation of a variety of disciplines. Students in systems design can elect either one of two professional directions. The first develops professionals with the technical expertise of a Ph.D. and with the ability to work with and direct groups of people working on large-scale technical projects. The second direction develops engineers with capabilities in the theory and analysis of large-scale complex systems. Concentration in an area of specific individual interest is combined with participation in a larger interdisciplinary project.

Admission Requirements

Qualified students with bachelor's or master's degrees in engineering, mathematics, or the physical sciences are eligible for admission to the program. Applicants must submit current scores (within five years) from the general test of the Graduate Record Examination (GRE). To be admitted, students must present evidence that they have sufficient background in the area in which they propose to specialize. They must also find a College of Engineering and Physical Sciences (CEPS) faculty member to serve as their adviser.

https://ceps.unh.edu/mechanical-engineering/program/phd/systems-engineering

Programs

- Systems Design (Ph.D.) (p. 275)

Faculty

See https://ceps.unh.edu/directory/all for faculty.

Systems Design (Ph.D.)

https://ceps.unh.edu/mechanical-engineering/program/phd/systems-engineering

Description

The systems design doctoral degree is an interdepartmental program that addresses contemporary engineering and scientific problems that can be solved only through the cooperation of a variety of disciplines. Students in systems design can elect one of two professional directions. The first develops professionals with the technical expertise of a Ph.D. and with the ability to work with and direct groups of people working on large-scale technical projects. The second direction develops engineers with capabilities in the theory and analysis of large-scale complex systems. Concentration in an area of specific individual interest is combined with participation in a larger interdisciplinary project.

Requirements

Degree Requirements

Following entrance into the program, a guidance committee is appointed for the student by the dean of the Graduate School upon recommendation of the student's area coordinator. This committee assists the student in outlining a program and may specify individual coursework requirements in addition to those required by the area of specialization. The committee also conducts an annual in-depth review of each student's progress and, following substantial completion of a student's coursework, administers the qualifying examination. This committee is also responsible for administering the language examination and/or research-tool proficiency requirements. Coursework and language requirements should normally be completed by the end of the second year of full--time graduate study and must be completed before the student can be advanced to candidacy. Typically, at least 13 courses beyond the Bachelor of Science degree are required.

Upon the successful completion of the qualifying examination and other proficiency requirements, the student is advanced to candidacy and, upon the recommendation of the student's area coordinator, a doctoral committee is appointed by the dean of the Graduate School. The doctoral committee conducts an annual review of the student's progress, supervises, and approves the doctoral dissertation, and administers the final dissertation defense.

To obtain a Ph.D. degree, a student must meet all of the general requirements as stated under academic regulations and degree requirements of the Graduate School. Students are normally expected to take coursework equivalent to two full-time academic years beyond the baccalaureate and to complete a dissertation on original technical research that will require at least one additional year of full--time study.

Student Learning Outcomes

- A deep understanding of at least one core area within CEPS.
- A broader understanding of at least 1 other area of CEPS (within the same department or another department) or another college that is/are different from the core area of research and that is/are necessary to complete the student's multi-disciplinary research.
- Ability to think critically and creatively in defining research questions and to outline strategies of inquiry.
- Ability to combine the knowledge and skills across multiple disciplines to solve a complex and/or large-scale problem.
- Ability to document research outcomes comprehensively for publication.
- Ability to communicate research results to scientific audience in conferences.
- Ability to work collaboratively with other peers.

Women's and Gender Studies

Program Offered: Graduate Certificate

This program is offered in Durham.

The Graduate Certificate in Feminist Studies is intended to serve the needs of both students who are matriculated in a graduate program and non-degree students who are interested in developing specific knowledge in the areas of feminist theory, critical women's, gender, and sexuality studies as well as feminist methodologies. There are three specific audiences:

- *Current and future UNH graduate students* from a variety of M.A. and Ph.D. programs who would like to connect their area of study to feminist theory and critical women's, sexuality, and gender studies, gain specific knowledge and skills in Feminist Studies and graduate with an additional, demonstrable credential;
- *UNH graduates* with bachelor's degrees, who may or may not have majored or minored in Women's Studies, whose career paths have led them to seek more knowledge and skills in feminist theory and critical women's, gender, and sexuality studies in order to gain a deeper understanding of the issues involved in their current job and/or to pursue advancement in their field;
- *Members of the community* or residents of the greater Seacoast region who hold a bachelor's or graduate degree who are interested in connecting their previous areas of study or current intellectual or political interests with the aspects of feminist theory and critical

women's, gender, and sexuality studies by pursuing additional knowledge and skills in these areas.

Please visit the the Graduate School Website for detailed instructions about applying for the graduate certificate program.

https://cola.unh.edu/womens-gender-studies

Programs

- Feminist Studies (Graduate Certificate) (p. 276)

Faculty

Please see https://cola.unh.edu/womens-gender-studies/faculty-staff-directory for faculty.

Feminist Studies (Graduate Certificate)

https://cola.unh.edu/womens-gender-studies/program/certificate/feminist-studies

Description

The Graduate Certificate in Feminist Studies at the University of New Hampshire is designed to provide students with an opportunity to pursue feminist scholarship within a structured, interdisciplinary curriculum. The Graduate Certificate in Feminist Studies can be earned by students enrolled in a Graduate Degree Program, or as a stand-alone certificate for those who have completed their Bachelor's Degree from an accredited institution.

The Graduate Certificate in Feminist Studies enables students to develop specific skills for use in their own personal and professional development by providing tools such as feminist theoretical frameworks and an understanding of contemporary feminist activism. The Feminist Studies Graduate Certificate also enables students to conduct research in the areas of critical Women's, Gender, and Sexuality Studies and centrally relies on analyses from such fields as critical race, ethnicity, nationality, class, age, religion, and disability studies.

Faculty in the Department of Women's and Gender Studies will act as advisors to students pursuing the certificate, helping to plan and facilitate an individualized course of study that fulfills student's academic, professional, and research needs. The certificate provides students a concentrated inquiry in advanced Feminist Studies that is supplemental to their disciplinary training, thereby qualifying them for positions requiring such expertise. In addition, it is an added component to graduate studies that informs and enriches careers, activism, and professional networks.

Requirements

This graduate certificate program requires 4 courses and at least **12** total credits.

Code	Title	Credits
Required Courses		
WS 832	Feminist Theory	4
WS 898	Colloquium in Feminist Studies	4

Code	Title	Credits
Elective Courses [1]		
Select two courses (4 credits total):		4
EDUC 950	Understanding Culture in Research on Learning and Development	4
EDUC 818	Critical Social Justice in and Beyond Education	4
ENGL 897	Special Studies in Literature	4
ENGL 914	Special Topics in Composition and Rhetoric	4
ENGL 922	Advanced Topics in Literacy Instruction	1-6
ENGL 935	Seminar. Studies in American Literature	4
ENGL 974	Seminar. Studies in 20th Century British Literature	4
HDFS 857	Race, Class, Gender, and Families	4
HIST 865	Themes in Women's History	4
HIST 897	Colloquium (Queer Theory)	4
MGT 720	Topics in Management II	4
PPOL 902	Strategy and Practice of Public Policy	3
SPAN 897	Topics in Hispanic Literature and Cultural Studies	3
SPAN 898	Topics in Hispanic Linguistics and Cultural Studies	3

[1] Students will be advised by the certificate program director and other participating faculty members about which electives might be most appropriate and consistent with their interests and career goals. The list of approved electives affords students opportunities to focus on particular areas of feminist or to seek the acquire additional methodological skills and disciplinary approaches in areas such as policy analysis or economics. Other electives offered by the University of New Hampshire graduate programs may be approved by the Feminist Studies certificate program director.

Course Descriptions

A

- Accounting and Finance (ACFI) (p. 279)
- Administration (ADMN) (p. 281)
- Agriculture, Nutrition and Food Systems (ANFS) (p. 285)
- Analytics (DATA) (p. 286)
- Animal Sciences (ANSC) (p. 287)
- Applied Studies (APST) CPSO (p. 288)
- Arts/History & Studio (ARTS) (p. 288)

B

- Biochemistry (BCHM) (p. 288)
- Bioengineering (BENG) (p. 289)
- Biology (BIOL) (p. 289)
- Biotechnology (BIOT) (p. 291)

C

- Chemical Engineering & Bioengineering (CHBE) (p. 294)
- Chemistry (CHEM) (p. 295)
- Civil and Environmental Engineering (CEE) (p. 297)
- Communication (COM) CPSO (p. 302)
- Communication Sciences & Disorders (COMM) (p. 302)
- Computer Science (CS) (p. 304)

Z

Accounting and Finance (ACFI)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ACFI 801 - Corporate Finance
Credits: 3
This course provides the foundation of corporate finance. Topics include investment criteria, capital structure, valuation, mergers and acquisitions, real options, and payout policy.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 802 - Investments
Credits: 3
This course provides an overview of several important topics in investments: securities and markets, asset pricing theory, stock analysis and valuation, fixed income securities, stock options, and applied portfolio management.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 803 - International Financial Management
Credits: 3
This course explores the financial management of firms operating in a global environment. Topics typically include foreign exchange markets, the financing of international trade, multinational tax management, derivatives used to mitigate international exposure, and the financial impact of foreign currency usage.
Mutual Exclusion: No credit for students who have taken ADMN 846.
Grade Mode: Letter Grading

ACFI 804 - Derivative Securities and Markets
Credits: 3
This course explores the basic types of derivative instruments (forwards, futures, options, swaps) and their use in the context of financial risk management by investors, firms and financial institutions. Topics include the mechanics of derivatives markets, practical and theoretical aspects of hedging and speculating using derivatives, and methodologies for pricing derivatives.
Prerequisite(s): ACFI 801 with a minimum grade of D- and ACFI 802 with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 805 - Financial Institutions
Credits: 3
This course explores the financial institutions that create credit and liquidity for businesses and other borrowers, the financial instruments that facilitate credit and liquidity creation, and the markets in which those instruments are sold or traded. Special emphasis is paid to commercial banks.
Prerequisite(s): ACFI 801 with a minimum grade of D- and ACFI 802 with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 806 - Financial Modeling and Analytics
Credits: 3
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.
Prerequisite(s): ACFI 801 (may be taken concurrently) with a minimum grade of D- and ACFI 802 (may be taken concurrently) with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 807 - Equity Analysis and Firm Valuation
Credits: 3
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. This course is not recommended if you have already taken the undergraduate FIN 707 at UNH.
Prerequisite(s): ACFI 801 with a minimum grade of B- and ACFI 802 with a minimum grade of B- and ACFI 872 with a minimum grade of B-.
Repeat Rule: May be repeated for a maximum of 6 credits.
Equivalent(s): ADMN 838
Grade Mode: Letter Grading

ACFI 809 - Mortgage Banking and Fixed Income Securities
Credits: 3
This course focuses on bonds and the bond market. While the cash flows of bonds are specifies, 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 explores the skills needed to manage fixed income portfolios considering both client specific objectives and the market environment.
Prerequisite(s): ACFI 801 with a minimum grade of D- and ACFI 802 with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 810 - Big Data in Finance
Credits: 3
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.
Prerequisite(s): ACFI 801 with a minimum grade of D- and ACFI 802 with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 811 - Investment Banking
Credits: 3
This course provides an introduction to investment banking, focusing on the strategic considerations and financial analysis that are utilized when performing research related to investment banking activities. Specific topics typically include valuation, deal structuring, initial public offerings (IPOs), mergers and acquisitions (M&A), and leveraged buyouts (LBOs).
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 812 - Alternative Investments
Credits: 3
This course explores non-traditional investments, such as hedge funds, private equity and venture capital, real estate, commodities, and currency. Topics include an overview of the investment choices, risks and returns to the different asset classes, and investment selection. Students will also evaluate business plans, funds, and fund managers.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 813 - Hedge Fund Analytics
Credits: 3
This course is highly quantitative and focuses on the analytical tools either used by hedge fund manages or used to evaluate hedge fun performance. Hedge fund strategies and institutional issues, such as hedge fund organization, objectives, and styles, are covered.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 820 - Corporate Taxation
Credits: 3
Provides coverage of advanced topics from a strategic viewpoint and an understanding of the history and development of taxation, the role taxes play in financial and managerial decisions, and how taxes motivate people and institutions. The major tax issues inherent in business and financial transactions and their consequences are also explored.
Grade Mode: Letter Grading

ACFI 825 - Ethics and Non-Profit Accounting
Credits: 3
This course aims to: (1) increase students understanding of, and sensitivity to, ethical issues in accounting and (2) provide a foundation for the conceptual and practical issues surrounding accounting for not-for-profit entities. Ethics topics include:ethical reasoning and cognitive processes, business ethics and corporate governance, ethics in accounting judgments and decisions, and legal/regulatory/professional responsibilities of accountants. Not-for-profit accounting topics include: planning, budgeting, accounting, and internal and external financial reporting for not-for-profit entities.
Equivalent(s): ACFI 897
Grade Mode: Letter Grading

ACFI 830 - Advanced Auditing
Credits: 3
This course is designed to establish an advanced competence in auditing theory and practice. Specifically, students will gain an in-depth understanding of current academic auditing research and the philosophy of strategic-systems auditing through readings, presentations, case studies, and a service learning project with a local non-profit organization.
Grade Mode: Letter Grading

ACFI 835 - Governmental Accounting
Credits: 3
The objective of this course is to provide a foundation for the conceptual and practical issues surrounding accounting for governmental entities. Topics include: planning, budgeting, accounting, and internal and external financial reporting for government organizations.
Equivalent(s): ACFI 895
Grade Mode: Letter Grading

ACFI 840 - Forensic Acctg & Fraud Exam
Credits: 3
This course builds on audit coursework, but is not limited to an audit perspective. It covers the major schemes used to defraud organizations and individuals. Students develop skills in the areas of fraud protection, detection, analysis, and some skills relating to investigations.
Grade Mode: Letter Grading

ACFI 844 - Topics in Advanced Accounting
Credits: 3
Theory and practice of accounting for corporate acquisitions and mergers and the preparation and presentation of consolidated financial statements. Other topics include multinational consolidations, interim reporting and partnership accounting.
Grade Mode: Letter Grading

ACFI 850 - Accounting Theory and Research
Credits: 3
The objective of this course is to study the role of accounting information both in a decision-making and in a performance-evaluation context. This objective will be achieved by studying various accounting theories and the role that research has played in developing and testing those theories.
Grade Mode: Letter Grading

ACFI 860 - Advanced Business Law
Credits: 3
Focuses on legal issues such as the formation, management, and operation of corporations, and partnerships, and rights and liabilities of shareholders and partners; as well as an analysis of securities regulations. Also covers the due process and equal protection provisions of the Constitution as they relate to business activities. Includes an in depth analysis of the Uniform Commercial Code such as sales, secured transactions, and negotiable instruments. Real and personal property issues are also explored.
Grade Mode: Letter Grading

ACFI 870 - Programming in Finance with Quantitative Applications
Credits: 3
This course provides students with tools necessary to manipulate, analyze, and interpret financial data. Programming languages covered may include C++, Python, R, SAS, and Stata. Quantitative applications involving data from Bloomberg, CRSP, and Compustat are incorporated into the material.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 871 - Financial Theory
Credits: 3
This course provides a rigorous overview of modern financial analysis. Topics include valuation, risk analysis, corporate investment decisions, and security analysis and investment management.
Prerequisite(s): ACFI 801 with a minimum grade of D- and ACFI 802 with a minimum grade of D- and ACFI 870 (may be taken concurrently) with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 872 - Corporate Financial Reporting
Credits: 3
This course covers the preparation and analysis of financial statements. It focuses on the measuring and reporting of corporate performance for investment decisions, stock valuation, bankers' loan risk assessment, and evaluations of employee performance. Emphasizes the required interdisciplinary understanding of business. Concepts from finance and economics (e.g., cash flow discounting, risk, valuation, and criteria for choosing among alternative investments) place accounting in the context of the business enterprise.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 873 - Cases in Finance
Credits: 3
This course is an application of financial knowledge to case studies. A number of Harvard business cases will be analyzed and discussed in detail, including buy vs. rent decisions, corporate governance, weighted average cost of capital calculations and merger and acquisition strategies.
Prerequisite(s): ACFI 801 (may be taken concurrently) with a minimum grade of D- and ACFI 802 (may be taken concurrently) with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 874 - Finance Experience
Credits: 3
This course enhances student knowledge regarding real-life applications of finance concepts, and includes activities such as: Bloomberg Terminal trainings, executive guest speaker talks, and career opportunities in the field. Presentation skills and networking abilities are emphasized.
Prerequisite(s): ACFI 801 (may be taken concurrently) with a minimum grade of D- and ACFI 802 (may be taken concurrently) with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 890 - Accounting Information Systems
Credits: 3
Accounting information systems and the use of computers for decision making with emphasis on sources and types of information and the use of analytical tools in solving accounting management problems.
Grade Mode: Letter Grading

ACFI 892 - Independent Study
Credits: 1-6
Projects, research, and reading programs in areas required for concentration within a specialized master's program in accounting or finance. Approval of the student's plan of study by adviser or by proposed instructor required.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

ACFI 896 - Topics
Credits: 3
Special topics.
Repeat Rule: May be repeated for a maximum of 12 credits.
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 801 - The U.S. Healthcare System
Credits: 3
This course focuses on the organization, financing, and delivery of healthcare in the U.S. It contrasts the private and public sectors and examines the effects of market competition and government regulation. It examines the ways that medical providers are paid, and explores the major issues currently facing physicians, hospitals, and the pharmaceutical industry. It also discusses several potential small-scale and large-scale reforms to the U.S. healthcare system and evaluates their likely effects on healthcare spending, quality of care, and access to care.
Equivalent(s): HDS 801
Grade Mode: Letter Grading

ADMN 827 - Hospitality Operations & Financial Metrics
Credits: 3
This course applies principles of organization, management and decision models to the challenges of hospitality operations. These include problem-solving techniques related to planning, staffing, communications, and operations. Topics: hospitality systems thinking-service design; service product lifecycle evolution and development; hospitality organizational structure and service system procedures; integrated hospitality operational diagnostics; and operational performance metrics. Students apply this knowledge in a simulated hotel environment, taking the Certified Hotel Industry Analyst (CHIA) exam to receive CHIA designation.
Grade Mode: Letter Grading

ADMN #828 - Hospitality Asset and Financial Management
Credits: 3
Asset management involves managing the business investment to achieve ownership's specific objectives. Students learn to administer/renegotiate management contracts, real estate development processes, evaluate capital expenditures/manage their execution, monitor expenses to reduce costs, and different valuation methods in the hospitality industry. Students learn to benchmark a property's revenue and expense performance against the market, perform asset risk analyses under current market conditions, and evaluate various refinancing opportunities to reduce debt costs or free up capital for other uses.
Prerequisite(s): ADMN 930 with a minimum grade of B-.
Grade Mode: Letter Grading

ADMN 829 - Corporate Financial Strategy
Credits: 3
Analytical tools and practical skills for recognizing and solving complex problems of business finance. This course covers the major decision-making areas of managerial finance and some selected topics in financial management such as real options, leasing, mergers and acquisitions, corporate re-organizations, financial planning, and working-capital management.
Prerequisite(s): ADMN 930 with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 830 - Investments
Credits: 3
This course covers several topics related to investing, including asset pricing models, efficient models, efficient markets, portfolio theory, stock analysis and valuation, fixed income securities, and derivatives.
Prerequisite(s): ADMN 930 with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 834 - Private Equity/Venture Capital
Credits: 3
The focus is financing innovation whether one is approaching private equity investors or corporate management for budget support. The course covers screening entrepreneurial ideas and business plans through the spectrum of all entrepreneurial financing stages from seed/start-up 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 intelligence on the private markets, angels, venture capital, mergers & acquisitions, and private companies.
Prerequisite(s): ADMN 930 (may be taken concurrently) with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 835 - Financial Institutions
Credits: 3
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.
Prerequisite(s): ADMN 930 with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 838 - Equity Analysis and Firm Valuation
Credits: 3
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. This course is not recommended if you have already taken the undergraduate FIN 707 at UNH.
Prerequisite(s): ADMN 919 with a minimum grade of B- and ADMN 930 with a minimum grade of B-.
Equivalent(s): ACFI 807
Grade Mode: Letter Grading

ADMN 840 - International Business
Credits: 3
Issues and problems confronting managers in the international economy. Emphasis on problems of working across national borders rather than on those encountered within the framework of different national economies, cultures, and institutions for managers working in a multinational enterprise.
Prerequisite(s): ADMN 970 with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 841 - International Management
Credits: 3
Develops an understanding of international business from the point of view of management and leadership, human resource management, and organizational structure and change. Emphasis on cultural impact on management thinking and business practice and on skills for managing effectively in international and multicultural environments.
Prerequisite(s): ADMN 912 with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 842 - Project Management
Credits: 3
Project management is the discipline of using policies, processes, and procedures to successfully lead teams and manage project phases from initiation through closure. Project management practices improve cost and schedule predictability and the quality of project results. Expertise in project management is a recognized source of competitive advantage. This course will provide students with an understanding of project management through readings, discussion board conversations, assignments, and the development of project management deliverables.
Grade Mode: Letter Grading

ADMN 845 - Supply Chain Management
Credits: 3
The purpose of this course is to learn how to design, plan, and operate supply chains for competitive advantage; to develop an understanding of how the key drivers of supply chain operations (inventory, transportation, information, and facilities) can be used to improve performance; and to develop knowledge of logistics and supply chain methodologies and the managerial context in which they are used.
Prerequisite(s): ADMN 940 with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 846 - International Financial Management
Credits: 3
Financial management problems facing multinational firms. Focus is on identifying and managing foreign exchange rate exposures and making financial decisions in a global context.
Prerequisite(s): ADMN 930 with a minimum grade of D-.
Mutual Exclusion: No credit for students who have taken ACFI 803.
Grade Mode: Letter Grading

ADMN 847 - Human Resource Management
Credits: 3
This course will explore key human resource management functions and the strategic role human resources play in maximizing the value of the workforce. Managing talent is a responsibility of every manager, in partnership with HR, and vital to organizational success. The course addresses concepts from an HR perspective, considering HR systems and practices, and drawing on examples from the field of Hospitality Management.
Grade Mode: Letter Grading

ADMN 852 - Marketing Research
Credits: 3
Focuses on identification of research questions and objectives as well as collection and analysis of data to improve marketing decision making. Covers qualitative and quantitative methods, internal and external secondary data, sampling, analytical methods, and reporting.
Grade Mode: Letter Grading

ADMN 858 - Revenue Management and Pricing Strategies
Credits: 3
Revenue management is increasingly important in hospitality management. This course is for those interested in learning more about formulating tactics and strategies to maximize revenues for their organizations. The course will prepare students for roles responsible for financial performance and operation. Topics include history of revenue management, reservation systems, forecasting demand, inventory control, cost analysis, pricing strategy, channel management, revenue management tactics (i.e., overbook, discount allocation, and demand management and applications). Appropriate for any business application.
Prerequisite(s): ADMN 960 with a minimum grade of B-.
Grade Mode: Letter Grading

ADMN 860 - International Marketing
Credits: 3
This course examines marketing practices in a global environment. The course assumes familiarity with marketing management and utilizes this as a base to develop insights and understanding in an international context. Special emphasis is placed on how to develop global marketing strategies, adaptation of marketing execution (communications, products, pricing, channels), and multinational and global structuring of the marketing and sales organization.
Prerequisite(s): ADMN 960 (may be taken concurrently) with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 863 - Marketing Analytics
Credits: 3
Marketing Analytics is the art and science of developing and utilizing quantitative marketing decision models to plan, implement, and analyze marketing strategies and tactics. The course is primarily designed for graduate students who have already acquired basic data analysis skills as well as principles of marketing. Using marketing cases and related exercises tied to Marketing Engineering for Excel (ME-EL), students will develop marketing plans in various decision contexts. Specifically, this course will introduce a wide variety of quantitative models to improve marketing decision making in such areas as market response, customer segmentation/targeting, product/brand positioning, new product development, and allocation of marketing mix expenditures.
Prerequisite(s): ADMN 960 with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 864 - New Product Development
Credits: 3
Provides a practical introduction to the process of designing and marketing new products. Covers the major phases of market-focused product development from idea to launch, including opportunity identification and market definition, customer research and product concept development, pre-marketing testing and launch marketing. Presents proven approaches and techniques used in new product development. Allows student teams to apply lessons to the development and testing of new product concepts.
Prerequisite(s): ADMN 960 (may be taken concurrently) with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 865 - Digital Marketing
Credits: 3
As technology has changed, so have the ways consumers acquire information about goods and services. Marketers must be able to engage with their customers via a variety of digital platforms. This course develops the digital marketing skills that will enable success in today's marketing environment. We cover a number of topics including (but not limited to) website and search engine optimization, email marketing, social media, paid search, mobile marketing, customer persona development, and influencer marketing.
Grade Mode: Letter Grading

ADMN 866 - Negotiating in Business
Credits: 3
Negotiating is an essential managerial skill necessary for influencing employees and stakeholders. This course will draw on the latest research, to help participants 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. The course will allow participants the opportunity to develop these skills experientially and to understand negotiation in the context of useful analytical frameworks.
Prerequisite(s): ADMN 912 with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 872 - Predictive Analytics
Credits: 3
This course will focus on modern predictive analytic techniques. Each module is designed to introduce a set of statistical techniques and their application to real data from various business fields. The course will focus on 4 broad topics 1) Finding the most appropriate model for the data, 2) selecting optimal set of predictors, 3) reducing dimensionality of the data, 4)improving prediction performance. Programming using R, open source software, is fundamental to the course.
Mutual Exclusion: No credit for students who have taken DATA 822.
Grade Mode: Letter Grading

ADMN 873 - Data Management and Visualization
Credits: 3
With improvements in computing technology and the ability to generate/collect vast amounts of data, many organizations are quickly finding themselves data rich yet information poor. The goal of this course is to expose students to techniques and technologies that will enable them to become key players in helping organizations transform unstructured and structured data from various sources including, social media, the web, databases and archival data, into meaningful and insightful information facilitating effective decision making.
Prerequisite(s): ADMN 926 with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 875 - Prescriptive Analytics
Credits: 3
This course is concerned with the final frontier of business analytics, and develops student knowledge of the uses of descriptive statistics and forecasts to find and suggest optimal courses of action, focusing on the development and use of optimization and Monte-Carlo simulation models for making quantitative business decisions. Optimization topics include linear and mixed-integer programming, network flow optimization, and nonlinear optimization. Application areas include operations & supply chain management, marketing, and finance.
Prerequisite(s): ADMN 950 with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 882 - Managing Growth and Innovation
Credits: 3
This course deals with central concepts and applications at the intersection of technological innovation, organizational growth, and corporate entrepreneurship or intrapreneurship. Building an organization to achieve high growth and successfully and repeatedly bring innovations to market is a daunting managerial challenge. The first part of the course examines why it is so challenging to maintain sustained growth in disruptive environments. In the second part, the course takes a look at technological innovation as a lever that can help firms achieve sustained growth, by providing a number of applied tools, frameworks, and practices mangers can use to manage growth and innovation in their organizational contexts.
Grade Mode: Letter Grading

ADMN #888 - Strategic Pricing
Credits: 3
The overall objective of this course is to provide students with the know-how and tools to make pricing decisions that align with the firm's strategy, drive profitability, and lead to sustainable competitive advantage. This course focuses on thoroughly understanding and articulating the monetary and psychological value drivers of the firm's value proposition, applying appropriate monetary equivalents, and successfully communicating these to the purchaser. Rather than seeking to "optimize" prices for the short run, this course takes a longer-term view of managing markets strategically.
Prerequisite(s): ADMN 960 with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 898 - Topics
Credits: 3
Special Topics; may be repeated. Pre- and co-requisite courses vary. Please consult time and room schedule for the specific 898 topics section you are interested in for details.
Repeat Rule: May be repeated up to 4 times.
Grade Mode: Letter Grading

ADMN 901 - PAUL Assessment of MBA Core Knowledge
Credits: 0
One of the learning objectives in the MBA 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 the learning as part of our Assurance of Learning Program. This zero credit course provides an administrative mechanism for accomplishing this goal.
Grade Mode: Graduate Credit/Fail grading

ADMN 902 - MBA Internship
Credits: 1-3
The internship provides an opportunity for MBA students to gain business experience in a professional setting, applying their course-based learning to challenges in a business or non-profit enterprise. Students explore the relationship between theory and practice while completing at least 250 hours of time on site. Required of all full-time MBA students (unless waived due to significant prior relevant professional experience). The internship is completed in the summer term, but students can begin it in the spring by registering for it in term IV if needed.
Repeat Rule: May be repeated for a maximum of 3 credits.
Grade Mode: Graduate Credit/Fail grading

ADMN 905 - Corporate Consulting Project
Credits: 3
Designed as the capstone experience for the Full-time MBA program, student teams will work with real-world clients on strategic business challenges. Teams will be coached by a faculty member and/or industry professional as they engage with their assigned client. Students will integrate and apply concepts learned in the MBA program as they manage their projects and deliver value to their clients.
Grade Mode: Letter Grading

ADMN 912 - Managing Yourself & Leading Others
Credits: 3
Uses the evidence from behavioral science to develop an understanding of individual and work group dynamics in relation to personal and group effectiveness in diverse organizations. Case studies, group projects and personal application will provide students with the opportunity to put theory into practice as they learn to understand individual differences, lead teams, enhance their personal influence, and plan to lead employees, teams and organizations during times of rapid change.
Grade Mode: Letter Grading

ADMN 919 - Accounting/Financial Reporting, Budgeting, and Analysis
Credits: 3
An introduction to the preparation and interpretation of financial information, with emphasis on the use of accounting information for management decision-making. It highlights the guiding principles by which accounting reflects the underlying economic events. It also focuses on reporting and measurement issues that help managers make better decisions.
Grade Mode: Letter Grading

ADMN 926 - Leveraging Technology for Competitive Advantage
Credits: 3
Building competitive advantage depends on a company's ability to strategically and tactically manage its information systems. Information technology is quickly expanding its importance in the business models and operations of companies. Managers in today's world depend on accurate, accessible and useful information to make decisions. The course provides the student with an understanding of the strategic role of information technology and its use within the enterprise to creative sustainable competitive advantage for the organization.
Grade Mode: Letter Grading

ADMN 930 - Financial Management/Raising and Investing Money
Credits: 3
Focuses on financial decision making to maximize shareholder value. Course concepts are integrated into the standard theories of risk and return, valuation of assets and market efficiency and risk management. Students are expected to develop dexterity with financial decision tools and models, the quantitative elements of this course.
Prerequisite(s): ADMN 919 with a minimum grade of D- and ADMN 970 (may be taken concurrently) with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 940 - Managing Operations
Credits: 3
This course provides a foundation for dealing with managerial decisions about technology and operations issues. Based on the premise that the technology and operations can be a significant source of competitive advantage for a firm. Prepares students to identify and implement operating improvements that directly affect firm performance.
Grade Mode: Letter Grading

ADMN 950 - Data Driven Decisions
Credits: 3
Introduction to the basics of applied statistics for decision-making and for assessing risk and uncertainty. The course will mainly cover the broadly defined subjects of descriptive statistics, probability, decision trees, random variables, random sampling, hypothesis testing for continuous/categorical data and regression analysis/model building. Course delivery will be a mix of lectures, hands-on problem solving and data-driven case discussions led by students.
Grade Mode: Letter Grading

ADMN 960 - Marketing/Building Customer Value
Credits: 3
Serves as the core marketing course in the MBA program. Provides an introduction and overview to the theory and practice of marketing. Explores the theory and applications of marketing concepts through a mix of cases, discussions, lectures, guest speakers, individual assignments, simulations, and group projects. Focuses on understanding and building customer value in consumer, business-to-business, and services settings. Examines strategic marketing elements (segmentation, targeting, positioning), as well as executional elements (pricing, channels, promotion, and value proposition).
Grade Mode: Letter Grading

ADMN 970 - Economics of Competition
Credits: 3
A study of economic principles useful to business managers. Microeconomic topics include market behavior, economic costs, and economic decision-making. Macroeconomic topics include macroeconomics performance, financial markets, international trade and finance, and monetary and fiscal policy.
Grade Mode: Letter Grading

ADMN 982 - Creating Winning Strategies
Credits: 3
A "capstone" course, focused on industries, companies, and other organizations in operation, and studied through the role of the strategic manager and case examples, with emphasis on integration of materials covered in prior courses, providing students with synergistic knowledge and a "strategy tool kit" to help achieve organizational purpose, excellence, and competitive advantage.
Prerequisite(s): ADMN 912 with a minimum grade of D- and ADMN 919 with a minimum grade of D- and ADMN 930 with a minimum grade of D- and ADMN 950 with a minimum grade of D- and ADMN 960 with a minimum grade of D- and ADMN 970 with a minimum grade of D- and ADMN 926 (may be taken concurrently) with a minimum grade of D- and ADMN 940 (may be taken concurrently) with a minimum grade of D-.
Grade Mode: Letter Grading

ADMN 992 - Special Projects and Independent Study
Credits: 1-6
Projects, research, and reading programs in areas required for concentration. Sixty days advance approval of the student's plan of study by adviser and by proposed instructor required.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

Agriculture, Nutrition and Food Systems (ANFS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ANFS #840 - Aquaponics
Credits: 4
Aquaponics integrates aquaculture and hydroponic systems producing fish and plants. The integration of these systems first requires an understanding of the needs for each system. This experiential course will dive into the concept of turning wastes into resources with hands-on growing and management experience in aquaponic food production systems. We will cover the fundamentals, and challenges of integrating recirculating aquaculture and hydroponic systems. Students are required to sign up for one farm day per week.
Grade Mode: Letter Grading
Special Fee: Yes

ANFS 895 - Special Topics
Credits: 1-4
Advanced studies in specific areas of relevance to agriculture, nutrition, and/or food systems.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

ANFS 899 - Master's Thesis
Credits: 1-10
Master's thesis research.
Repeat Rule: May be repeated for a maximum of 10 credits.
Grade Mode: Graduate Credit/Fail grading

ANFS 901 - Introduction to Agriculture, Nutrition, and Food Systems Graduate Studies
Credits: 1
This course explores foundational ANFS graduate program expectations (proposed timelines, programmatic requirements, resources, and research opportunities) while modeling collaborative, interdisciplinary, and inquiry-based systems learning. Students will investigate selected topics that permeate across traditional discipline boundaries, thus developing skills ubiquitously applicable to all. Students will sharpen critical thinking, writing and presentation skills to apply systems thinking to graduate research studies. The importance of values, ethics, networking, and work/life balance will be explored.
Grade Mode: Letter Grading

ANFS 933 - Design, Analysis, and Interpretation of Experiments
Credits: 4
Through in-depth consideration of common general linear models used in the analysis of variance, this course introduces graduate students to the fundamental concepts and statistical methods necessary to plan, conduct, and interpret effective experiments. The course provides an opportunity for graduate students to receive critical input on the experimental design and analysis of their individual research projects. All analyses are conducted using the open-source package R; no previous coding experience is required.
Grade Mode: Letter Grading

ANFS 997 - Agriculture, Nutrition, and Food Systems Seminar
Credits: 1
Graduate student, faculty and invited presenters on current topics in agriculture, animal science, plant science, nutritional sciences and food systems. Open to COLSA graduate students only.
Repeat Rule: May be repeated for a maximum of 4 credits.
Grade Mode: Graduate Credit/Fail grading

ANFS 999 - Doctoral Dissertation Research
Credits: 0
Doctoral dissertation research.
Grade Mode: Graduate Credit/Fail grading

Analytics (DATA)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

DATA 800 - Introduction to Applied Analytic Statistics
Credits: 3
This course is designed to give students a solid understanding of the experience in probability, and inferential statistics. The course provides a foundational understanding of statistical concepts and tools required for decision making in a data science, business, research or policy setting. The course uses case studies and requires extensive use of statistical software.
Grade Mode: Letter Grading

DATA #801 - Foundations of Data Analytics
Credits: 3
This course introduces students to the principles and practice of analytics. The course emphasizes software tools used in the field of data science and covers topics such as data exploration and imputation, linear modeling, time series forecasting, customer segmentation, multivariate techniques and predictive modeling.
Prerequisite(s): DATA 800 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA #802 - Analytical Tools and Foundations
Credits: 3
The course introduces students to the tools used in applications of data analytics programming, data management, visualization, and web analytics. Students learn how to use SAS and R programming as well as data visualization tools in a case analysis based environment. Base SAS programming focuses primarily on data extraction from various sources, web scraping, data cleaning and management. The emphasis is on making students proficient in statistical programming languages like SAS, SQL, R, and Python.
Prerequisite(s): DATA 800 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA #803 - Introduction to Analytics Applications
Credits: 3
The course introduces students to various analytics applications including web analytics, Data Mining, Simulation and Text Mining. Students learn these techniques through hands-on case studies from various industries.
Prerequisite(s): DATA 800 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA #812 - Health Analytics
Credits: 3
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.
Equivalent(s): HMP #812
Grade Mode: Letter Grading

DATA 820 - Programming for Data Science
Credits: 3
In this class, students will build their foundational toolbox in data science: upon completion, students will be able to use the computer from the command line; practice version control with GIT & GitHub; gain a mastery of programming in Python; data wrangling with Python and perform an exploratory data analysis (EDA) in Python. All learning objectives are achieved through active application of these techniques to real world datasets.
Prerequisite(s): DATA 800 (may be taken concurrently) with a minimum grade of D-.
Grade Mode: Letter Grading

DATA 821 - Data Architecture
Credits: 3
In this class, students will learn the foundations of databases and large datasets: upon completion, students will be able to explore out-of-ram datasets though traditional SQL databases and NoSQL databases. Students will also be introduced to distributed computing. All learning objectives are achieved through active application of these techniques to world datasets.
Prerequisite(s): DATA 800 with a minimum grade of D- and DATA 820 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA 822 - Data Mining and Predictive Modeling
Credits: 3
In this class, students will learn foundations of practical machine learning: upon completion, students will be able to understand and apply supervised and unsupervised learning in Python to build predictive models on real world datasets. Techniques covered include (but not limited to): preprocessing, dimensionality reduction, clustering, feature engineering and model evaluation. Models covered include: generalized linear models, tree-based models, bayesian models, support vector machines, and neural networks. All learning objectives are achieved through active application of these techniques to real world datasets.
Prerequisite(s): DATA 800 with a minimum grade of D- and DATA 820 with a minimum grade of D- and DATA 821 (may be taken concurrently) with a minimum grade of D-.
Mutual Exclusion: No credit for students who have taken ADMN 872.
Grade Mode: Letter Grading

DATA #888 - Special Topics
Credits: 3
This course will explore the purpose, design, and analysis of a real-world data science project guided by faculty. Students will be provided a collection of data sets and systematically work through data cleaning, data merging, and the application of a variety of data science methods. The outcome of the course will be an iterative, faculty-guided exploration. The outcomes of the class will be a formal presentation for public consumption using data science visualizations.
Grade Mode: Letter Grading

DATA #896 - Self-Designed Analytics Lab I
Credits: 3
This is the first of a two course self-designed thesis sequence offered under the master's of science degree in analytics. The nature of the class will be applied learning directly around a student directed analytic thesis project. Students will have a choice of either bringing an analytical problem of their interest or one assigned by the instructor out of the ongoing projects in the lab. The student chosen problem will be vetted thoroughly and a decision will be made based on the depth of the proposed data management and analysis proposed submitted in the proposal. Once approved by the committee, the students will collect, clean, merge and create readable analytical files for the project and write a formal 2000+ words report on the data mining part of the project.
Prerequisite(s): DATA #803 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA 897 - Self Designed Analytics Thesis Lab II
Credits: 3
This is the second of a two course self-designed thesis sequence offered under the master's of science degree in analytics. The nature of the class is applied learning directly around a student directed analytic thesis project. The class requires competency in two areas for the successful completion of the course. Students will have completed the data collection, cleaning and management and created readable analytic files for the project of their choice in the first of the two course sequence. Students are primarily responsible to apply modern analytical tools and techniques like predictive modeling, segmentation, and network analysis etc. They are also required to write a formal 2000+ word report on the findings of the project. The report is expected to include modern data visualization synthesized with analysis results.
Prerequisite(s): DATA #803 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA #900 - Data Architecture
Credits: 3
The module-driven course builds off previous introductory analytics coursework and exposes students to advanced level concepts and techniques with respect to big data, data management, architecture, mining, privacy, and security concerns.
Prerequisite(s): DATA 800 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA #901 - Analytics Applications I
Credits: 3
This is the second of the four advanced core courses. This course is partly geared towards analytical business problem solving. This course covers the following broad topics areas: Text Mining, Visualization, Customer analytics and Segmentation, Financial Analytics, Optimization, and Risk analytics. The course is taught by different faculty and industry experts.
Prerequisite(s): DATA 800 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA #902 - Analytics Methods
Credits: 3
This is the third of the four advanced core courses. The module-driven course builds off previous introductory analytics coursework and exposes students to advanced level programming and data management, predictive modeling, experiment design, multivariate techniques, probability and statistical inference.
Prerequisite(s): DATA 800 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA #903 - Analytics Applications II
Credits: 3
This is the last of the four advanced core courses. The module-driven course covers the following broad topic areas: survival analysis, propensity score matching, time series and forecasting, simulation, survey and psychometrics, and web analytics format. This course is taught by a mix of Analytics Program faculty and industry experts.
Prerequisite(s): DATA 800 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA #911 - Analytics Practicum I
Credits: 3
This course introduces students to the practicum project and synthesizes learning from the curriculum into the analysis of their team projects. It includes applied skills in data cleaning, data mining, and analysis, but also professionalization, including business writing, presentation skills and messaging.
Prerequisite(s): DATA 800 with a minimum grade of D-.
Grade Mode: Letter Grading

DATA #912 - Analytics Practicum II
Credits: 3
This course continues the practicum learning experience with teams applying principles and tools to address their assigned project question. In addition, this course continues to develop the professional skills of students culminating in the delivery of a professional team presentation to their sponsor agency of their results.
Prerequisite(s): DATA 800 with a minimum grade of D-.
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 808 - 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.
Grade Mode: Letter Grading

ANSC 810 - Dairy Nutrition
Credits: 4
Feeding and related management of dairy cows, nutrients and their use, digestive anatomy, physiology, energy systems, forage quality and conservation methods, metabolic disorders, ration balancing.
Grade Mode: Letter Grading

ANSC 815 - 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.
Grade Mode: Letter Grading

ANSC 827 - Advanced Dairy Management I
Credits: 4
Advanced management evaluation of milking procedures, reproduction, nutrition, mastitis, and calf and heifer management.
Grade Mode: Letter Grading

ANSC 828 - Advanced Dairy Management II
Credits: 4
Advanced management evaluation of dairy cattle, housing, milking equipment, milk quality, record keeping, herd health, financial, personnel management, environmental issues. Visits to farms in the area to provide critical assessments of dairy farm businesses.
Grade Mode: Letter Grading
Special Fee: Yes

ANSC 895 - Investigations
Credits: 1-4
Investigations in genetics, nutrition, management, diseases, histology, equestrian management/agribusiness, physiology, cell biology, microbiology, dairy management, or teaching experience.
Repeat Rule: May be repeated for a maximum of 4 credits.
Grade Mode: Letter Grading

ANSC 899 - Master's Thesis
Credits: 1-6
Master's students must enroll for a total of 6 credits of this course. Students may enroll in 1-6 credits per semester.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

ANSC 995 - Non-thesis Investigations in Animal Science
Credits: 1-4
Advanced investigations in a research project, exclusive of thesis project. Elective only after consultation with the instructor. Offered both fall and spring semesters.
Repeat Rule: May be repeated for a maximum of 4 credits.
Grade Mode: Letter Grading

ANSC 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Applied Studies (APST) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

APST 805 - Grant Writing
Credits: 3
This course prepares participants to effectively write different types of grant narratives based on organizational need(s). Topics may include the strategic purpose of grants, basic grant elements, effective grant-writing strategies, and grant management and stewardship process and tools.
Equivalent(s): APST 805G
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 #932 - Graduate Drawing
Credits: 6
Structured to emphasize developing skills and to explore techniques to create invented and observed space. Drawing will be considered as an inventive tool to extend the students' repertoire of ideas.
Repeat Rule: May be repeated for a maximum of 12 credits.
Grade Mode: Letter Grading
Special Fee: Yes

ARTS #996 - Independent Study in the Visual Arts
Credits: 1-6
C01 - Drawing; D01 - Painting; E01 - Printmaking; I01 - Painting in Italy; L01 - Art History. An opportunity for independent study in the above listed disciplines. The content and structure of the course will be developed through collaboration of the graduate student and the supervising faculty member. May be repeated in any one area.
Repeat Rule: May be repeated for a maximum of 18 credits.
Grade Mode: Letter Grading

ARTS #997 - Graduate Painting Thesis
Credits: 10
The Graduate Painting Thesis is the culmination of the MFA student's graduate work in painting. The course requires: 1) continued work in the studio under supervision of graduate faculty; 2) a more formal midterm critique with graduate faculty (oral summarization of thesis work); 3) extensive work with The Art Gallery in preparation for the MFA Thesis Exhibition (including hanging the exhibition); 4) the thesis exhibition itself; and 5) an oral presentation to the faculty during the thesis exhibition.
Grade Mode: Letter Grading

Biochemistry (BCHM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

BCHM 802 - 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. A previous cell biology course is recommended. One semester of biochemistry recommended.
Equivalent(s): ANSC 802
Grade Mode: Letter Grading

BCHM 825 - 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. Introductory microbiology and microbiology lab recommended.
Grade Mode: Letter Grading

BCHM 850 - 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. 1-2 semesters of organic chemistry and one semester of calculus recommended.
Grade Mode: Letter Grading

BCHM 851 - Principles of Biochemistry I
Credits: 4
In-depth survey of biochemistry: macromolecule structure; structure and function of proteins, nucleic acids, carbohydrates, and lipids; introduction to metabolic pathways. One semester of organic chemistry recommended.
Grade Mode: Letter Grading

BCHM 852 - Principles of Biochemistry II
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.
Prerequisite(s): BCHM 851 with a minimum grade of D-.
Grade Mode: Letter Grading

BCHM 853 - 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. Lab. Introductory microbiology and microbiology lab recommended.
Grade Mode: Letter Grading
Special Fee: Yes

BCHM 854 - Molecular Biology Research Methods
Credits: 5
Theory and application of current technologies to manipulate DNA. Hands-on experience that includes DNA isolation and quantitation methods, cloning, PCR, DNA sequencing, and analysis of gene products. Lab. Introductory genetics recommended.
Equivalent(s): GEN 854, PBIO 854
Grade Mode: Letter Grading
Special Fee: Yes

BCHM 855 - 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. One semester of biochemistry recommended.
Grade Mode: Letter Grading
Special Fee: Yes

BCHM 860 - 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 the curative effects. Foundations of pharmacology including pharmacodynamics and pharmacogenomics; drugs affecting the nervous system (neuropharmacology); drugs affecting other systems; chemotherapeutic drugs. One semester of biochemistry recommended.
Grade Mode: Letter Grading

BCHM 863 - 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. One semester of biochemistry recommended.
Grade Mode: Letter Grading

BCHM 894 - 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; and mechanisms of enzyme catalysis. Computer resources used for protein modeling and structural prediction. One semester of biochemistry recommended.
Grade Mode: Letter Grading

Bioengineering (BENG)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

Biology (BIOL)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

BIOL 801 - 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): (BIOL 411 with a minimum grade of D- and BIOL 412 with a minimum grade of D-) or BIOL 409 with a minimum grade of D-.
Equivalent(s): PBIO 801
Grade Mode: Letter Grading

BIOL 804 - 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. One year of general biology and a semester of Microbiology or Genetics recommended.
Grade Mode: Letter Grading

BIOL 805 - 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 the most advanced techniques in neuroscience, with emphasis in cellular and molecular processes. Students will learn how different model organisms have been used to understand neurons. Graduate students should have a strong background in chemistry, biochemistry and cell biology, and must obtain permission to register.
Grade Mode: Letter Grading

BIOL 806 - 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 809 - 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 809
Grade Mode: Letter Grading

BIOL 811 - 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 812 - Experimental Design Seminar
Credits: 2
Explore the experimental design of your own and your classmates' current or proposed graduate research projects. Learn to recognize the difference between good and bad experimental designs by analyzing recently published studies in your field of interest. Learn the secrets of statistical reviewers and how to avoid mistakes that will prevent your work from being published.
Prerequisite(s): BIOL 811 with a minimum grade of D- or ANFS 933 with a minimum grade of D-.
Grade Mode: Letter Grading

BIOL 814 - 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.
Grade Mode: Letter Grading

BIOL 820 - 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. One year of general biology recommended.
Grade Mode: Letter Grading

BIOL 827 - 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. One year of general biology recommended.
Grade Mode: Letter Grading

BIOL 828 - Marine Bioacoustics
Credits: 3
Marine bioacoustics is a highly interdisciplinary field of science that requires knowledge of marine biology, oceanography, physics, and engineering. This course provides an introduction to the role of acoustics in aquatic biological systems and how acoustics is used to study biological processes and ecosystem dynamics. Topics include: marine animal hearing; sound production; behavior; echolocation; remote sensing; research methods; and the impacts of sounds on marine animals. It is suggested that students have a strong background in biology. College level physics and calculus is suggested.
Grade Mode: Letter Grading

BIOL 840 - Acoustic Ecology
Credits: 4
This course examines the acoustic environment and how alterations to the acoustic environment from human activities and climate change result in permanent changes to animal behavior and the resulting soundscape. Focusing on using acoustics as a tool to monitor species and habitats, students will learn quantitative approaches and best practices for acoustic ecology investigations. Students will explore the emerging field of ecological acoustics through primary literature and hands-on, independent research in habitats surrounding UNH campus. This course is intended for advanced undergraduate or graduate students interested in animal behavior, ecology, wildlife and conservation biology, or zoology. Two semesters of college-level biology required prior to taking this course.
Grade Mode: Letter Grading
Special Fee: Yes

BIOL 852 - 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. Intro course in Biology or Plant Biology, recommended.
Equivalent(s): PBIO 852
Grade Mode: Letter Grading
Special Fee: Yes

BIOL 855 - Biological Oceanography
Credits: 3
Biological processes of the oceans, including primary and secondary production, trophodynamics, plankton diversity, zooplankton ecology, ecosystems and global ocean dynamics. One year of general biology recommended.
Equivalent(s): ESCI 850, ZOOL 850
Grade Mode: Letter Grading

BIOL 873 - 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.
Equivalent(s): ZOOL 873
Grade Mode: Letter Grading
Special Fee: Yes

BIOL 895 - Advanced Studies
Credits: 1-4
Advanced research or seminar, supervised by a faculty member.
Grade Mode: Letter Grading

BIOL 899 - Master's Thesis
Credits: 1-10
Master's thesis research.
Repeat Rule: May be repeated for a maximum of 10 credits.
Grade Mode: Graduate Credit/Fail grading

BIOL 901 - Introductory Graduate Seminar
Credits: 2
This seminar provides an introduction to the Biological Sciences Graduate Program, offering students an overview of program structure and requirements, introducing faculty research and campus resources, and helping participants develop skills and strategies useful in graduate school. Requirements include preparation of a written research proposal and a brief oral presentation.
Equivalent(s): ZOOL 901
Grade Mode: Graduate Credit/Fail grading

BIOL 902 - Writing and Publishing Science
Credits: 2
Participants in this seminar (1) make significant progress on one or more of their current academic writing projects; (2) increase their understanding of the genres, protocols, and mechanisms of scientific writing and publishing; and (3) develop strategies and skills for getting professional writing done efficiently and well, in graduate school and beyond.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

BIOL 950 - Scientific Communication
Credits: 2
Professional success in science depends on the ability to communicate, both by publishing in professional journals and by explaining the implications of research to a broad audience. This course covers a wide range of topics related to scientific communication. Students work on multiple forms of communication, practice communicating science to the public, strengthen peer reviewing skills, explore online scientific communities, and enhance awareness of relevant economic, legal, and ethical issues.
Equivalent(s): LSA 950
Grade Mode: Graduate Credit/Fail grading

BIOL 999 - Doctoral Dissertation Research
Credits: 0
Doctoral dissertation research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Biotechnology (BIOT)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

BIOT 804 - New and Emerging Biotechnology
Credits: 3
This course is a graduate-level investigation of emerging technologies, innovations and new products in the biotechnology industry, taught using 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.
Grade Mode: Letter Grading

BIOT 825 - Biotech Products and Regulation
Credits: 3
The biopharma industry begins with foundations in basic science and works through various stages to turn ideas into marketable therapies. The business, clinical, and regulatory steps that are required to bring a product to market are important to understand in order to maximize ones effectiveness in any department in a biopharma setting. This course draws upon field experts to help deliver the content and tackle important discussions about the processes involved in drug development.
Grade Mode: Letter Grading

BIOT 835 - Cell Biology
Credits: 3
This course is an upper level biology class that expands on the basic knowledge of cellular structure and function. The focus will be on molecular biology and cell signaling. Research methods and experiments but preeminent scientists will be explored and analyzed.
Grade Mode: Letter Grading

BIOT 837 - Microbial Genomics
Credits: 0 or 3
Microbial genomes (primarily bacteria and bacteriophages) and genome-scale approaches to addressing questions in microbial physiology and pathogenesis will be the focus of this course. Large-scale sequencing projects, genome structure and evolution, metagenomics, and other challenges in comparative genomics, will be discussed. Hands-on wet laboratory and bioinformatics projects will be included in this laboratory-lecture course.
Grade Mode: Letter Grading

BIOT 840 - Antibiotic Discovery Research
Credits: 0 or 3
Students will identify antibiotic-producing bacterial isolates from environmental samples. They will participate in a self-directed research project that will involve working with faculty to generate hypotheses. Students will also perform one or more antibiotic discovery and/or antibacterial chemical experiments and use advanced lab techniques including the UHPLC to fractionate and analyze chemical extracts. Cannot earn credit if already taken BIOT 897 Special Topic "Antibiotic Discovery".
Grade Mode: Letter Grading

BIOT 847 - Industrial Microbiology and Fermentation
Credits: 3
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.
Grade Mode: Letter Grading

BIOT 850 - Cancer Biology: From Benchtop Research to Therapeutic Interventions
Credits: 3
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 studies using models in the laboratory; and (3) how innovative therapeutics are being designed to target tumors based upon their individual molecular signatures.
Grade Mode: Letter Grading

BIOT 853 - Cell Culture
Credits: 0 or 3
Principles and technical skills fundamental to the culture of animal cells. Introduction to the techniques of sub-culturing, establishing primary cultures, karyotyping, cloning, growth curves, and cryopreservation. Techniques involving culturing mammalian cells in bioreactors will be introduced. Application of cell culture to contemporary research in biotechnology through independent projects.
Grade Mode: Letter Grading
Special Fee: Yes

BIOT 855 - Advanced Therapies
Credits: 3
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 BIOT 897 "Top/Advanced Therapies".
Grade Mode: Letter Grading

BIOT 860 - Numerical & Statistical Analysis in Biotechnology
Credits: 0 or 3
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 BIOT 897 "Top/Num & Statistical Analysis".
Grade Mode: Letter Grading

BIOT 865 - Nucleic Acid Techniques
Credits: 3
Lecture and laboratory course focused on application of molecular biology techniques for the extraction, detection, and use of nucleic acids. Emphasis will be on recombinant DNA cloning and bioengineering techniques in biotechnology.
Grade Mode: Letter Grading

BIOT 866 - Protein and Immunological Techniques
Credits: 0 or 3
Laboratory course focused on application of molecular biology techniques of the isolation, quantitation, detection, analysis, and use of proteins. Substantial emphasis will be on the use of immunoassays and antibodies in protein work. Modern proteomics techniques will also be discussed. Emphasis will be on recombinant protein expression in the field of biotechnology.
Grade Mode: Letter Grading
Special Fee: Yes

BIOT 870 - Stem Cell and Biomaterials Engineering Laboratory
Credits: 0 or 3
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.
Grade Mode: Letter Grading

BIOT 872 - Pluripotent Stem Cell Laboratory
Credits: 0 or 3
Introduction to human pluripotent stem cells (hPSCs) and how they are utilized in biomedical applications. Lab topics such as aseptic techniques, pluripotent stem cell cultures, stem cell differentiation, and cellular analyses will be covered. Lectures will focus on the current literature while the lab portion involves inquiry-based projects that will investigate how pluripotent stem cells proliferate and differentiate. Special focus will be given to induced pluripotent stem cell (iPSC) cultures. Students must have previous cell culture experience.
Grade Mode: Letter Grading
Special Fee: Yes

BIOT 875 - Biopharmaceutical Production Processes
Credits: 0 or 3
This course will provide the 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 a 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.
Grade Mode: Letter Grading

BIOT 877 - Molecular Biology and Biotechnology
Credits: 0 or 3
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.
Grade Mode: Letter Grading
Special Fee: Yes

BIOT 880 - Techniques in Microscopy and Image Analysis
Credits: 0 or 3
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.
Grade Mode: Letter Grading

BIOT 889 - Biotech Career Planning
Credits: 1
This course is intended for any student seeking internship, co-op, and/or employment opportunities. Participants research and evaluate biotech-related career opportunities related to their interests, create application portfolios, conduct interviews, use networking and job search resources, and participate in employer-based resume reviews and/or mock interviews. This course cannot be repeated for credit.
Grade Mode: Graduate Credit/Fail grading

BIOT 890 - Training Workshop
Credits: 1-3
Through the Graduate Training Workshop, students will gain experience in emerging topics and techniques relevant to careers in the biotech industry. These will include, but not be limited to: flow cytometry, various chromatography techniques, and high-throughput sample processing.
Repeat Rule: May be repeated up to 6 times.
Grade Mode: Letter Grading

BIOT 891 - Applied Research
Credits: 3-6
The applied research experience enhances the student's academic achievements with real-world, professional industry projects through placement at biopharma industry organizations. The student is expected to apply knowledge and skills acquired through other coursework in the major to address and solve new, authentic problems identified by the employer. Under the direction of a faculty advisor and workplace supervisor, the student is expected to contribute effectively within a team at the organization.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

BIOT 892 - Graduate Internship
Credits: 3-6
The internship experience enhances the student's academic achievements with real-world, professional industry projects through placement at biopharma industry organizations. The student is expected to apply knowledge and skills acquired through other coursework in the major to address and solve new, authentic problems identified buy the internship employer. Under the direction of a faculty advisor and workplace supervisor, the student is expected to contribute effectively within a team at the organization.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

BIOT 893 - Directed Graduate Research
Credits: 3-6
The research project experience enhances the student's academic achievements with a project-based experience in an academics lab. The student is expected to apply knowledge and skills acquired through other coursework in the major to address and solve new, authentic basic or applied science questions under the direction of a faculty advisor. The student is expected to contribute effectively within a lab team.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

BIOT 895 - Graduate Co-op Experience
Credits: 1-9
This intensive internship experience enhances the student's academic achievements with real-world, professional industry projects through placement at biopharma industry organizations. The student is expected to apply knowledge and skills acquired through other coursework in the major by working in an industry setting alongside professionals to hone their technical and business skills. Under the direction of a faculty advisor and workplace supervisor, the student is expected to contribute effectively within a team at the organization.
Repeat Rule: May be repeated for a maximum of 9 credits. May be repeated up to 2 times.
Grade Mode: Graduate Credit/Fail grading

BIOT 896 - Graduate Seminar in Biotechnology
Credits: 1
The graduate seminar in biotechnology will run each semester with different topics. For example: 1) Cutting-edge issues facing the biotech industry will be encountered through case studies in order to apply what is being learned in other courses, hone communication skills, and stay up to date in the fields. 2) Instrumentation and technologies utilized in the biotechnology industry will be described through lectures, readings, and site visits to nearby facilities.
Repeat Rule: May be repeated for a maximum of 3 credits.
Grade Mode: Graduate Credit/Fail grading

BIOT 897 - Special Topics in Biotechnology
Credits: 1-3
This course explores and investigates advanced topics in biotechnology that would not normally be covered in other courses in the curriculum.
Repeat Rule: May be repeated for a maximum of 9 credits.
Grade Mode: Letter Grading
Special Fee: Yes

BIOT 898 - Special Laboratory Topics in Biotechnology
Credits: 0-3
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 9 credits.
Grade Mode: Letter Grading

Chemical Engineering & Bioengineering (CHBE)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CHBE 805 - 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.
Equivalent(s): CHE 805
Grade Mode: Letter Grading

CHBE 806 - 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.
Prerequisite(s): CHEM 683 with a minimum grade of D- or CHEM 684 with a minimum grade of D-.
Equivalent(s): CHE 806
Grade Mode: Letter Grading

CHBE 812 - 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.
Equivalent(s): CHE 812
Grade Mode: Letter Grading

CHBE 814 - 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 pf sensors, biosensors, electrochemical sensors, mass sensors, optical sensors, and multivariate sensors. Lab.
Equivalent(s): CHE 814
Grade Mode: Letter Grading

CHBE 822 - Introduction to Microfluidics
Credits: 4
Fundamentals and applications of microfluidics; scaling laws; microfabrication technology; hydrodynamics and electrodynamics; interfacial phenomena; capillary effects and diffusion; microvalves; micropumps; lab-on-a-chip systems; biochips. Fluids mechanics course required prior to taking this course.
Equivalent(s): CHE 822
Grade Mode: Letter Grading

CHBE 825 - 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.
Equivalent(s): BENG 825
Grade Mode: Letter Grading

CHBE 844 - 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.
Equivalent(s): CHE 844
Grade Mode: Letter Grading

CHBE 852 - Process Dynamics and Control
Credits: 4
Dynamic behavior of chemical engineering processes described by differential equations; feedback control concepts and techniques; stability analysis. Lab.
Equivalent(s): CHE 852
Grade Mode: Letter Grading

CHBE 855 - 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.
Equivalent(s): BENG 855
Grade Mode: Letter Grading

CHBE 861 - 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.
Equivalent(s): CHE 861
Grade Mode: Letter Grading

CHBE 862 - 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.
Equivalent(s): BENG 862, CHE 862
Grade Mode: Letter Grading

CHBE 866 - 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.
Equivalent(s): BENG 866, CHE 866
Grade Mode: Letter Grading

CHBE 898 - Chemical Engineering Project
Credits: 3
Concluding experience for Master of Engineering Degree.
Repeat Rule: May be repeated for a maximum of 6 credits.
Equivalent(s): CHE 898
Grade Mode: Graduate Credit/Fail grading

CHBE 899 - Master's Thesis
Credits: 1-9
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 9 credits.
Equivalent(s): CHE 899
Grade Mode: Graduate Credit/Fail grading

CHBE 900 - Seminar
Credits: 0 or 1
Topics of interest to graduate students; reports of research ideas, progress, and results; lectures by outside speakers. Must be taken twice for 1.00 credit. Students register for 0.00 credits for all other semesters in ChE graduate program.
Repeat Rule: May be repeated for a maximum of 2 credits.
Equivalent(s): CHE 900
Grade Mode: Graduate Credit/Fail grading

CHBE 923 - Advanced Chemical Engineering Thermodynamics
Credits: 3
The multi-component open system; the volumetric and phase behavior of pure substances and of multi-component systems at physical and chemical equilibrium, fugacity and activity; thermal properties of equilibrium, chemically reacting systems; introduction to statistical thermodynamics.
Equivalent(s): CHE 923
Grade Mode: Letter Grading

CHBE 932 - Advanced Chemical Engineering Kinetics
Credits: 3
Specialized applied kinetics problems; catalysis; fast reaction and shock tubes; combustion and detonation processes; non-isothermal kinetics; heat and mass transfer in non-equilibrium, chemically reacting systems.
Equivalent(s): CHE 932
Grade Mode: Letter Grading

CHBE 940 - Advanced Transport Phenomena
Credits: 3
This course is a graduate level engineering course designed to review the governing relations of momentum, heat, and transfer at an advanced level for students who have already been exposed to transport at the undergraduate level. Principal concepts will be illustrated through their application to classical and practical paradigms in transport phenomena. Students will learn useful analytical methods for studying and solving steady state and unsteady state (transient) transport problems with and without fluid convection. Prior to taking this course, completion of the following courses are required; fluid mechanics, heat transfer, and mass transfer.
Equivalent(s): CHE 940
Grade Mode: Letter Grading

CHBE 996 - Graduate Independent Study
Credits: 1-4
Directed reading or investigation at the advanced level on topics in chemical engineering, including internships for graduate students.
Equivalent(s): CHE 996
Grade Mode: Letter Grading

CHBE 999 - Doctoral Research
Credits: 0
Doctoral Research.
Equivalent(s): CHE 999
Grade Mode: Graduate Credit/Fail grading

Chemistry (CHEM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CHEM 800 - Introduction to Chemistry Teaching and Research Practices
Credits: 1
Introduction to professional responsibilities, safety, and ethics of teaching and research. Theory-based teaching, learning, and assessment, and reflective practice. Departmental research overview and seminar participation. Pre-semester sessions and periodic seminars during semester.
Grade Mode: Graduate Credit/Fail grading

CHEM 801 - Modern Tools for Researchers in the Chemical Sciences
Credits: 1
Series of professional development workshops on essential research skills, including intellectual property, literature searching and management, data management, building individual development plan and ethical concerns in chemistry.
Grade Mode: Graduate Credit/Fail grading

CHEM 802 - Critical Thinking for Chemists
Credits: 1
Students begin writing their Thesis Research Proposal document and participate in structured peer-review of evolving drafts. They also participate in a claim-and-question process in which peers challenge claims made in the document and authors explain them. The activities prepare students to present and discuss their proposal with their committee after the end of the semester.
Prerequisite(s): CHEM 801 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

CHEM 803 - Creative Thinking for Chemists
Credits: 1
Students engage in a specific focus on the creative process in scientific research and the formal processes of research proposal development by inspection of existing proposals, discussion of grant agency functions, and developing an original research idea that undergoes a mock panel review.
Prerequisite(s): CHEM 802 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

CHEM 808 - 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 840 - 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 chemical and chemical reactions involved to probe, manipulate, and control biological systems in vitro and in vivo. This course is designated 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 855 - Advanced Organic Chemistry
Credits: 3
An overview of organic chemistry at the intermediate levels. Aspects of synthetic organic chemistry and physical organic chemistry, including stereochemistry, are covered.
Grade Mode: Letter Grading

CHEM 862 - Advanced Chemical Analysis Instrumentation
Credits: 3
Theory, instrumentation, and application of methods to qualitative identification and quantitative measurement of trace chemical substances including environmental pollutants. Includes methods of such as atomic spectroscopy, gas and liquid chromatography, IR and UV-VIS spectrophotometry, electrochemistry, fluorescence, mass spectrometry, X-ray techniques.
Grade Mode: Letter Grading

CHEM 874 - Inorganic Chemistry
Credits: 3
Intermediate level overviews of modern inorganic chemistry including structure, bonding, and reactivity. Coursework in organic chemistry and physical chemistry required.
Grade Mode: Letter Grading

CHEM 876 - Physical Chemistry III
Credits: 3
Application of quantum theory to atomic electron structure, spectroscopy, and molecular structure.
Grade Mode: Letter Grading

CHEM 895 - Special Topics
Credits: 2-4
New or specialized topics not covered in regular course offerings. May be repeated. Lab. (Not offered every year.)
Grade Mode: Letter Grading

CHEM 899 - Thesis/Problems
Credits: 1-10
Conferences, library, and experimental work in some field of chemistry.
Repeat Rule: May be repeated for a maximum of 10 credits.
Grade Mode: Graduate Credit/Fail grading

CHEM 902 - Theoretical Organic Chemistry II
Credits: 3
A continuation of CHEM 901. (Not offered every year.)
Grade Mode: Letter Grading

CHEM 903 - Advanced Inorganic Chemistry I
Credits: 3
Survey of important advanced topics in concepts of modern inorganic chemistry.
Grade Mode: Letter Grading

CHEM 904 - Advanced Inorganic Chemistry II
Credits: 3
Overview of current trends in inorganic research, including transition metal reactions and mechanisms and organometallic chemistry. (Not offered every year.)
Grade Mode: Letter Grading

CHEM #905 - Advanced Physical Chemistry I
Credits: 3
Introduction to topics in quantum mechanics and group theory, which form the background of all areas of modern chemistry. (Not offered every year.)
Grade Mode: Letter Grading

CHEM 911 - Synthetic Organic Chemistry I
Credits: 4
Fundamentals of synthetic organic methodology and applications in multiple syntheses. Fourth hour recitation session.
Grade Mode: Letter Grading

CHEM #917 - Advanced Special Topics
Credits: 2-4
Advanced courses dealing with specialized sub-disciplines in chemistry. (Not offered every year.)
Grade Mode: Letter Grading

CHEM 918 - Advanced Special Topics
Credits: 2-4
Advanced courses dealing with specialized sub-disciplines in chemistry. (Not offered every year.)
Grade Mode: Letter Grading

CHEM 925 - Surface Chemistry
Credits: 3
Bulk and surface structure of solids, experimental methods of surface characterization, molecule-surface interactions, principles of homogeneous and heterogeneous catalysis. This course typically discusses adsorption/desorption kinetics, surface reaction mechanisms, adsorption isotherms, volcano plots, zeolite catalysis, applications to renewable energy, photovoltaics, nanoscience, all from a chemical standpoint.
Grade Mode: Letter Grading

CHEM 927 - Chemical Kinetics and Reaction Dynamics
Credits: 3
The course reviews macroscopic chemical kinetics, then investigates the microscopic origins of rate laws. Scattering theory. Transition state theory. Unimolecular and bimolecular reactions.
Grade Mode: Letter Grading

CHEM 930 - Advanced Optical Methods
Credits: 3
Techniques of chemical identification and analysis utilizing optical instrumentation from the standpoint of theory and application. Topics include UV-visible absorption, luminescence, atomic spectroscopy, IR, NMR, x-ray methods, and mass spectrometry. (Not offered every year.)
Grade Mode: Letter Grading

CHEM #933 - Chemical Separations
Credits: 3
The use of various separation techniques prior to analysis; separations as methods of analysis. (Not offered every year.)
Grade Mode: Letter Grading

CHEM 934 - Chemical Equilibria
Credits: 3
Formulation and solution of chemical equilibrium problems of relevance to analytical chemistry. (Not offered every year.)
Grade Mode: Letter Grading

CHEM 935 - Advanced Analytical Chemistry
Credits: 3
Advanced analytical chemical methods, including: potentiometry and voltammetry, X-ray fluorescence, electron spectroscopy, scanning electron microscopy and modern methods of mass spectrometry.
Grade Mode: Letter Grading

CHEM 991 - Graduate Presentation Portfolio
Credits: 1
A graduate course for Chemistry Master of Science students designed to provide them with expertise in preparing, organizing, and giving research presentations.
Grade Mode: Graduate Credit/Fail grading

CHEM 992 - Graduate Writing Portfolio
Credits: 1
A graduate course for students to acquire and practice appropriate professional data documentation and writing skills.
Grade Mode: Graduate Credit/Fail grading

CHEM 995 - Colloquium
Credits: 1-4
A) Inorganic Chemistry; B) Organic Chemistry; C) Theoretical Organic Chemistry; D) Physical Chemistry; E) Analytical Chemistry; F) Chemical Education. (Not offered every year.)
Repeat Rule: May be repeated for a maximum of 12 credits.
Grade Mode: Letter Grading

CHEM 997 - Seminar
Credits: 1
Presentation and discussion of recent investigations in chemistry.
Grade Mode: Graduate Credit/Fail grading

CHEM 998 - Seminar
Credits: 1
Presentation and discussion of recent investigations in chemistry.
Grade Mode: Graduate Credit/Fail grading

CHEM 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Civil and Environmental Engineering (CEE)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CEE 804 - Transportation Engineering and 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.
Equivalent(s): CIE 854
Grade Mode: Letter Grading

CEE 805 - Introduction to Sustainable Engineering
Credits: 3
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 major focus of the course, which include 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.
Equivalent(s): CIE 851
Grade Mode: Letter Grading

CEE 806 - 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 820 - Solid and Hazardous Waste Engineering
Credits: 3
A thorough examination of the problems which exist in hazardous and solid waste management will be presented in terms of the current regulations and engineering approaches used to develop solutions. Topics will 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 will be used throughout the course to highlight key concepts and provide real-world examples.
Equivalent(s): CIE 842
Grade Mode: Letter Grading

CEE 821 - 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.
Grade Mode: Letter Grading

CEE 822 - Introduction to Marine Pollution and Control
Credits: 4
Introduction to 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. Prior coursework in fundamental aspects of environmental engineering required.
Equivalent(s): CIE 847
Grade Mode: Letter Grading

CEE 823 - 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. General chemistry knowledge required.
Equivalent(s): CIE 849
Grade Mode: Letter Grading

CEE 824 - Environmental Engineering Microbiology
Credits: 4
Concepts of environmental engineering microbiology including microbial metabolism, growth kinetics, bioremediation applications, mass transfer kinetics and effects of environmental parameters. Coursework includes reading and discussion of the microbial literature. Laboratories cover microbiological monitoring and biological treatment experiments. Lab. Prior coursework in fundamental aspects of environmental engineering required.
Equivalent(s): CIE 856
Grade Mode: Letter Grading

CEE 829 - Sources, Control, and Stewardship of Air Pollution
Credits: 4
Sources and fate of air pollutants from natural and engineered systems. Fundamentals of pollutant chemistry, atmospheric dispersion, and engineering controls. Includes regulatory policy, environmental, and social justice issues. Prior coursework in solid and hazardous waste engineering or permission required.
Grade Mode: Letter Grading

CEE 830 - Public Health Engineering for Rural and Developing Communities
Credits: 3
The design principles are to impart to the student specific information that can be used to design public health control facilities such as small water treatment systems and on-site wastewater disposal systems. The engineering control methods taught are particularly applicable to rural areas and developing countries.
Equivalent(s): CIE 840
Grade Mode: Letter Grading

CEE 831 - Advanced Water Treatment Design
Credits: 4
Selection, design, and evaluation of advanced unit processes employed in the treatment of water, wastewater, and hazardous wastes. Emphasis given on treatment schemes based on experimental laboratory or pilot studies.
Grade Mode: Letter Grading

CEE 832 - 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. Prior coursework in fundamental aspects of environmental engineering required.
Equivalent(s): CIE 848
Grade Mode: Letter Grading

CEE 833 - 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. Prior coursework in fundamental aspects of environmental engineering required.
Equivalent(s): CIE 839
Grade Mode: Letter Grading

CEE 835 - 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. Prior coursework in fundamental aspects of materials engineering required.
Equivalent(s): CIE 822
Grade Mode: Letter Grading

CEE 836 - 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 and new material production and construction technologies are introduced. Prior coursework in fundamental aspects of materials engineering required.
Equivalent(s): CIE 823
Grade Mode: Letter Grading

CEE 837 - 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.
Grade Mode: Letter Grading

CEE #848 - Pavement Design Project
Credits: 1
Semester long design project accompanying CEE 849 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.
Co-requisite: CEE 849
Grade Mode: Letter Grading

CEE 849 - Pavement Design 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. Prior coursework in fundamental aspects of material and geotechnical engineering required.
Equivalent(s): CIE 821
Grade Mode: Letter Grading

CEE 851 - 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. Prior coursework in fundamental aspects of environmental engineering required.
Equivalent(s): CIE 841
Grade Mode: Letter Grading

CEE 853 - Snow Hydrology
Credits: 3
Snow is a significant component of the hydrologic cycle in high latitude and high elevation environments. It is also a part of engineering design and practice that is frequently overlooked. In this course, we will examine spatial controls on snow accumulation and the dynamics of snowmelt processes through readings in snow hydrology, field assays of snow distribution, and analytical exercises. Of particular interest will be the role of snow in water resource engineering.
Grade Mode: Letter Grading

CEE 854 - Engineering Hydrology
Credits: 3
Hydrologic cycle, probability theory related to hydrology and the design of water resources structures, water flow, 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 845
Grade Mode: Letter Grading

CEE 855 - 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. Coursework in fluid mechanics required.
Equivalent(s): CIE 855
Grade Mode: Letter Grading

CEE 858 - 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. Coursework in fluid mechanics required.
Equivalent(s): CIE 858
Grade Mode: Letter Grading

CEE 859 - Stream Restoration
Credits: 4
Explores the assessment, planning, design, engineering, and monitoring of stream and watershed practices intended to protect and restore the quality and quantity of flowing and 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. Coursework in fluid mechanics required.
Equivalent(s): CIE 859
Grade Mode: Letter Grading

CEE 865 - 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 behavior of soils. Failure states and residual strength. Application of stress paths in engineering problems. Unsaturated soil mechanics. Laboratory exercises using the direct shear test, triaxial test, and soil-water retention measurements. Coursework in foundation design required.
Equivalent(s): CIE 867
Grade Mode: Letter Grading

CEE 866 - Introduction to Geotechnical Earthquake Engineering
Credits: 3
Overview of earthquake source mechanisms; magnitude and intensity; seismicity of the U.S.A. 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.
Prerequisite(s): CEE 878 with a minimum grade of D-.
Equivalent(s): CIE 862
Grade Mode: Letter Grading

CEE #867 - Geological Engineering
Credits: 3
Functional classification of rocks and rock masses. Stereographic projection. Engineering properties of rocks. 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 863
Grade Mode: Letter Grading

CEE 868 - Geo-Environmental Engineering
Credits: 3
Soil composition and structure; hydrogeology; attenuation and contaminant transport; containment design including landfills, geosynthetics 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. Prior coursework in fundamental aspects of geotechnical engineering required.
Equivalent(s): CIE 866
Grade Mode: Letter Grading

CEE 878 - 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. Prior coursework in fundamental aspects of geotechnical engineering required.
Equivalent(s): CIE 860
Grade Mode: Letter Grading

CEE 879 - 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.
Prerequisite(s): CEE 878 with a minimum grade of D-.
Equivalent(s): CIE 861
Grade Mode: Letter Grading

CEE 880 - 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 consecutive relationships. Plane trusses, beams, frames, and space trusses. Prior coursework in fundamental aspects of structural engineering required.
Equivalent(s): CIE 883
Grade Mode: Letter Grading

CEE 881 - 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.
Prerequisite(s): CEE 880 with a minimum grade of D-.
Equivalent(s): CIE 887
Grade Mode: Letter Grading

CEE 889 - Timber Design
Credits: 3
Introduction to the design of timber structures. Structural properties of wood. Determination of horizontal and vertical loads. Horizontal and vertical load-resisting systems. Design of horizontal diaphragms, shear walls, beams, and columns. Bolted, screwed, and nailed connections. Prior coursework in fundamental aspects of structural engineering required.
Equivalent(s): CIE 882
Grade Mode: Letter Grading

CEE 890 - 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. Prior coursework in fundamental aspects of materials and structural engineering required.
Equivalent(s): CIE 876
Grade Mode: Letter Grading

CEE 891 - Reinforced Concrete Design
Credits: 0 or 4
Introduction to the design of reinforced concrete structural members by the strength method and considering deflection performance. Includes loads, approximate analysis, slabs, beams, and columns. Prior coursework in fundamental aspects of materials and structural engineering required.
Equivalent(s): CIE 874
Grade Mode: Letter Grading

CEE 892 - Pre-stressed Concrete
Credits: 3
Analysis and design of pre-stressed and post-tensioned concrete sections in flexure and shear. Strength, deflection, and losses in flexural members. Optimization of section and pre-stressing force selection.
Prerequisite(s): CEE 891 with a minimum grade of D-.
Equivalent(s): CIE 891
Grade Mode: Letter Grading

CEE 893 - 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. Prior coursework in fundamental aspects of materials and structural engineering required.
Equivalent(s): CIE 893
Grade Mode: Letter Grading

CEE 894 - LRFD Bridge Design
Credits: 3
AASHTO LRFD Bridge Design Specifications using SI units. Design objectives, loads, load case analysis and selection, load distributions, static analysis, and design for axial loads, flexure, and shear. Design of slender columns, composite beams, and plate girders. Senior-level structural design course required prior to taking this course.
Equivalent(s): CIE 892
Grade Mode: Letter Grading

CEE 895 - Independent Study
Credits: 1-4
A limited number of qualified graduate students will be permitted to pursue independent studies under faculty guidance. May be repeated.
Equivalent(s): CIE 895
Grade Mode: Letter Grading

CEE 896 - Special Topics
Credits: 1-4
Advanced or specialized topics not normally covered in regular course offerings. May be repeated, but not in duplicate areas.
Equivalent(s): CIE 896
Grade Mode: Letter Grading
Special Fee: Yes

CEE 897 - Masters Student Seminar
Credits: 1
Topics of interest to graduate students and staff; reports of research ideas, progress, and results; lectures by outside speakers. Requires one presentation from students on their research, self-assessment, and a minimum attendance level. Continuing course: instructor may assign IA grade (continuous grading) at the end of one semester. Course held simultaneously with 897/997.
Equivalent(s): CIE 900
Grade Mode: Graduate Credit/Fail grading

CEE 898 - Master's Project Paper
Credits: 3
Concluding project paper required of Master's level students who utilize the non-thesis option.
Equivalent(s): CIE 888
Grade Mode: Letter Grading

CEE 899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Equivalent(s): CIE 899
Grade Mode: Graduate Credit/Fail grading

CEE #907 - Systems Analysis of the Environment
Credits: 3
This course teaches knowledge and hands-on skills in system dynamics modeling, which is one of the most commonly used tools in analyzing the mechanisms, tradeoffs, and feedbacks in environmental, social, and economic procedures and systems Students will also be trained with the ability of systems thinking during this course Class time is primarily devoted to a combination of lectures and computer labs.
Grade Mode: Letter Grading

CEE 936 - Advanced Asphalt Materials
Credits: 3
Examination of chemical composition of asphalt cements, current technologies for modification, and inclusion of recycled materials to meet desired physical properties. Advanced characterization of asphalt materials, modelling, advanced mixture design tools.
Prerequisite(s): CEE 836 with a minimum grade of D-.
Equivalent(s): CEE 923
Grade Mode: Letter Grading

CEE 949 - Advanced Pavement Design and Analysis
Credits: 3
Advanced flexible pavement design and analysis including rehabilitation/overlay design. Includes development of mechanistic-empirical methods, advanced pavement structural analysis, and advanced material characterization.
Prerequisite(s): CEE 849 with a minimum grade of D-.
Equivalent(s): CEE 921
Grade Mode: Letter Grading

CEE 951 - Statistical Hydrology
Credits: 3
Course examines statistical methods used to address water resources planning and management problems involving uncertainty objectives and hydrologic inputs. Application of statistics and probability to uncertainty in the description, measurement, and analysis of hydrologic variables and processes, including extreme events, error models, simulation, and sampling. A hydrology course and basic statistics required prior to taking this course.
Equivalent(s): CIE 951
Grade Mode: Letter Grading

CEE 954 - Advanced Groundwater Topics
Credits: 3
Review of Darcy's Law for confined and unconfined aquifers, linearization techniques, draw down computations under varying boundary conditions, solutions to the inverse problem, drainage theory, recharge theory, two-phase flow, succession of steady states modeling, and borehole geophysics.
Prerequisite(s): ESCI 810 with a minimum grade of D-.
Equivalent(s): CIE 945
Grade Mode: Letter Grading

CEE #955 - Advanced Surface Water Hydrology
Credits: 3
Occurrence and distribution of water by natural processes including atmospheric thermodynamics, precipitation, runoff, infiltration, water losses, flood routing and catchment characteristics, analysis, and methods of runoff prediction. This course builds from a foundation of fluid mechanics in the environment to address essentials of modern hydrology. An emphasis is placed on fundamental concepts, first principles, and the scientific basis of approximations. Knowledge of calculus and fluid mechanics required for this course.
Equivalent(s): CIE 955
Grade Mode: Letter Grading

CEE 959 - Advanced Stream Restoration Topics
Credits: 3
Course focuses on: stream crossing analysis and design, dam removal, and designs for aquatic species passage. Prior coursework in fundamental aspects of stream restoration required.
Equivalent(s): CIE 959
Grade Mode: Letter Grading

CEE 966 - Geotechnical Modeling
Credits: 4
Introduction to geotechnical modeling, soil constitutive modeling, introduction to numerical modeling and applications, physical modeling, centrifuge modeling, and theoretical modeling. Prior coursework in fundamental aspects of geotechnical engineering required.
Equivalent(s): CIE 962
Grade Mode: Letter Grading

CEE 967 - In Situ Geotechnical Testing
Credits: 3
In situ geotechnical testing methods for site characterization; theory and practice. Geotechnical testing methods include the piezocone, the pressuremeter, the flat plate dilatometer, the field vane, and the standard penetration test. Includes sampling techniques, geophysical exploration, and recent innovations in site and soil characterization.
Prerequisite(s): CEE 965 with a minimum grade of D-.
Equivalent(s): CIE 961
Grade Mode: Letter Grading

CEE 968 - Soil-Structure-Interaction
Credits: 3
Introduction to soil-structure-interaction, elastic and plastic analyses, serviceability calculations, relative foundation stiffness, Pile-soil-interaction, flexible retaining walls, tunnel lining, bridge abutments, dynamic soil-structure-interaction, case studies, and modeling techniques. Prior coursework in fundamental aspects of geotechnical engineering required.
Equivalent(s): CIE 963
Grade Mode: Letter Grading

CEE 993 - Advanced Structural Steel Design
Credits: 3
Advanced design of structural steel elements according to the AISC Load and Resistance Factor Method as applied to advanced topics in steel design. Emphasis will be placed on theory involved in the development of the design code requirements. Course design project will expand on these topics and include experimental work as appropriate. Prior coursework in fundamental aspects of structural steel design engineering required.
Equivalent(s): CIE 993
Grade Mode: Letter Grading

CEE 995 - Problems
Credits: 2-4
The study and investigation of problems selected to meet the needs of the students.
Equivalent(s): CIE 995
Grade Mode: Letter Grading

CEE 997 - Doctoral Student Seminar
Credits: 1
Topics of interest to graduate students and staff; reports of research ideas, progress, and results; lectures by outside speakers. Requires one presentation from students on their research, self-assessment, and a minimum attendance level. Continuing course: instructor may assign IA grade (continuous grading) at the end of one semester. Course help simultaneously with 897/997.
Equivalent(s): CIE 901
Grade Mode: Graduate Credit/Fail grading

CEE 999 - Doctoral Research
Credits: 0
Doctoral Research.
Equivalent(s): CIE 999
Grade Mode: Graduate Credit/Fail grading

Communication (COM) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

COM 800 - Foundations of Organizational Communication
Credits: 3
This course examines fundamental principles and theories of organizational communication. Students analyze the effects of communication on organizational quality; discuss specific skill sets necessary for effective internal communication; analyze methods of managing information; discuss the value and methods used to create organizational networks; and study the influence of organizational culture on organizational communication. Crisis communication, intercultural communication, and communication assessment are introduced.
Equivalent(s): COMM 800G
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 800 - Graduate Independent Study
Credits: 1-4
Faculty supervised graduate independent studies. The graduate student engages in independent study under the direction of one of the Faculty members of the department.
Grade Mode: Letter Grading

COMM 801 - Principles of Assessment
Credits: 2
Principles and practice for diagnosis of speech and language disorders; examination procedures and measurement techniques.
Grade Mode: Letter Grading

COMM 802 - 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. CSD majors only.
Grade Mode: Letter Grading

COMM 803 - 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.
Equivalent(s): COMM 876
Grade Mode: Letter Grading

COMM 804 - Counseling Clients and Families with Communication Disorders
Credits: 2
This course focuses on counseling in the area of communication sciences and disorders. Specifically, the course will examine the application of therapeutic principles in clinical settings with people who have speech, language, and hearing communication difficulties. More specifically, this course is intended to provide the student with a broad overview of contemporary counseling approaches and issues that apply to specific clients and their family members. The course involves formal lectures and group discussion.
Equivalent(s): COMM 915
Grade Mode: Letter Grading

COMM 805 - Research Methods in Communication Sciences and Disorders
Credits: 3
This course introduces students to concepts, procedures, and application of research methods in communication sciences and disorders. The course covers group, single subject, experimental, quasi-experimental, correlational, and qualitative designs with an emphasis on clinical application. CSD majors only.
Equivalent(s): COMM 917
Grade Mode: Letter Grading

COMM 811 - 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.
Equivalent(s): COMM 891
Grade Mode: Letter Grading

COMM 812 - Dysphagia
Credits: 3
This course addresses swallowing problems occurring in the preparatory, oral, and pharyngeal stages of the swallow. Assessment and treatment are discussed.
Equivalent(s): COMM 901
Grade Mode: Letter Grading

COMM 821 - 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.
Equivalent(s): COMM 900
Grade Mode: Letter Grading

COMM 822 - Stuttering
Credits: 3
This course provides students with an in-depth knowledge of stuttering from theoretical and clinical perspectives. Emphasis is placed on clinical decision making. Current practices are discussed that cover diagnosis of stuttering, differentiating it from "normal" dysfluencies, etiological considerations, and treatment options. Emphasis is placed on a psycho-social approach to intervention. Evidence based practices in stuttering are covered as well as issues associated with diverse populations.
Equivalent(s): COMM 902
Grade Mode: Letter Grading

COMM 823 - Voice Disorders
Credits: 3
Study of vocal habilitation and rehabilitaion. Focus will be on the use of voice and its modification in health and disease. Included in the course will be specific assessment and treatment approaches for clients who want to modify their vocal behavior including professional voice users, people with voice disorders, and transgender voice and communication change.
Equivalent(s): COMM 906
Grade Mode: Letter Grading

COMM 824 - Motor Speech Disorders
Credits: 3
Diagnosis and treatment of motor speech disorders in children and adults including dysarthria and apraxia of speech. Focus in the class will be on understanding perceptual and acoustic measures of speech, differential diagnosis and evidence based practice.
Equivalent(s): COMM 905
Grade Mode: Letter Grading

COMM 831 - Early Childhood Language Disorders
Credits: 3
Examination of interrelationships between early language, social, and cognitive development, with emphasis on collaborative inter-professional models of assessment and intervention. Reviews implications for special populations (e.g., intellectual and developmental delay/disorder, autism spectrum disorder, sensory impairment, and English language learners).
Equivalent(s): COMM 912
Grade Mode: Letter Grading

COMM 832 - School-Age & Adolescent Language Disorders
Credits: 3
This course addresses language acquisition in school-age children, adolescents, and young adults, and provides an overview of current language assessment and intervention issues. Topics include neurotypical development relative to developmental language delays and disorders, in the context of empirical research, clinical decision-making, and professional issues. Current evidence-based practices related to assessment and intervention are critically reviewed. Designed for future speech-language pathologists but may be relevant to others with an interest in language development and disorders.
Equivalent(s): COMM 875
Grade Mode: Letter Grading

COMM 833 - Aphasia in Adults
Credits: 3
Principles concerning etiologies, evaluation, classification, and methods of clinical management including the team approach to rehabilitation of aphasia in adults.
Prerequisite(s): KIN 706 with a minimum grade of D- and KIN 707 with a minimum grade of D-.
Equivalent(s): COMM 904
Grade Mode: Letter Grading

COMM 841 - Cognitive Communication Disorders
Credits: 2
This course addresses the nature of cognitive-communicative impairments in children and adults with acquired brain injury and links theory and practice to community reintegration.
Prerequisite(s): KIN 706 with a minimum grade of D- and KIN 707 with a minimum grade of D-.
Equivalent(s): COMM 913
Grade Mode: Letter Grading

COMM 842 - Autism Spectrum Disorders
Credits: 2
Provides an overview of autism spectrum disorders (ASD) including perspectives of individuals and their families. Current practices are discussed in relation to early identification, screening, diagnosis, and possible etiology of ASD, including and overview of medical considerations. Evidence-based practices across the life-span are critically reviewed in areas of behavior, communication, play, social interactions, and sensory-motor. Teaming approaches and transition to adult life to support a high quality of life are presented. Current "hot topics" in ASD research are presented.
Equivalent(s): COMM 916
Grade Mode: Letter Grading

COMM 843 - Augmentative and Alternative Communication
Credits: 3
An overview of how augmentative and alternative communication systems can be used to foster the participation, interaction, and inclusion of children and adults for whom speech is not a primary mode of communication. Students are exposed to a broad variety of assessment and intervention techniques, some of which involve the use of assistive technology.
Equivalent(s): COMM 914
Grade Mode: Letter Grading

COMM 851 - Advanced Audiology for Speech Language Pathologists
Credits: 3
This course prepares speech-language pathology students to provide clinical services for individuals, across the age span, with hearing loss/auditory disorders. Acquisition of knowledge and skills within the speech-language pathology scope of practice including screening protocols, communication assessment, assistive technology, re/habilitation techniques and referral procedures will be provided. Interprofessional collaboration strategies and ethical considerations will also be addressed.
Equivalent(s): COMM 890
Grade Mode: Letter Grading

COMM 870 - Clinical Practicum
Credits: 1-3
On-campus practicum provides graduate students with the opportunity to apply advanced theoretical knowledge in clinical setting with clients demonstrating speech, language, hearing, and/or swallowing disorders. Students acquire therapy and diagnostic experience under supervision. A minimum of 3 credits is required for the M.S. degree.
Repeat Rule: May be repeated for a maximum of 3 credits.
Equivalent(s): COMM 910
Grade Mode: Letter Grading

COMM 872 - Externship
Credits: 1-4
Application of advanced theoretical knowledge through clinical work in an off-campus clinical setting. A total of 8 credits in COMM 870 required prior to taking this course.
Prerequisite(s): COMM 870 with a minimum grade of B.
Repeat Rule: May be repeated for a maximum of 8 credits.
Equivalent(s): COMM 911
Grade Mode: Letter Grading

COMM 895 - Special Topics
Credits: 1-3
Advanced study in specific areas; involves an independent project.
Repeat Rule: May be repeated for a maximum of 4 credits. May be repeated up to 2 times.
Grade Mode: Letter Grading

COMM 899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

COMM 995A - Independent Study
Credits: 1-4
Individual or group projects involving faculty-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.
Grade Mode: Letter Grading

COMM 995B - Independent Study: Bilingual Speech-Language Pathology
Credits: 1-4
Individual or group projects involving faculty-directed study of bilingual speech-language pathology for students who wish to explore the topic in greater depth than is covered in the required curriculum.
Grade Mode: Letter Grading

Computer Science (CS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CS 800 - Internship
Credits: 1
Provides an opportunity to apply academic experience in settings associated with future professional employment. A written proposal for the internship must be approved by the department chair. The proposal must specify what the student will learn from the internship, why the student is properly prepared for the internship, and what supervision will be available to the student during the internship. A mid-semester report and a final report are required.
Repeat Rule: May be repeated for a maximum of 3 credits.
Grade Mode: Graduate Credit/Fail grading

CS 812 - Compiler Design
Credits: 3
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 are required to design and implement a compiler for a simple language. Students are expected to have background in computer organization.
Grade Mode: Letter Grading

CS #819 - Advanced Programming with Object-Oriented Design
Credits: 3
Advanced problem solving using software design, development and testing techniques that follow the software development life cycle. Object-oriented programming and design. Advanced data structures and algorithm analysis. Students are expected to have strong programming skills, experience with C/C++ and background in computer organization.
Grade Mode: Letter Grading

CS 820 - Systems Programming
Credits: 3
Study and simulation of various types of systems that include assemblers, linkers, memory management, concurrency and other resource management techniques. Students are expected to have background in Computer Organization, Operating Systems Fundamentals or equivalent.
Grade Mode: Letter Grading

CS 822 - Cloud Computing Systems
Credits: 3
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 system design, cloud-scale storage, cloud data processing and machine learning systems, and cloud configuration management. The course also covers the latest advancements in cloud computing/systems, IoT, edge, and fog computing. Students are expected to have background in operating systems fundamentals.
Grade Mode: Letter Grading

CS 823 - Performance Evaluation of Computer Systems
Credits: 3
This class 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. The course is mainly based on the use of analytic queuing network models of computer 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. Students are expected to have background in operating systems fundamentals.
Grade Mode: Letter Grading

CS 825 - Computer Networks
Credits: 3
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.
Grade Mode: Letter Grading

CS 827 - Software Security
Credits: 3
Mechanisms and implementation of techniques in software security. Various fundamental security topics include cryptography, access control, protocols, software vulnerabilities, and reverse engineering. Students are expected to have background in Computer Organization, Assembly Language, Fundamentals of Cybersecurity.
Grade Mode: Letter Grading

CS 830 - Introduction to Artificial Intelligence
Credits: 3
In-depth introduction to artificial intelligence concentrating on aspects of intelligent problem-solving. Topics include situated agents, advanced search techniques, knowledge representations, logical reasoning techniques, reasoning under uncertainty, advanced planning and control, and learning. Students are expected to have background in data structures.
Grade Mode: Letter Grading

CS 833 - Mobile Robotics
Credits: 3
An introduction to the foundational theory and practices in mobile robotics. Topics include Kinematics of wheeled mobile robots. Seniors 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. Students are expected to have background in programming.
Grade Mode: Letter Grading

CS 835 - Introduction to Parallel and Distributed Programming
Credits: 3
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. Students are expected to have background in operating systems fundamentals and computer organization.
Grade Mode: Letter Grading

CS 845 - Formal Specification and Verification of Software Systems
Credits: 3
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, are discussed. We rely on a notation (T LA+, the Temporal Logic of Actions) and a support tool (TLC, the TLA+ Model Checker). Students are expected to be knowledgeable in logic and to be able to write symbolic proofs in predicate calculus. A basic understanding of the notions of assertion, precondition, and post-condition is also assumed.
Grade Mode: Letter Grading

CS 850 - Machine Learning
Credits: 3
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. Students are expected to have background in statistics and programming.
Grade Mode: Letter Grading

CS 851A - Reinforcement Learning
Credits: 3
Reinforcement learning studies how agents can learn to act to achieve goals in complex, stochastic environments. This course introduces students to fundamental theoretical concepts of reinforcement learning, standard algorithms, and practical techniques. In addition to theoretical topics, the course involves implementing basic algorithms in a high-level programming language. Programming and statistics required prior to taking this course.
Grade Mode: Letter Grading

CS 852 - 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. Students are expected to have background in data structures.
Grade Mode: Letter Grading

CS 853 - Information Retrieval
Credits: 3
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. Students are expected to have background in data structures.
Grade Mode: Letter Grading

CS 855 - Computer Vision
Credits: 3
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. Students are expected to have background in statistics and programming.
Grade Mode: Letter Grading

CS 857 - Mathematical Optimization for Applications
Credits: 3
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. Programming proficiency in MATLAB, R, Java, C, Python, or equivalent required prior to taking course.
Prerequisite(s): MATH 426 with a minimum grade of D-.
Equivalent(s): MATH 857
Grade Mode: Letter Grading

CS 858 - Algorithms
Credits: 3
An introduction to important concepts in the design and analysis of algorithms and data structures, including implementation, complexity, analysis, and proofs of correctness. Understanding of basic data structures, familiarity with proof methods and basic concepts from discrete mathematics and the ability to program with recursion.
Grade Mode: Letter Grading

CS 859A - Natural Language Processing
Credits: 3
This class covers natural language processing, including both methods and well-known applications. Methods discussed will range from classical probabilistic methods such as Naive Bayes and Hidden Markov Models, to contemporary neural network methods, including word vector models, recurrent neural networks, and Transformer-based models. Applications discussed will include text classification, machine translation, and conversation systems. Data structures and statistics required prior to taking this course.
Grade Mode: Letter Grading

CS 861 - Programming Language Concepts and Features
Credits: 3
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. Students are expected to have background in operating systems fundamentals and Computer organization, and some knowledge of Java.
Grade Mode: Letter Grading

CS 870 - Computer Graphics
Credits: 3
Input-output and representation of pictures from hardware and software points of view; interactive techniques and their applications; three-dimensional image synthesis techniques. Students are expected to have background in Data Structures and Computer Organization.
Grade Mode: Letter Grading

CS #871 - Web Programming Paradigms
Credits: 3
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 on understanding how the design of these multi-paradigm dynamic languages support the process of developing Web applications. Students are expected to have background in programming language concepts.
Grade Mode: Letter Grading

CS 875 - Database Systems
Credits: 3
Database analysis, design, and implementation. Focus on the relational model. Data description and manipulation languages, schema design and normalization, file and index organizations, data integrity and reliability. Usage of selected DBMS. Students are expected to have background in data structures.
Grade Mode: Letter Grading

CS 880 - Topics
Credits: 1-4
Material not normally covered in regular course offerings. May be repeated.
Grade Mode: Letter Grading

CS 881 - Data Science for Knowledge Graphs and Text
Credits: 3
This course covers advanced text processing and machine learning algorithms and techniques for data science with knowledge graph and text data. This includes a wide range of algorithms for neural networks, machine learning, graph processing, text processing, and information retrieval with a focus of gaining insights into the knowledge stored in data. This an implementation-intensive research-oriented seminar, where a particular data science application will be developed by reading research publication and implementing a software prototype.
Prerequisite(s): CS 852 with a minimum grade of B- or CS 853 with a minimum grade of B- or CS 859A with a minimum grade of B-.
Grade Mode: Letter Grading

CS 898 - Master's Project
Credits: 3
Master's Project.
Grade Mode: Letter Grading

CS 899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

CS 900 - Graduate Seminar
Credits: 1
Regularly scheduled seminars presented by outside speakers, UNH faculty, and graduate students. Topics include reports of research ideas, progress, and results.
Grade Mode: Graduate Credit/Fail grading

CS 920 - Distributed Systems and Algorithms
Credits: 3
Covers fundamental topics in distributed systems: time, global state, synchronization, election, consensus, distributed file systems, security. Also includes a study of several distributed applications. Students are expected to have background in operating system fundamentals.
Grade Mode: Letter Grading

CS 925 - Advanced Computer Networks
Credits: 3
Design and analysis of computer networks. Modeling and performance evaluation, queuing theory applied to computer networks. Traffic flow management and error control. Routing algorithms and protocols. Switch and router architectures. Selected issues in high-speed network design. Optical networks.
Prerequisite(s): CS 825 with a minimum grade of D-.
Grade Mode: Letter Grading

CS 927 - Software Security Analysis
Credits: 3
This course covers advanced research topics in software security. The main focus is automatic software analysis techniques, such as symbolic execution, taint analysis, and fuzz testing.
Grade Mode: Letter Grading

CS 931 - Planning for Robots
Credits: 3
Students read research papers and perform a research project pertaining to algorithms for planning and decision-making for robots, with an emphasis on autonomous systems. Advanced undergraduate students in Computer Science and graduate students from other disciplines are eligible to take the course with the instructor's permission.
Prerequisite(s): CS 830 with a minimum grade of D- or CS 833 with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 9 credits.
Grade Mode: Letter Grading

CS 933 - Human Robot Interaction
Credits: 3
Human robot interaction (HRI) is a multidisciplinary research domain that investigates the issues involved with smooth integration of robots in the human society. This course will discuss the evolution of HRI research over the past two decades with an emphasis on HRI algorithms that promote safe, meaningful, and goal-oriented human-robot interactions. Topics also include experimental design methodologies commonly used in HRI studies.
Prerequisite(s): CS 830 with a minimum grade of D- or CS 833 with a minimum grade of D- or CS 850 with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

CS 950 - Advanced Machine Learning
Credits: 3
Course covers advanced machine learning techniques for making good decisions driven by data. The main focus areas are reinforcement learning, exploration-exploitation trade-off, mathematical optimization methods, and practical applications. Group-based Project on a selected topic.
Repeat Rule: May be repeated for a maximum of 9 credits.
Grade Mode: Letter Grading

CS 953 - Data Science for Knowledge Graphs and Text
Credits: 3
This course covers basic and advanced algorithms and techniques for data science with knowledge graph and text data. This includes a wide range of algorithms for graph processing, text processing, and information retrieval with a focus of knowledge graphs and text from knowledge articles.
Prerequisite(s): CS 853 with a minimum grade of D-.
Grade Mode: Letter Grading

CS 980 - Advanced Topics
Credits: 3
Advanced Topics.
Grade Mode: Letter Grading

CS 998 - Independent Study
Credits: 1-6
Independent Study.
Grade Mode: Letter Grading

CS 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Computing Technology (COMP)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

COMP 801 - Integrated Computing Practice
Credits: 3
Student learning in this course focuses on the development and application of professional computing competencies. To achieve this goal, students will engage in project management activities, collaborate with peers and participate in teamwork, give presentations and receive feedback, make effective use of appropriate tools and platforms, and gain practice with test-driven iterative development and version control.
Grade Mode: Letter Grading

COMP 805 - Full Stack Development
Credits: 3
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 applications with database and web server applications. Free and open source development and communication tools are used to carry out the course project.
Grade Mode: Letter Grading

COMP 815 - Information Security
Credits: 3
Topics include general security principles and practices, network and system security, access control methodology, and cryptography. Students develop a basic cryptographic system based on sound mathematical principles, elaborate on its features and refine it, and experiment with various ways to attack it. Some programming required.
Grade Mode: Letter Grading

COMP 820 - Database Systems and Technologies
Credits: 3
This is a project course that provides practical experience with database systems and technologies. Topics include data modeling, database design, system development and integration, database administration, and configuration and project management. The course emphasizes communication and collaboration with online tools. Project artifacts and activities are supported by current version control and database development and administration tools.
Grade Mode: Letter Grading

COMP 821 - Big Data for Data Engineers
Credits: 3
In this course students gain practical experience developing data-oriented applications in modern infrastructure frameworks, also known as 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.
Grade Mode: Letter Grading
Special Fee: Yes

COMP 825 - Programming Languages
Credits: 3
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.
Grade Mode: Letter Grading

COMP 830 - Software Development
Credits: 3
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.
Grade Mode: Letter Grading

COMP 835 - Secure Networking Technologies
Credits: 3
In this course students study modern computer networking and focus on principles, architectures, protocols, security, and cloud. Modern IT and cloud computing call for expertise in security, which is a theme across all computing subjects, as well as a core area of study. Course requirements include both programming and administrative exercises to explore and gain practice with networking topics.
Grade Mode: Letter Grading

COMP 840 - Machine Learning Applications and Tools
Credits: 3
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, including deep learning techniques. Different application domains are considered, such as computer vision, natural language processing, and cyber security. Students learn to evaluate the effectiveness of machine learning systems as well as their potential prediction problems.
Grade Mode: Letter Grading

COMP 841 - Practical Artificial Intelligence
Credits: 3
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.
Grade Mode: Letter Grading

COMP 842 - Fundamentals of Computer Vision
Credits: 3
This course provides a comprehensive introduction to computer vision, covering both the theoretical and practical skills needed to pursue a career in computer vision, pattern recognition, image processing, and signal processing. Students will learn basic concepts as well as hands-on experience to solve various real-life problems in image processing, feature extraction, object recognition, and image understanding. Not offered for credit if credit is received for COMP 880 Topics Computer Vision.
Grade Mode: Letter Grading

COMP 845 - Fundamentals of Computer Vision
Credits: 3
This course provides a comprehensive introduction to computer vision, covering both the theoretical and practical skills needed to pursue a career in computer vision, pattern recognition, image processing, and signal processing. Students will learn basic concepts as well as hands-on experience to solve various real-life problems in image processing, feature extraction, object recognition, and image understanding. Not offered for credit if credit is received for COMP 880 Topics "Computer Vision".
Grade Mode: Letter Grading

COMP 850 - Neural Networks
Credits: 3
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.
Equivalent(s): DATA 850
Grade Mode: Letter Grading

COMP 851 - System Integration and Architecture
Credits: 3
Students work in teams to explore and practice various system integration techniques to address requirements, software and hardware acquisitions, integration issues, and acceptance testing. Specific focus is given to diagnosing and troubleshooting systems interoperability and interface integration issues. Students develop project plans and study the influence of business processes and culture on system architecture decisions. Studied techniques are compared and contrasted to derive lessons learned, best practices, and critical success factors.
Grade Mode: Letter Grading

COMP 855 - Digital Forensics
Credits: 3
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.
Grade Mode: Letter Grading

COMP 860 - Data Visualization & Communication
Credits: 3
Through hand-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 880 - Topics
Credits: 1-3
This course includes topics and emerging areas in computing. Barring duplication of subject the course may be repeated for credit.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

COMP 885 - Applied Cryptography
Credits: 3
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.
Grade Mode: Letter Grading

COMP 890 - Internship and Career Planning
Credits: 1
This course is recommended for any student seeking internship and/or employment opportunities. Participants research and evaluate computing-related career opportunities related to their interests. create application portfolio, conduct informational interviews, use networking and job search resources, and participate in employer-based resume reviews and mock interviews. This course cannot be repeated for credit.
Grade Mode: Letter Grading

COMP 891 - Internship Practice
Credits: 1-3
The Internship Practice 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 workplace supervisor and a faculty advisor, the student is expected to contribute to the computing products, processes, or services of the organization.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

COMP 892 - Applied Research Internship
Credits: 1-3
This Applied Research Internship enhances the student's academic achievements with real-world, professional computing applied research projects at a sponsoring organization. The student is expected to apply knowledge and skills acquired through other coursework in the major to address a research question in information technology related fields under the direction of a faculty advisor and a site supervisor at the organization.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

COMP 895 - Independent Study
Credits: 1-3
Advanced individual study under the direction of a faculty mentor. Content area to be determined in consultation with faculty mentor. May be repeated.
Grade Mode: Letter Grading

COMP 898 - Master's Project
Credits: 3
Guided project on a topic which has been approved as a suitable subject for a master's project. Supervision and advising by faculty in the Computing Technology program. Completion of 24 credits in the major.
Grade Mode: Letter Grading

COMP 899 - Master's Thesis
Credits: 1-6
Guided research on a topic which has been approved as a suitable subject for a master's thesis. Supervision and advising by faculty of the Computing Technology program.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

Cybersecurity Policy & Risk Management (CPRM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

CPRM 810 - Foundations of Cybersecurity Policy
Credits: 3
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 820 - Policy Development and Communication
Credits: 3
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 830 - Security Measures I
Credits: 3
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 systems.
Prerequisite(s): CPRM 810 with a minimum grade of B-.
Grade Mode: Letter Grading

CPRM 840 - Cybersecurity Standards, Regulations, and Laws
Credits: 3
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 850 - Security Measures II
Credits: 3
This course continues surveying common technological 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.
Prerequisite(s): CPRM 830 (may be taken concurrently) with a minimum grade of B-.
Grade Mode: Letter Grading

CPRM 860 - Incident Response and Investigation
Credits: 3
This course fosters cybersecurity incident response and investigative knowledge, from both the organizational and system perspective. Material includes laws, standards, codes of behavior and best practices for incident response, including the management of relationships (e.g., regulators, clients, vendors). Case studies are presented and discusses in light of organizational resource limitations, legal mandates, and jurisdictional boundaries.
Prerequisite(s): CPRM 830 with a minimum grade of B- and CPRM 850 (may be taken concurrently) with a minimum grade of B-.
Grade Mode: Letter Grading

CPRM 870 - Cybersecurity Risk Management
Credits: 3
This course establishes foundations for addressing cybersecurity as a risk management concept and process, and as a component of overall risk management within an organization. Students will become familiar with theories of risk and methods of risk management, as well as frameworks/models for applying these theories and methods to cybersecurity.
Prerequisite(s): CPRM 840 with a minimum grade of B- and CPRM 860 with a minimum grade of B-.
Grade Mode: Letter Grading

CPRM #879 - Research Methods
Credits: 3
This course helps students understand and apply research methods and planning processes for accomplishing a graduate-level thesis. Students will survey a variety of research approaches and select those most applicable to each student's research project. Within those approaches, students will explore planning and management skills as well as academic components (e.g., literature review, critical analyses) in preparation for applying these skills and knowledge in a Capstone: Thesis Option course.
Equivalent(s): EDUC 882
Grade Mode: Letter Grading

CPRM 880 - Cybersecurity Metrics and Evaluation
Credits: 3
This course provides an overview of analytical techniques for the documentation and evaluation of cybersecurity metrics, and the incorporation of such assessments in organizational risk management. Students will become familiar with methods for cybersecurity evaluation and the translational impacts to function and mission success of an organization (business, public administration, homeland security, etc.); as well as processes for security measurements, comparisons, and reassessments for purposes of risk management.
Prerequisite(s): CPRM 870 (may be taken concurrently) with a minimum grade of B-.
Grade Mode: Letter Grading

CPRM 890 - Organizations, Change Management, and Leadership
Credits: 3
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

CPRM #895 - Independent Study
Credits: 3
This course allows students to complete a graduate-level course in Cybersecurity Policy and Risk Management program via independent study if they were unable to take the course when it was offered. This course can substitute for a required course.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

CPRM 898 - Capstone Project
Credits: 3
This capstone integrates all disciplines and competencies that have been learned in this degree program, plus the student's past experiences, areas of specialization, and professional goals, into a single work-based project, internship experience, or other appropriate activity. In consultation with an advisor, each student develops a project plan, establishes goals and objectives; collects and analyzes information; and prepares and delivers a final project agreed upon by the student and advisor.
Prerequisite(s): (CPRM 720 with a minimum grade of B- or CPRM 820 with a minimum grade of B-) and CPRM 880 with a minimum grade of B- and (CPRM #790 (may be taken concurrently) with a minimum grade of B- or CPRM 890 (may be taken concurrently) with a minimum grade of B-).
Grade Mode: Letter Grading

CPRM 899 - Capstone: Thesis Option
Credits: 3
Students synthesize, evaluate, and integrate past experiences, new research, and the cross-disciplinary knowledge constructed during this degree program to create a publishable quality, graduate-level thesis. In continuation with an advisor, each student develops a project plan; establishes goals and objectives; collects and analyzes information; and prepares and delivers a final product agreed upon by the student and advisor.
Prerequisite(s): (CPRM 720 with a minimum grade of B- or CPRM 820 with a minimum grade of B-) and CPRM 870 with a minimum grade of B- and (CPRM #879 with a minimum grade of B- or EDUC 882 with a minimum grade of B-) and (CPRM #790 (may be taken concurrently) with a minimum grade of B- or CPRM 890 (may be taken concurrently) with a minimum grade of B-).
Repeat Rule: May be repeated for a maximum of 6 credits.
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 800 - Paul Assessment of MSBA Core Knowledge
Credits: 0
One of the learning objectives in the MSBA Program is that all students will graduate with an understanding of the core knowledge assembled from various core courses in the program. We assess the learning as part of our Assurance of Learning Program. This zero credit course provides an administrative mechanism for accomplishing this goal.
Grade Mode: Graduate Credit/Fail grading

DS 801 - Business Intelligence
Credits: 3
This course is designed to introduce students to the skills needed to succeed in today's big data environment through the application of data management techniques, business-oriented hands-on cases and exercises. Students will acquire concepts and application of data management techniques, business-oriented hands-on cases and exercises. Students will acquire concepts and techniques in the theory, design, and implementation of relational databases and Data Warehousing (DW) systems, queries in Structured Query Language (SQL), next generation query language (NoSQL).
Grade Mode: Letter Grading

DS 802 - Probability and Simulation
Credits: 3
The course is designed to provide an introductory understanding of the fundamentals of uncertainty quantification in business decision making. The course will serve as a building block for subsequent course work in inferential statistics, predictive analytics, and time series analysis. The topics include the axioms of probability theory, random variables, probability distributions, random variable generation using simulation methods, and system simulation for relevant business applications (e.g. inventory management, supply chain management, and staffing in call centers). An introduction to the programming language R will be part of the learning experience.
Grade Mode: Letter Grading

DS 803 - Fundamentals of Statistical Analysis
Credits: 3
The course is designed to introduce the fundamentals of statistics needed for solving business analytics problems. The course will mainly cover the broadly defined subjects of random sampling, likelihoods, estimation using maximum likelihood, Bayesian inference using priors, computational statistics methods, interval estimation, hypothesis testing for continuous data, Gaussian linear models, and model diagnostics. The course will conclude with a brief introduction to nonparametric analysis.
Prerequisite(s): DS 802 with a minimum grade of D-.
Grade Mode: Letter Grading

DS 804 - Exploration and Communication of Data
Credits: 3
The goal of this course is to expose students to techniques and technologies that will enable them to collect, harvest and transform unstructured and structured data into useful business insights. The first half of the course deals with data management and provides an introduction to data types and sources, data acquisition and harvesting tools and techniques and effective strategies and methods for data aggregation and analysis. In the second half of the course, students learn about the theoretical underpinnings of data visualization and use a variety of software tools to visualize business data in order to generate insightful information that facilitates effective business decision making.
Grade Mode: Letter Grading

DS 805 - Statistical Learning
Credits: 3
This course introduces students to statistical tools for modeling and identifying patterns in complex data sets. The goal of statistical learning is to develop predictions informed by data. Topics to be covered include Gaussian linear models, cross-validation techniques, penalized regression methods such as ridge and LASSO, nonlinear models, logistic regression, tree-based models including random forests, bagging, and boosting, and support vector machines. Application areas include Marketing (e.g., effectiveness of advertising and customer satisfaction), Financial Economics (valuation), and Operations Management (resource allocation). The course delivery will be a mix of lectures, readings/podcasts with discussion, and hands-on data analyses.
Prerequisite(s): DS 803 with a minimum grade of D-.
Grade Mode: Letter Grading

DS 806 - Optimization Methods I
Credits: 3
This course introduces students to fundamental quantitative methods for modeling, analyzing, and determining the best course of action in complex decision-making situations. Topics to be covered include decision trees and tables, price of uncertainty, utility theory, linear programming, LP sensitivity analysis, and network flow optimization. Application areas include Marketing and Operations management (e.g., advertising, production and inventory planning, project or personnel scheduling, shipping and distribution, routing, ride matching, etc.)
Grade Mode: Letter Grading

DS 807 - Modeling Unstructured Data
Credits: 3
This course introduces students to statistical and machine learning tools for modeling unstructured data; including emails, documents, text messages, and social media data. Topics to be covered include text mining, clustering, mixture models, deep learning, and topic models. The course integrates numerous applications to demonstrate practical approaches to analyzing large unstructured collections of data. Application areas include Marketing (Yelp and Trip Advisor reviews), Human Resources (health care plan analysis), Social Media (Twitter, YouTube, and Instagram). The course delivery will be a mix of lectures, readings/podcasts with discussion, and hands-on data analysis.
Prerequisite(s): DS 805 with a minimum grade of D-.
Grade Mode: Letter Grading

DS 808 - Optimization Methods II
Credits: 3
This course introduces students to more advanced concepts and modeling techniques in mathematical programming. Topics to be covered include integer programming, nonlinear programming, multi-objective optimization, goal programming, and Monte Carlo simulation. Application areas include Marketing (e.g., pricing and revenue optimization), Finance (capital budgeting and portfolio optimization), and Operations management (e.g., production and inventory planning, shipping and distribution, routing, location selection, etc.). The course delivery will be a mix of lectures, hands-on problem solving, and case discussions.
Prerequisite(s): DS 806 with a minimum grade of D-.
Grade Mode: Letter Grading

DS 809 - Time Series Analysis
Credits: 3
The course is designed to introduce analytical techniques needed in the estimation and analysis of temporal (time series) data in various business disciplines. The course focuses on theoretical and application aspects of stationary/non-stationary univariate as well as multivariate time series models. Emphasis will be given to topics such as time series regression, random walks, ARIMA/SARIMA processes, ARCH/GARCH for modeling conditional volatility, Vector ARMA models, and transfer functions. Modern software implementation is fully integrated into the course. Some examples of the business application areas include demand forecasting, financial asset return modeling, stochastic volatility modeling of financial indexes and securities, mortgage default risk assessment, online webpage click-rate modeling, market share modeling.
Prerequisite(s): DS 803 with a minimum grade of D-.
Grade Mode: Letter Grading

DS 810 - Big Data and AI: Strategy and Analytics
Credits: 3
This course is designed to be a capstone experience with emphasis on the integration of materials covered in prior courses. In addition, the course provides students with the knowledge and skills to manage and model vast quantities of data for business analytics. The course covers deep neural networks and large-scale data processing using ecosystems of computing tools such as TensorFlow and Apache Spark. Students learn how to store, analyze, and derive insights from large-scale datasets and develop an understanding of the implications of deep learning for business. As a part of the capstone experience, students complete a team project that focuses on using big data and artificial intelligence for business insights, and present and discuss their work.
Prerequisite(s): DS 801 with a minimum grade of D- and DS 804 with a minimum grade of D- and DS 805 with a minimum grade of D-.
Grade Mode: Letter Grading

DS 815 - Programming for Business Analytics
Credits: 3
This course introduces students to business programming. The course covers the Python programming language and students learn to collect, wrangle and manipulate data. Students also gain hands-on experience generating and presenting meaningful visualizations of quantitative and qualitative data to aid peer/managerial decision-making.
Grade Mode: Letter Grading

DS 816 - Tools for Business Analytics
Credits: 3
The goal of this course is to expose students to popular software tools used in all stages of data analytics in business, to create actionable insights. The course will cover and introduce tools for the three key areas of data analytics: a) Data Preparation & Blending b) Data Analysis & Visualization c) Model Building for Predictive Analytics .Students learn about the overall capabilities of these tools and will practice applying them to diverse types of sample data.
Grade Mode: Letter Grading

DS 898 - Topics in Business Analytics
Credits: 3
Special Topics; may be repeated. Pre- and co-requisite courses vary. Please consult time and room schedule for the specific 898 topics section you are interested in for details.
Repeat Rule: May be repeated for a maximum of 12 credits.
Grade Mode: Letter Grading

Development Policy & Practice (DPP)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

DPP 901 - Integrative Approaches to Development Policy and Practice
Credits: 3
This course aims to provide students with a general introduction to the basic core competencies and practical skills required of a "generalist" development practitioner and serves as the foundation course for the curriculum. Case studies will be used to demonstrate the interconnectedness of natural sciences and engineering, social science, health sciences, and management, especially as they relate to communities.
Grade Mode: Letter Grading

DPP 902 - Economic Analysis for Development
Credits: 3
This course provides the practitioner with tools of economic analysis that are necessary for effective community development practice. Drawing upon principles of macroeconomics, the course explores how markets, property rights, political institutions, government policies, environmental conditions and cultural values interact to produce development outcomes.
Grade Mode: Letter Grading

DPP 905 - Fiscal Management for Development Organizations
Credits: 3
Budgeting, goal setting, financial planning and financial analysis for development organizations.
Grade Mode: Letter Grading

DPP 906 - Organizational Management and Leadership
Credits: 3
Combines theory and practical information for students to learn traditional and contemporary organizational and leadership theories and apply them to their experience in organizations particularly non-profit institutions, non-governmental organizations. The course will focus on personal and inter-personal development such as self-awareness, stress and problem solving, interpersonal skills such as supportive communication, power and influence, motivation and conflict management: group skills such as delegation and team building; and leadership.
Grade Mode: Letter Grading

DPP 908 - Policy Seminar
Credits: 3
This seminar will reinforce the multidisciplinary breadth and trans-disciplinary perspective of the master's program, providing students with the opportunity to sharpen critical policy analysis skills. The goal of the course is to help students understand the sources of public policy, that is, why we have various public policies and how to produce professional policy analysis.
Grade Mode: Letter Grading

DPP #910 - Leadership and Development
Credits: 2
Leadership and Development emphasizes issues relevant to managing organizations in diverse cultural, socio-economic and political settings. Topics on board governance, resource development, organizational options and communication skills such as marketing, public relations, organizing and conducting meetings will be explored.
Grade Mode: Letter Grading

DPP #911 - Environmental Factors in Development Practice
Credits: 1
Students will learn key themes in the integration of environmental, social, and economic systems in community development and consider how to incorporate these themes into their master's community project.
Grade Mode: Letter Grading

DPP #951 - Nuts and Bolts of Microfinance
Credits: 3
This course is designed to provide the participant with an overall understanding of the microfinance institutions including management, planning and monitoring strategies, tools, and systems. Sessions will seek to develop skills and capacity to examine various areas, such as competition, expansion, product development, service delivery and human resource, marketing, and information management systems.
Grade Mode: Letter Grading

DPP #953 - Community Medicine and Epidemiology
Credits: 3
Surveys the fundamental principles of epidemiology and its importance as an analytical tool in the fields of public health and policy development to assure the health of populations in the developing world. Emphasis is placed on providing the student with a firm foundation of epidemiological concepts via a historical perspective of the field, measures of disease occurrence and association, practical applications to policy, data sources, and study designs to reduce community health problems. In order for the student to be able to utilize epidemiology as a health management tool, special emphasis will be placed on understanding and applying descriptive and analytical epidemiologic techniques to assess the health of diverse communities. The student will gain an appreciation for the role epidemiology plays in helping to produce and maintain healthy populations on both a local and global scale.
Grade Mode: Letter Grading

DPP 956 - Housing Development
Credits: 3
This course provides an introduction to housing policy in the United States, particularly policies designed to produce affordable housing. It explores federal policy related to private, market-rate owner and renter occupied housing; private subsidized housing; and public housing. It also presents state, local, and non-profit led strategies to create and preserve affordable housing, such as fair share requirements and builder's remedies, inclusionary zoning, and community land trusts. Finally, the course provides an overview of the real estate development process including project feasibility, acquisition, finance, construction leasing and management.
Grade Mode: Letter Grading

DPP #960 - Social Enterprise
Credits: 3
This course examines innovative organizations that are created to improve people's lives and that contribute to improved social, economic and environmental conditions. These organizations adapt various aspects of the market model emphasizing both financial viability and social (including environmental) goals - measuring achievement in all of the areas. Social enterprises are often launched to address problems where government, the private sector and the traditional non-profit sector fail to provide a public good. The course emphasis is on how such organizations are started, the business models they develop, and how they are sustained. We will have a wide range of social entrepreneurs presenting in the class.
Grade Mode: Letter Grading

DPP #961 - Community Development Finance
Credits: 3
This course examines the historic, theoretical, and applied foundations of community development lending and investment. The course critically examines what works, what doesn't work, and how community development financial institutions, investors, government agencies, private donors, and the capital markets have all contributed to the field of community development finance. The course also covers which methodologies, strategies, products, services, organizational models, and evaluation and reporting protocols have the greatest efficacy towards building and improving the industry.
Grade Mode: Graduate Credit/Fail grading

DPP 962 - Public Safety and Community Development
Credits: 3
This course will use a multidisciplinary approach to examine the underpinnings of creating the safe, just and predictable communities that are necessary for sustainable development. Various models of government legitimacy will be examined, particularly in light of the rule of law movement. The purposes of criminal justice systems (punishment, rehabilitation, and/or restoration) and the significance of procedural justice will be explored. The latter part of the course will focus specifically on public safety as a precursor to, or component of community development. The effects of collective efficacy, community cohesion, social capital and community level trauma on crime patterns and community engagement will be highlighted. Finally strategies for promoting public safety and engaging vulnerable populations (minorities, women, youth, poor) will be explored, models that join public safety with community development will be highlighted.
Grade Mode: Letter Grading

DPP 980 - Introduction to Community Development Projects
Credits: 3
During the first semester, students will identify a community problem or issue, research and analyze the issue in consultation with colleagues and community stakeholders, and design a project. A preliminary design will be submitted at the end of the first semester.
Grade Mode: Letter Grading

DPP 981 - Project Design and Planning
Credits: 3
Studies how project plan inputs are accurately gathered, integrated, documented and managed; the tools and techniques used in project management; and the outputs of a project plan to viable stakeholders. Considers the development of project scope, work breakdown structures, and the importance of quality, risk, and contingency management in planning development projects.
Prerequisite(s): DPP 980 with a minimum grade of D-.
Grade Mode: Letter Grading

DPP 982 - Project Implementation and Monitoring
Credits: 3
Students will begin implementation activities in field placement communities. Regular progress reports ad online postings will be required.
Prerequisite(s): DPP 980 with a minimum grade of D- and DPP 981 with a minimum grade of D-.
Grade Mode: Letter Grading

DPP 983 - Project Evaluation
Credits: 3
This semester students will conduct an evaluation of their project and manage closure processes. At the end students will submit a final written report and present it to the faculty and peers. This final project and the final report detailing the project will serve as the capstone course of the program.
Prerequisite(s): DPP 980 with a minimum grade of D- and DPP 981 with a minimum grade of D- and DPP 982 with a minimum grade of D-.
Grade Mode: Letter Grading

DPP 990 - Independent Study
Credits: 1-4
Under the guidance of an MCD Faculty member, the Independent Study Course (DPP 990) provides students with the opportunity to study a unique topic in-depth that is not offered as a traditional course. Often this topic is a relevant aspect of their capstone project which they wish to explore in more depth.
Repeat Rule: May be repeated for a maximum of 6 credits.
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 801 - Quantitative Methods in Earth Sciences
Credits: 4
Introduces quantitative tools necessary for upper level Earth Science courses. Incudes 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. One year of calculus and at least one semester of intermediate Earth Science required.
Grade Mode: Letter Grading

ESCI 805 - Principles of Hydrology
Credits: 4
Physical principles important in the land phase of the hydrologic cycle, including precipitation, snow melt, infiltration and soil physics, and surface and subsurface flow to streams. Problems of measurement and aspects of statistical treatment of hydrologic data. Field trips. Transportation fee. One year of calculus required and statistics recommended. Lab.
Grade Mode: Letter Grading
Special Fee: Yes

ESCI 810 - 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. One year each of calculus and physics required. Lab.
Grade Mode: Letter Grading
Special Fee: Yes

ESCI 820 - 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 810
Grade Mode: Letter Grading

ESCI 826 - 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 silicate rocks, with special emphasis on closed- and open-system reactions, multi-systems, reaction space, and pressure-temperature-time paths. Intermediate courses in petrology, calculus, chemistry, and physics required. Field trips. Lab.
Grade Mode: Letter Grading
Special Fee: Yes

ESCI 834 - 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. Undergraduate course in physical geology, one year of calculus, one year of college physics required.
Grade Mode: Letter Grading
Special Fee: Yes

ESCI 841 - 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. Lab. One year each of calculus and chemistry required.
Grade Mode: Letter Grading

ESCI 845 - 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. Lab. One year each of calculus and chemistry required.
Grade Mode: Letter Grading
Special Fee: Yes

ESCI 847 - 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. One year each of calculus and chemistry or geochemistry required.
Grade Mode: Letter Grading

ESCI 852 - 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. One year each of calculus and chemistry required.
Grade Mode: Letter Grading

ESCI 854 - 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.
Grade Mode: Letter Grading
Special Fee: Yes

ESCI 856 - 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. Intermediate level courses in structural geology or petrology required.
Grade Mode: Letter Grading
Special Fee: Yes

ESCI 858 - Introduction to 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. Calculus-based physics and introductory oceanography required.
Grade Mode: Letter Grading

ESCI 859 - 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.
Grade Mode: Letter Grading

ESCI 860 - 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. One year of chemistry and one course in introductory geology required.
Grade Mode: Letter Grading

ESCI 862 - 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. Lab.
Grade Mode: Letter Grading
Special Fee: Yes

ESCI 864 - 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. One year of calculus required.
Equivalent(s): OE 864
Grade Mode: Letter Grading

ESCI 865 - 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 1.8 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.
Grade Mode: Letter Grading

ESCI 866 - 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. One year of calculus and one course in introductory geology required. Lab.
Grade Mode: Letter Grading
Special Fee: Yes

ESCI 868 - Applied Physical Oceanography for Hydrographic Surveyors
Credits: 2
This course provides a context-specific examination of physical oceanographic phenomena that impact the quality of hydrographic surveys. This includes a review of global scale ocean circulation followed by a particular focus on processes controlling the variability of coastal and continental shelf oceanography. The instruments used, and the available ocean climatological databases are emphasized. The course is designed to meet the oceanography requirement for the Category A FIG/IHO/ICA Standards of Competence for Hydrographic Surveyors.
Grade Mode: Letter Grading

ESCI 869 - Marine Geology and Geophysics for Hydrographic Surveyors
Credits: 2
This course provides an overview of the geology, physiography, and sediments of the ocean basins, continental margins, shelves and coastal zone, formation and distribution of sediments, major substrate types, and gravity and magnetic fields. It introduces the main marine geophysical techniques (seismics, gravity, magnetics) and describes their methodology and derived information content. The course is designed to meet the marine geology and geophysics requirement for the Category A FIG/IHO/ICA Standards of Competence for Hydrographic Surveyors.
Grade Mode: Letter Grading

ESCI 871 - 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. One year of each calculus and physics required.
Equivalent(s): OE 871
Grade Mode: Letter Grading

ESCI 872 - Applied Tools for Ocean Mapping
Credits: 2
A review course on research tools commonly used in ocean mapping. The course focuses on teaching problem solving skills, note merely the application of tools. The course consists of modules addressing the use of: IVS Fledermaus; GeoMappApp, GIS, Google Earth, Matlab as well as the effective library research and use of Wikis. One year of calculus required.
Grade Mode: Graduate Credit/Fail grading

ESCI 874 - 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. Progressions through typical configurations involving single beam, sidescan, phase differing and multibeam systems. Integration of asynchronous 3D position, orientation and sound speed measurements with sona-relative acoustic travel times and angles. Analysis of impact of offsets, mis-alignments and latency in all integrated sensors. Prereq: two terms each of college calculus and physics. One year each of calculus and physics required.
Prerequisite(s): MATH 831 (may be taken concurrently) with a minimum grade of D-.
Equivalent(s): OE 874
Grade Mode: Letter Grading

ESCI 875 - Advanced Topics in Ocean Mapping
Credits: 4
The second of two courses covering the principles and practices of hydrography and ocean mapping. In this course the following topics are covered: Verification and Field QA/QC, Water Levels (Tides); Mapping Standards; Survey Planning, Execution and Reporting; Terrain Analysis; Optical Remote Sensing; Data Presentation; Seafloor Characterization; Electronic Navigational Charts; Hydrography for Nautical Charting, Product Liability and contracts; and the United Nations Common Law of the Sea (UNCLOS). One year each of calculus and physics required.
Prerequisite(s): ESCI 872 with a minimum grade of D- and (ESCI 874 with a minimum grade of D- or OE 874 with a minimum grade of D-) and MATH 831 (may be taken concurrently) with a minimum grade of D-.
Equivalent(s): OE 875
Grade Mode: Letter Grading

ESCI 877 - 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 open source program QGIS. Additional work will develop programing skills using the python language. Programming background is not required but beneficial. Course in earth sciences or natural resources required.
Equivalent(s): GSS 807
Grade Mode: Letter Grading

ESCI 878 - Remote Sensing Earth & Environmental Sciences
Credits: 4
Remote sensing provides insight to 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. Course in earth sciences or natural resources required.
Equivalent(s): GSS #817
Grade Mode: Letter Grading

ESCI 895 - Topics
Credits: 1-4
Study on an individual or group basis in geologic, hydrologic, or oceanographic problems, under members of the graduate staff. 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; earth science teaching methods.
Repeat Rule: May be repeated for a maximum of 9 credits.
Grade Mode: Letter Grading

ESCI 896 - Topics
Credits: 1-4
Study on an individual or group basis in geologic, hydrologic, or oceanographic problems, under members of the graduate staff. 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; earth science teaching methods. Special fee on some topics.
Repeat Rule: May be repeated for a maximum of 9 credits.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

ESCI 898 - Directed Research
Credits: 2
Research project on a specified topic in the Earth Sciences, guided by a faculty member.
Grade Mode: Graduate Credit/Fail grading

ESCI 899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

ESCI 972 - Hydrographic Field Course
Credits: 4
A lecture, lab, and field course on the methods and procedures for the acquisition and processing of hydrographic and ocean mapping data. Practical experience in planning and conducting hydrographic surveys. Includes significant time underway (day trips and possible multi-day cruises) aboard survey vessel(s).
Prerequisite(s): ESCI 871 with a minimum grade of D- and ESCI 874 with a minimum grade of D- and ESCI 875 with a minimum grade of D-.
Equivalent(s): OE 972
Grade Mode: Letter Grading

ESCI 973 - Seafloor Characterization
Credits: 3
Remote characterization of seafloor properties using acoustic (echo sounders, sub-bottom profilers, side-scan, multi-beam and interferometric sonars) and optical (video and laser linescanner) methods. Models of sound interaction with the seafloor will be explored as well as a range of possible geologic, geotechnical, morphologic, acoustic, and biologic descriptors. Upper level courses in ocean mapping and geodesy required.
Grade Mode: Letter Grading

ESCI #993 - Advanced Seminar
Credits: 1
Focused seminar in a discipline of earth sciences: earth, ocean, atmosphere, or hydrology. Can not be concurrently enrolled in ESCI 997.
Repeat Rule: May be repeated for a maximum of 4 credits.
Grade Mode: Graduate Credit/Fail grading

ESCI 995 - Advanced Topics
Credits: 1-4
Advanced work on an individual or group basis.
Repeat Rule: May be repeated for a maximum of 12 credits.
Grade Mode: Letter Grading

ESCI 996 - Advanced Topics
Credits: 1-4
Advanced work on an individual or group basis.
Repeat Rule: May be repeated for a maximum of 12 credits.
Grade Mode: Letter Grading

ESCI 997 - Seminar in Earth Sciences
Credits: 1
Readings, discussion, and presentation of recent investigations in the earth sciences. Required of all M.S. students in Earth Sciences. Can not be concurrently enrolled in ESCI #993.
Grade Mode: Graduate Credit/Fail grading

ESCI 998 - Proposal Development
Credits: 1
Introduction to research in the earth sciences and development of thesis and directed research proposals. Required of all M.S. students in Earth Sciences. Can not be concurrently enrolled in ESCI 994.
Grade Mode: Letter Grading

ESCI 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Economics (ECON)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ECON 825 - Mathematical Economics
Credits: 0 or 4
Principal mathematical techniques and their application in economics. Topics covered: matrix algebra, derivatives, unconstrained and constrained optimization, linear and nonlinear programming, game theory, elements of integral calculus.
Grade Mode: Letter Grading

ECON 871 - Macroeconomic Consulting
Credits: 3
Assess a macroeconomy's condition over the short-run and long-run. Emphasis is given to the construction of data from the National Income and Product Accounts (NIPA), Bureau of Labor Statistics (BLS), the Federal Reserve System (FRS), and other sources. This course also considers the role and functioning of financial markets and how business decisions are impacted by short-run and long-run macroeconomic developments.
Prerequisite(s): ECON 611 with a minimum grade of D- or ADMN 970 with a minimum grade of D-.
Grade Mode: Letter Grading

ECON 875 - Strategy Analysis: Games and Auctions
Credits: 3
Game theory is the study of strategic interactions. It models conflict and cooperation between rational agents. Applications include, statistical decision theory, artificial intelligence, auctions, pricing, bargaining, etc. The focus of this course is on business strategy. Students formalize strategic situations as well-defined games, analyze and solve a wide variety of games and business applications, and develop optimal auctions given specific corporate requirements. On-line auctions will be emphasized.
Prerequisite(s): ECON 605 with a minimum grade of D- or ECON 606 with a minimum grade of D- or ADMN 970 with a minimum grade of B- or ADMN 510 with a minimum grade of D-.
Grade Mode: Letter Grading

ECON 890 - Analytical Economics in Practice
Credits: 3
The course gives students an opportunity to use their economics, analytics, and data analysis skills in a business or consulting setting. To this end, students undertake an internship and/or corporate project.
Co-requisite: ECON 927
Prerequisite(s): ECON 926 with a minimum grade of B- and ECON 976 with a minimum grade of B-.
Grade Mode: Letter Grading

ECON 908 - Environmental Economics: Theory and Policy
Credits: 4
Applies microeconomic tools to issues in environmental economics. Considers the role of government, externalities, public goods, property rights, and market failure. Identifies and compares different policy instruments such as administrative regulation, marketable permits, tax incentives, and direct subsidies, along with consideration of complicating factors such as information, uncertainty and risk. These tools are applied to various policy issues such as air pollution, solid waste management, and recycling.
Prerequisite(s): ECON 926 with a minimum grade of B- and ECON 976 with a minimum grade of B-.
Grade Mode: Letter Grading

ECON 909 - Environmental Valuation
Credits: 4
Focuses on the theory and methods for estimating the economic values of environmental resources and public goods (such as clean air and water, preservation of wetlands or coastal resources, etc.) many of which are not exchanged in established markets and therefore do not have prices associated with them. The valuation of environmental resources is an important component in benefit-cost analyses which are used in policy making. Provides a blend of theory and hands-on applications of methods and real data sets.
Prerequisite(s): ECON 926 with a minimum grade of B- and ECON 927 with a minimum grade of B- and ECON 976 with a minimum grade of B-.
Grade Mode: Letter Grading

ECON 926 - Econometrics I
Credits: 0 or 4
Application and theory of statistical and econometric methods to problems in economics. Topics: basic statistical theory, simple and multiple regression, violations of the basic assumptions, generalized least squares, and introduction to simultaneous equation models. MATH 545 is strongly recommended prior to taking this course.
Prerequisite(s): ECON 726 with a minimum grade of D- and (MATH 424A with a minimum grade of D- or MATH 425 with a minimum grade of D-).
Grade Mode: Letter Grading

ECON 927 - Econometrics II
Credits: 4
Asymptotic theory, likelihood estimation, simultaneous equations, panel data analysis, binary and multiple choice models, count data analysis, selection models, survival analysis.
Prerequisite(s): ECON 926 with a minimum grade of B-.
Grade Mode: Letter Grading

ECON 928 - Econometrics III, Time Series Econometrics
Credits: 4
Basic and advanced time series models with up-to-date empirical techniques with emphasis on the application of econometric tools to economic issues. Selected topics include stationary ARMA models, unit roots and cointegration, VAR, ARCH dynamic panel data models, structural break models, and non-linear time series models.
Prerequisite(s): ECON 926 with a minimum grade of B- and ECON 927 with a minimum grade of B-.
Grade Mode: Letter Grading

ECON 929 - Econometrics IV, Advanced Econometrics
Credits: 4
Advanced nonlinear Econometrics and an introduction to the asymptotic theory of nonlinear regression. A summary of selected topics include nonlinear least squares (NLLS), generalized method of moments (GMM), numerical optimization, bootstrap, maximum likelihood (MLE), quasi-maximum likelihood (QMLE), nonparametric and semiparametric regression, cross-validation.
Prerequisite(s): ECON 926 with a minimum grade of B- and ECON 927 with a minimum grade of B-.
Equivalent(s): ECON 898
Grade Mode: Letter Grading

ECON 941 - Empirical Analysis in Health Economics
Credits: 4
Provides students with an understanding of key issues in the field of health economics from an empirical perspective. Topics (which align with those in ECON 942) include: production of health; health behaviors; supply of care by physicians, hospitals and nurses; cost-effectiveness and measuring quality of care; features of the U.S. health insurance system; and the effect of insurance on demand for care and health status.
Prerequisite(s): ECON 927 with a minimum grade of B- and ECON 977 with a minimum grade of B-.
Grade Mode: Letter Grading

ECON 942 - Theoretical Analysis in Health Economics
Credits: 4
Covers the seminal theoretical papers in the field of health economics. The first set of papers covered in the course focus on the determinants of health and demand for healthcare services; the second set of papers cover healthcare providers and their supply of healthcare services in competitive, monopolistic, and government-regulated markets; and the third set of papers cover private and public health insurance markets.
Prerequisite(s): ECON 977 with a minimum grade of B- and ECON 927 with a minimum grade of B-.
Grade Mode: Letter Grading

ECON 945 - International Trade
Credits: 4
Contemporary issues in international economic theory and policy. Analysis of trade theory, dynamics of world trade and exchange, and international commercial policy.
Equivalent(s): ECON 845
Grade Mode: Letter Grading

ECON 946 - Open Economy Macroeconomics
Credits: 4
This course introduces you to the frontier of research in open economy macroeconomics and builds on the tools currently used in modern macroeconomic analysis. This course first examines real business cycle fluctuations of small open economies, and then turns to considering monetary and fiscal policies. By the end of the course, students are expected to demonstrate the ability to formulate new theoretical models and be able to apply them to conduct policy analysis.
Prerequisite(s): ECON 973 with a minimum grade of B-.
Grade Mode: Letter Grading

ECON 957 - History of Economic Thought
Credits: 4
Traces the development of economic thought, with careful examination and critical appraisal of the contributions made by important figures and schools of thought.
Grade Mode: Letter Grading

ECON #958 - Topics in Economic Thought and Methodology
Credits: 4
Advanced seminar in a selected topic in economic thought or methodology.
Grade Mode: Letter Grading

ECON 972 - Macroeconomics I
Credits: 0 or 4
Development of the major macro models and approaches to macroeconomics: classical, Keynes' "General Theory," Keynesian, Monetarists, New Classical, and New Keynesian models and views. Introduction to open economy macro and growth models.
Grade Mode: Letter Grading

ECON 973 - Macroeconomics II
Credits: 0 or 4
Theory, empirical specification, and tests of macroeconomic functions. National econometric models. Theories and empirical models of the business cycle and economic growth. Use of models for policy analysis and forecasting.
Prerequisite(s): ECON 926 with a minimum grade of B- and ECON 972 with a minimum grade of B-.
Grade Mode: Letter Grading

ECON 976 - Microeconomics I
Credits: 0 or 4
Survey and applications of modern microeconomic theory. Analysis of households, firms, product and resource markets, and behavior under uncertainty.
Grade Mode: Letter Grading

ECON 977 - Microeconomics II
Credits: 0 or 4
Analysis of stability, cooperative and non-cooperative game theory, information economics, exhaustible resources, disequilibrium, public goods, public choice, and input-output analysis.
Prerequisite(s): ECON 976 with a minimum grade of B-.
Grade Mode: Letter Grading

ECON 978 - Teaching Economics
Credits: 4
This seminar-style course helps prepare graduate students to become effective teachers of economics at the college level. Emphasis is on teaching at the principles level. Students study and discuss key issues, including the learning process, the objectives of principles classes and of the economic major, heterogeneous learning styles, chalk and talk, vs. active learning, testing and the testing effect, homework, and the role of textbooks. Students also write teaching philosophies, lead discussion sessions, present research on teaching, and deliver short lectures to the class on specific topics at the principles level.
Grade Mode: Letter Grading

ECON #979 - Research Skills
Credits: 2
Aids students in completing a paper for which they conduct research on a particular economic problem or issue using the knowledge and skills they have gained from their other classes. Students meet regularly with their faculty advisor throughout the semester. They also present their work at various stages of completion. Presentations of students' topics and final papers are made to the faculty.
Prerequisite(s): ECON 926 with a minimum grade of D- and ECON 972 with a minimum grade of D- and ECON 976 with a minimum grade of D-.
Grade Mode: Letter Grading

ECON 988 - Graduate Economics Seminar
Credits: 0-4
Attend weekly graduate economics seminars; write reviews and critiques of seminar papers; participate in discussion at seminars. May be repeated up to a maximum of 4 credits for Masters students and up to 8 credits for Ph.D. students.
Repeat Rule: May be repeated for a maximum of 8 credits. May be repeated up to 4 times.
Grade Mode: Graduate Credit/Fail grading

ECON 995 - Independent Study
Credits: 1-6
Independent Study.
Grade Mode: Letter Grading

ECON 996 - Research Workshop
Credits: 2
Present research papers in the graduate economics seminar series; serve as a discussant for seminar presentations; write reviews and critiques of seminar papers; participate in discussion at seminars. May be repeated up to a maximum of 4 credits for Ph.D. students.
Repeat Rule: May be repeated for a maximum of 4 credits.
Grade Mode: Graduate Credit/Fail grading

ECON 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Education (EDC) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

EDC 800 - Introduction to Field Experience/Program Requirements
Credits: 1
This course is required for all students enrolled in teaching certification programs. Students work with Field Placement Faculty to create a field experience plan, develop prerequisite lesson planning and formative assessment skills, and gain the technical and professional understandings required for successful completion of teacher certification programs. Completion of Praxis Core required prior to taking this course.
Equivalent(s): EDU 700G
Grade Mode: Letter Grading

EDC 801 - Special Education Law
Credits: 4
The current field of special education was established by law and further refined through the courts in litigation. In this writing intensive class, students trace the historical development of federal, state, and local laws and regulations such as the Individuals with Disabilities Education Act (IDEA) and the New Hampshire Standards for the Education of Students with Disabilities. Students will gain an understanding of the relationship between constitutional law, statutory law, regulatory law and case law as it relates to current special education law. The focus on policies and procedures provides the background future teachers and paraprofessionals need to fulfill their legal and ethical responsibilities and to understand the ever changing, complex nature of special education law.
Equivalent(s): EDU 721G
Grade Mode: Letter Grading

EDC 802 - Young Children with Exceptionalities, Birth to Age 8
Credits: 4
In this course, students examine typical and non-typical development of children from birth through age 8. This is a time of rapid brain growth and overall development that forms the foundation for all learning. For young children who have exceptionalities in the physical, behavioral, developmental, or learning domains, these years are even more critical. The purpose of this course is to provide current, research-based knowledge and resources for professionals and their families who nurture, support, and provide services to exceptional children.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 761G
Grade Mode: Letter Grading

EDC 803 - The Dynamic Role of the Special Educator
Credits: 4
In this clinical course, students will examine the multifaceted role of the special education teacher as evaluator, consultant, case manager and teacher. Courses taken throughout the teacher certification program support the development of skills for each of these roles. This is an introductory course designed to accomplish the following outcomes: (a) explore the college's digital library; (b) introduce the American Psychological Association annotation and format requirements; (c) provide a beginning teacher with an organizational framework for the varying roles of a special education teacher; (d) provide an in-depth understanding of their case management responsibilities; e) plan for the effective supervision of paraeducators; f) introduce the reflective analysis of student work teaching and assessment cycle; and g) apply the components of systematic direct instruction in lesson plan development.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 701G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 804 - Assessment of Young Children in EC/ECSPED - Birth to Age 8
Credits: 4
In this course, students use procedures involved in the evaluation process for determination of eligibility for special education. Students develop the skills necessary to administer and interpret assessment tools commonly used by early intervention staff and early childhood special education teachers. Under the supervision of the district mentor, students review early support and services records and/or school records, gather information, observe an evaluation team meeting, consult with district evaluators, and review a variety of assessment tools and evaluation reports for young children through age 8. Students participate in preparing an assessment plan, administering chosen assessment tools, and writing assessment reports. Emphasis is placed on working with team members in the evaluation process.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 763G
Grade Mode: Letter Grading

EDC 805 - Collaboration, Consultation and Teaming In Early Childhood & Early Childhood Special Education
Credits: 4
In this course, students research and evaluate family, community and professional partnerships which support the growth and development of children with disabilities. The specific roles and responsibilities of each contributing partner will be explored and analyzed. Students, using knowledge acquired in areas of collaboration, consultation and teaming, construct service delivery models to support young children with diverse needs and their families.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 766G
Grade Mode: Letter Grading

EDC 806 - IFSP, IEP, and Transition Plans, Birth to Age 8
Credits: 2
This clinical course focuses on the components and processes involved in the legal aspects and development of Individual Family Service Plans (IFSP) and Individualized Education Programs (IEPs). Under the supervision of a district mentor, Students review school records; observe IFSP/IEP team meetings; consult with district evaluators, student and parents; analyze previously written IFSPs/IEPs and progress reports; and develop the skills necessary to prepare IFSPs/IEPs inclusive of transition plans and/or services. The culminating activities of the course include the development of an IFSP and an IEP, and a research paper which addresses the legal/ethical considerations and implications in the development of IFSPs and IEPs.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 767G
Grade Mode: Letter Grading

EDC 807 - Behavior Interventions for Young Children
Credits: 4
In this clinical course, students examine basic principles and components of life skills that children need as foundation for the development of positive social skills, e.g., attachment, affiliation, self-regulation, initiative, problem-solving, and respect. The student develops and implements a variety of activities and lesson plans to teach young children these critical life skills. Students develop strategies to be used with young children receiving early intervention services and/or to motivate young children in their preschool programs/classrooms by facilitating the development of positive peer relationships, addressing emotional needs, and minimizing disruptions resulting in increased learning. The student documents the use of individual activities and/or classroom strategies in a professional portfolio.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 768G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 808 - Science, Technology, Engineering, and Mathematics in Early Childhood and Early Child Spec. Ed. 0-8
Credits: 4
In this clinical course, students focus on STEM content, effective practice, instructional strategies, materials and curriculum integration, based on standards, inquiry, and connections to the real world. STEM concepts of curiosity, creativity, collaboration and critical thinking are researched and explored. Students will learn about the Scientific Method, as well as the roles of observation, classification, description, experimentation, application and imagination. Students will learn how to use technology and interactive media in the early childhood classroom to support learning. The role of engineering in the curriculum will be investigated, including design of methods and ideas for product development. Students will understand and apply math process standards of problem-solving, reasoning and proof, communication, connection, and representation. The course emphasizes application of principles in order to investigate and create experiences which employ STEM concepts and teaching strategies.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 764SG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 809 - Teaching Language Arts and Literacy in Early Childhood and Early Childhood Special Education
Credits: 6
In this clinical course, students develop an understanding of language and literacy development from birth through grade three. Topics include the reciprocal connections between speaking and listening, rhythm and rhyme, communication activities, hearing and reading literature, stories, poetry, music, and written expression. Students engage in appropriate literacy interactions, activities, and assessments to meet the literacy needs of a diverse range of children. Students work with parents and care givers as partners in promoting literacy. The key components of reading (e.g. word recognition, fluency, phonological awareness, etc.) identified by the National Reading Panel for this age level are studied in depth. Students apply their knowledge of how young children develop their own reading skills using these key components of the reading process. Students then evaluate the effectiveness of their instruction.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 710AG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 810 - Curriculum, Assessment & Instruction in Early Childhood and Early Childhood Spec Educ. Birth-Age 8
Credits: 4
In this clinical course, students examine, develop, and evaluate developmentally appropriate curriculum and instruction in early childhood special education settings, for young children birth through age 8 (grade 3). Students use district and state curriculum and integrate subjects with one another. Students develop skills to create and advocate for healthy, supportive, respectful, and challenging learning environments for all children.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 765G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 816 - Students with Disabilities
Credits: 4
This course provides an overview of the 13 Individuals with Disabilities Education Act (IDEA) educational disabilities and the opportunity to explore the implications of disability on learning. Students will develop knowledge of specific disabilities including: definition, diagnosis, etiology, prevalence, characteristics, adaptive behavior, and systems of support and resources. Students will explore how disability impacts learning and access to the general education curriculum. Students will research and identify teaching strategies, Universal Design for Learning (UDL) strategies, interventions, and educational and assistive technologies to enhance learning and provide equity in the classroom for students with disabilities.
Equivalent(s): EDU 717G
Grade Mode: Letter Grading

EDC 817 - Managing Student Behavior
Credits: 4
This clinical course focuses on the components and processes involved in the development of Individualized Education Programs (IEPs). Under the supervision of a supervising practitioner, students review school records, observe IEP team meetings, consult with district evaluators, student and parents, analyze previously written IEPs and progress reports, and develop the skills necessary to prepare IEPs inclusive of transition plans. During the culminating activity of the course, students develop an IEP and transition plan as a vehicle for exploring the legal and ethical considerations and implications in the development, implementation, and evaluation of IEPs.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 707G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 818 - Transition Planning and Developing IEPs
Credits: 2
This clinical course focuses on the components and processes involved in the development of Individualized Education Programs (IEPs). Under the supervision of a supervising practitioner, students review school records, observe IEP team meetings, consult with district evaluators, student and parents, analyze previously written IEPs and progress reports, and develop the skills necessary to prepare IEPs inclusive of transition plans. During the culminating activity of the course, students develop an IEP and transition plan as a vehicle for exploring the legal and ethical considerations and implications in the development, implementation, and evaluation of IEPs.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 706G
Grade Mode: Letter Grading

EDC 819 - Using Technology to Teach Social Studies
Credits: 4
Technology is a necessary tool in teaching today's youth. In this clinical course, students focus on developing three broad skills: (1) how to design and teach an integrated social studies unit plan that challenges and assists K-8 students to think deeply, (2) how to incorporate into the plan a wide range of mostly constructivist instructional strategies, and (3) how to integrate a rich array of technology tools and digital educational content into the unit plan. Admission to the teacher certification program required.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 702G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 820 - Instructional Methods, Strategies and Technologies to Meet the Needs of All Students
Credits: 4
In this clinical course, students develop knowledge and expertise using a variety of instructional methods and research-based strategies to improve learning for a diverse, student population facing complex individual learning challenges. Students will research strategy based instruction and meta-cognition to determine its effectiveness in increasing independence, enhancing learning and developing thinking skills. Math will be the content area focus, including: standards based instruction, assessment, unit development and teaching, and technology integration.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 703G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 821 - Assessment of Students with Disabilities
Credits: 4
This course focuses on the tools and procedures involved in the evaluation and determination of education disabilities. Under the supervision of the district mentor, students review school records, observe an evaluation team meeting, consult with district evaluators, review a variety of assessment tools and evaluation reports, and develop the skills necessary to administer and interpret some of the assessments commonly used by special education teachers. The culminating activity of the course is the development of a formal assessment report.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 705G
Grade Mode: Letter Grading

EDC 822 - Strategies for Teaching Science
Credits: 4
This clinical course focuses on learning theories and their application to science instruction. Students examine a variety of instructional strategies through readings, observation and participation in their clinical placements, and determine the appropriateness of each in the learning process. Topics include constructivist learning, differentiated learning, and an in-depth look at how the state and national standards guide science instruction. Additional topics include integrated STEM curricula, the appropriate use of technology, and effective formative, summative and alternative assessment strategies. Students plan, teach and evaluate an integrated/thematic unit with lessons that align with Next Generation Science Standards.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 704G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 823 - Teaching Language Arts and Literacy
Credits: 6
In this clinical course, students explore, develop, implement and evaluate a variety of strategies to teach language arts to diverse learners. Students analyze a language arts series in relation to the National Council of Teachers of English standards, and the National Reading Panel's recommendations in each of the following areas: phonemic awareness, phonics, fluency, comprehension of vocabulary and text.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 710G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 824 - Elementary School Mathematics Methods
Credits: 4
This clinical course focuses on learning theories and their application to elementary school mathematics instruction. Students research a variety of instructional strategies through readings, observation and participation in a clinical placement and determine the appropriateness of each in the learning process. Topics include constructivist learning, differentiated learning, and an in-depth look at how the Common Core State Standards in Mathematics guide mathematics instruction. Additional topics include integrated curricula, the appropriate use of technology, and effective formative, summative and alternative assessment strategies. Students plan two 5-lesson mathematics units for two different grade levels, teaching and reflecting on lessons taught in one of the units.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 732G
Mutual Exclusion: No credit for students who have taken MATH 803.
Grade Mode: Letter Grading
Special Fee: Yes

EDC 831 - Aspects of Mathematics Learning
Credits: 4
This clinical course is designed to provide prospective secondary and middle school teachers with the skills to develop an integrated approach to teaching and learning. It will cover cultural and psychological aspects of learning mathematics, models of instruction and planning, teaching and learning styles, assessment strategies, models and organization and selection of curriculum materials, classroom management, and the role of technology and media within these.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 752G
Mutual Exclusion: No credit for students who have taken MATH 800.
Grade Mode: Letter Grading
Special Fee: Yes

EDC 832 - Reading and Writing in the Mathematics Content Area
Credits: 4
This clinical course is designed to provide prospective secondary and middle school teachers with the knowledge, skills, and resources necessary to incorporate literacy skills into their mathematics content area plans. Emphasis will be on integrating the teaching of reading, writing, and oral literacy skills from various fields; students will explore and practice the methods and strategies, including testing and measurement assessments necessary to meet the diverse literacy needs of today's students allowing them to become independent students. Teaching and discussing theoretical and practical application of current theories and methods involved in teaching literacy to diverse secondary and middle student population within the contemporary pluralistic classroom, including differentiated learning styles through socioeconomic status, gender, and heritage will be emphasized. Ninety supervised clinical hours are required.
Prerequisite(s): (EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B- and (EDC 831 with a minimum grade of B- or EDU 752G with a minimum grade of B-.
Equivalent(s): EDU 753G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 833 - Middle School Mathematics Methods
Credits: 4
This clinical course focuses on mathematics learning theories and their application to middle school mathematics instruction. Students examine a variety of instructional strategies through readings, observation and supervised teaching. Topics include constructivist learning, differentiated learning, and an in-depth look at how the state and national standards guide mathematics instruction. Additional topics include integrated curricula, the appropriate use of technology, and effective formative, summative and alternative assessment strategies. Students plan two, 5-lesson mathematics units for two different grade levels, teaching and reflecting on lessons taught in one of the units. Depending on the certification program, a range of fifty to ninety supervised clinical hours are required.
Prerequisite(s): (EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B- and (EDC 832 with a minimum grade of B- or EDU 753G with a minimum grade of B-.
Equivalent(s): EDU 733G
Mutual Exclusion: No credit for students who have taken MATH 803, MATH 809.
Grade Mode: Letter Grading
Special Fee: Yes

EDC 834 - Secondary School Mathematics Methods
Credits: 4
This clinical course focuses on mathematics learning theories and their application to secondary mathematics instruction. Students examine a variety of instructional strategies through readings, observation and supervised teaching. Topics include constructivist learning, differentiated learning, and an in-depth look at how the state and national standards guide mathematics instruction. Additional topics include integrated curricula, the appropriate use of technology, and effective formative, summative and alternative assessment strategies. Students plan two, 5-lesson mathematics units for two different grade levels, teaching and reflecting on lessons taught in one of the units. Depending on the certification program, a range of fifty to ninety supervised clinical hours are required.
Prerequisite(s): (EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B- and (EDC 832 with a minimum grade of B- or EDU 753G with a minimum grade of B-.
Equivalent(s): EDU 734G
Mutual Exclusion: No credit for students who have taken MATH 809.
Grade Mode: Letter Grading
Special Fee: Yes

EDC 844 - Special Topics: Upper Level
Credits: 1-6
A study of current and variable topics in Education. Course content changes from term to term. It is expected that the learner will have prior coursework or experience in the subject area.
Repeat Rule: May be repeated up to unlimited times.
Equivalent(s): EDU 744G
Grade Mode: Letter Grading

EDC 845 - Natural Selection and Evolution
Credits: 3
In this non-clinical introductory course, students examine the major concepts around the structure and function of organisms and explore the best methodologies to teach these concepts. The major concepts include: DNA's discovery and structure; replication, transcription, and translation; the organizational levels of organisms; how structure relates to function; and feedback loops and homeostasis. The student develops multiple engaging activities and lesson plans to teach middle or high school children details within the major concepts. Students create formative investigations and assessments related to the major concepts as well as satisfy summative assessment requirements.
Equivalent(s): EDU 756G
Grade Mode: Letter Grading

EDC 846 - Life Sciences Across the Curriculum
Credits: 3
In this non-clinical introductory level course, students examine real-life application of life science phenomena and concepts across the curriculum and how these sciences intersect with chemistry, physics, and earth space science. The student uses laboratory techniques to explain and solve problems and develops multiple engaging activities and lesson plans to teach middle or high school children details within the major concepts. Students create formative investigations and assessments related to the major concepts as well as satisfy summative assessment requirements.
Equivalent(s): EDU 757G
Grade Mode: Letter Grading

EDC 847A - Introductory Field Experiences
Credits: 1
In this introductory level clinical course, students participate in several formative clinical experience tasks to prepare them for the facilitation of effective 7-12 science lessons. Students use Next Generation Science Standards and prior student evidence to create and deliver introductory level lessons that include appropriate activities and assessments aligned to a clear and measurable learning objective. Students' clinical assignments are carried out and assessed in an approved science classroom under the supervision of faculty and on-site Supervising Practitioners.
Equivalent(s): EDU 758AG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 847B - Introductory Field Experiences
Credits: 1
In this introductory level clinical course, students participate in several formative clinical experience tasks to prepare them for the facilitation of effective 7-12 science lessons. Students use Next Generation Science Standards and prior student evidence to create and deliver introductory level lessons that include appropriate activities and assessments aligned to a clear and measurable learning objective. Students' clinical assignments are carried out and assessed in an approved science classroom under the supervision of faculty and on-site Supervising Practitioners.
Equivalent(s): EDU 758BG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 847C - Introductory Field Experiences
Credits: 1
In this introductory level clinical course, students participate in several formative clinical experience tasks to prepare them for the facilitation of effective 7-12 science lessons. Students use Next Generation Science Standards and prior student evidence to create and deliver introductory level lessons that include appropriate activities and assessments aligned to a clear and measurable learning objective. Students' clinical assignments are carried out and assessed in an approved science classroom under the supervision of faculty and on-site Supervising Practitioners.
Equivalent(s): EDU 758CG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 847D - Introductory Field Experiences
Credits: 1
In this introductory level clinical course, students participate in several formative clinical experience tasks to prepare them for the facilitation of effective 7-12 science lessons. Students use Next Generation Science Standards and prior student evidence to create and deliver introductory level lessons that include appropriate activities and assessments aligned to a clear and measurable learning objective. Students' clinical assignments are carried out and assessed in an approved science classroom under the supervision of faculty and on-site Supervising Practitioners.
Equivalent(s): EDU 758DG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 848 - Structure and Function in Life Sciences
Credits: 3
In this non-clinical intermediate course, students examine the major concepts around the structure and function of organisms and explore the best methodologies to teach these concepts. The major concepts include: DNA's discovery and structure; replication, transcription, and translation; the organizational levels of organisms; how structure relates to function; and feedback loops and homeostasis. The student develops multiple engaging activities and lessons.
Equivalent(s): EDU 759G
Grade Mode: Letter Grading

EDC 849 - Matter and Energy in Organisms and Ecosystems
Credits: 3
In this non-clinical intermediate course, students examine the major concepts around the flow of matter and energy within ecosystems and explore the best methodologies to teach these concepts. The major concepts include: energy production in organisms; cycling of carbon through each sphere; carbon's role in living things; cycling of matter and energy in aerobic and anaerobic conditions; and cycling of matter and energy among organisms and ecosystems. The student develops multiple engaging activities and lesson plans to teach middle or high school children details within the major concepts. Students create formative investigations and assessments related to the major concepts as well as satisfy summative assessment requirements. Students plan an integrated/thematic unit with lessons that align with Next Generation Science Standards.
Equivalent(s): EDU 769G
Grade Mode: Letter Grading

EDC 850 - Teaching Life Sciences: Ecosystems-Interdependent Relationships
Credits: 3
In this non-clinical intermediate course, students examine the major concepts around interdependencies between organisms within ecosystems and explore the best methodologies to teach these concepts. The major concepts include: natural factors that affect population size; human influence on populations; factors that influence biodiversity; carrying capacity; and the role of group behavior on ecosystems. The student develops multiple engaging activities and lesson plans to teach middle or high school children details within the major concepts. Students create formative investigations and assessments related to the major concepts as well as satisfy summative assessment requirements. Students plan an integrated/thematic unit with lessons that align with Next Generation Science Standards.
Equivalent(s): EDU 776G
Grade Mode: Letter Grading

EDC 851A - Intermediate Field Experiences
Credits: 1
In this intermediate clinical course, students participate in several formative clinical experience tasks to prepare them for the facilitation of effective 7-12 science lessons. Students use Next Generation Science Standards and prior student evidence to create and deliver intermediate level lessons that include higher order thinking, rich academic language, differentiation, and data based instructional decisions. Students' clinical assignments are carried out and assessed in an approved science classroom under the supervision of faculty and on-site Supervising Practitioners.
Equivalent(s): EDU 777AG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 851B - Intermediate Field Experiences
Credits: 1
In this intermediate clinical course, students participate in several formative clinical experience tasks to prepare them for the facilitation of effective 7-12 science lessons. Students use Next Generation Science Standards and prior student evidence to create and deliver intermediate level lessons that include higher order thinking, rich academic language, differentiation, and data based instructional decisions. Students' clinical assignments are carried out and assessed in an approved science classroom under the supervision of faculty and on-site Supervising Practitioners.
Equivalent(s): EDU 777BG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 851C - Intermediate Field Experiences
Credits: 1
In this intermediate clinical course, students participate in several formative clinical experience tasks to prepare them for the facilitation of effective 7-12 science lessons. Students use Next Generation Science Standards and prior student evidence to create and deliver intermediate level lessons that include higher order thinking, rich academic language, differentiation, and data based instructional decisions. Students' clinical assignments are carried out and assessed in an approved science classroom under the supervision of faculty and on-site Supervising Practitioners.
Equivalent(s): EDU 777CG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 851D - Intermediate Field Experiences
Credits: 1
In this intermediate clinical course, students participate in several formative clinical experience tasks to prepare them for the facilitation of effective 7-12 science lessons. Students use Next Generation Science Standards and prior student evidence to create and deliver intermediate level lessons that include higher order thinking, rich academic language, differentiation, and data based instructional decisions. Students' clinical assignments are carried out and assessed in an approved science classroom under the supervision of faculty and on-site Supervising Practitioners.
Equivalent(s): EDU 777DG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 852 - Teaching Life Sciences: Genetics-Inheritance and Variation of Traits
Credits: 3
In this non-clinical advanced course, students examine the major concepts around the genetics and mechanisms of inheritance in organisms and explore the best methodologies to teach these concepts. The major concepts include: mitosis and cell division; DNA and the inheritance of traits; meiosis, mutations and change over time; and the statistics of genetics. The student develops multiple engaging activities and lesson plans to teach middle or high school children details within the major concepts. Students create formative investigations and assessments related to the major concepts as well as satisfy summative assessment requirements. Students plan an integrated/thematic unit with lessons that align with Next Generation Science Standards.
Equivalent(s): EDU 778G
Grade Mode: Letter Grading

EDC 853 - Math Across the Life Sciences
Credits: 3
In this non-clinical advanced level course, students examine the major concepts of the application and use of math and identification and manipulation of variables in life sciences. The major concepts include: applying mathematical modeling to a variety of concepts; using statistical concepts to model and predict; identifying and manipulating variables. The student may develops multiple engaging activities and lesson plans to teach middle or high school children details within the major concepts. Students create formative investigations and assessments related to the major concepts as well as satisfy summative assessment requirements. Students plan an integrated/thematic unit with lessons that align with Next Generation Science Standards.
Equivalent(s): EDU 779G
Grade Mode: Letter Grading

EDC 854A - Advanced Field Experiences
Credits: 1
In this advanced clinical course, students participate in several formative clinical experience tasks to prepare them for the facilitation of effective 7-12 science lessons. Students use Next Generation Science Standards and prior student evidence to create and deliver advanced level lessons that include instructional strategies generated based on student data, scaffolding for unique student needs, varied assessments, and high quality reflections. Students' clinical assignments are carried out and assessed in an approved science classroom under the supervision of faculty and on-site Supervising Practitioners.
Equivalent(s): EDU 798AG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 854B - Advanced Field Experiences
Credits: 1
In this advanced clinical course, students participate in several formative clinical experience tasks to prepare them for the facilitation of effective 7-12 science lessons. Students use Next Generation Science Standards and prior student evidence to create and deliver advanced level lessons that include instructional strategies generated based on student data, scaffolding for unique student needs, varied assessments, and high quality reflections. Students' clinical assignments are carried out and assessed in an approved science classroom under the supervision of faculty and on-site Supervising Practitioners.
Equivalent(s): EDU 798BG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 854C - Advanced Field Experiences
Credits: 1
In this advanced clinical course, students participate in several formative clinical experience tasks to prepare them for the facilitation of effective 7-12 science lessons. Students use Next Generation Science Standards and prior student evidence to create and deliver advanced level lessons that include instructional strategies generated based on student data, scaffolding for unique student needs, varied assessments, and high quality reflections. Students' clinical assignments are carried out and assessed in an approved science classroom under the supervision of faculty and on-site Supervising Practitioners.
Equivalent(s): EDU 798CG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 854D - Advanced Field Experiences
Credits: 1
In this advanced clinical course, students participate in several formative clinical experience tasks to prepare them for the facilitation of effective 7-12 science lessons. Students use Next Generation Science Standards and prior student evidence to create and deliver advanced level lessons that include instructional strategies generated based on student data, scaffolding for unique student needs, varied assessments, and high quality reflections. Students' clinical assignments are carried out and assessed in an approved science classroom under the supervision of faculty and on-site Supervising Practitioners.
Equivalent(s): EDU 798DG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 855 - Culminating Experience for Life Science
Credits: 2
In this culminating, field-based course, students use their content knowledge and field experience to design and implement a three lesson unit that reflects the full range of experiences based on the standards for certification in Life Sciences for Grade 7-12 and the professional education standards for all teachers. As part of the course, candidates demonstrate completion of all requirements for teacher certification through the Teacher Candidate Assessment of Performance (TCAP).
Equivalent(s): EDU 799G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 858 - Introduction to Digital Learning
Credits: 3
This is an introductory, fast-paced course on the role of the digital learning specialist and the available technology tools to improve teaching and learning. Candidates will formulate a vision for what type of digital learning specialist they will become. Individually and collaboratively, candidates will reduce fear, embrace exploration of technology in all facets and manifestations while building practical technical skills. Candidates will learn to find and evaluate resources, applications, tools and software both for teaching and their own learning. The class emphasizes the development of on-going 'self-propelled' professional development and reflection habits.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 770G
Grade Mode: Letter Grading

EDC 859 - Curricular Theory of Technological Integration
Credits: 3
Candidates will explore how to effectively use technology with differentiation, rigor, relevance, and engaging learning experiences to enhance existing curriculum. Candidates will gain knowledge of digital tools to model, promote, and facilitate experiences that advance learner competency, creativity, and innovation in both face-to-face and virtual environments.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 771G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 860 - Pedagogical Practice and Management of Technological Integration
Credits: 3
Candidates build understandings and practical pedagogical skills/ strategies for effective implementation of a constructivist curriculum including management of cooperative learning groups, project-based learning, and inquiry-based learning. Teacher candidates will explore strategies to properly carry out this type of learning and assessment in the classroom setting. Various technological tools and resources will be explored and shared.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 772G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 861 - Meeting the Needs of All Learners Through Technological Integration
Credits: 3
This course investigates the principles of Universal Design for Learning (UDL) as a tool to meet the needs of all learners in the classroom. Candidates explore the UDL framework and examine how designing lessons with the UDL guidelines can improve and optimize learning for all students. Candidates research the use of assistive technologies to allow every student access to the curriculum, as well as determine what assistive technology is appropriate for overcoming barriers to learning.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 773G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 863 - Professionalism, Leadership and Administrative Understandings and Practice for Tech. Integration
Credits: 3
In this course students will be exposed to the current theories in educational leadership, discover and explore their own leadership styles, and develop strategies to promote and participate in the development and implementation of technology to foster excellence to support transformational change throughout the instructional environment.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 774G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 864 - Culminating Teaching Experience: Clinical Synthesis and Implementation of Technological Integration
Credits: 3
In this culminating clinical experience, the candidate will develop and implement a comprehensive instructional project demonstrating full understanding and application of instructional technological integration leadership. Candidates will reflect, revise, self-assess, and evaluate their instruction and leadership based on student learning and positive school change.
Equivalent(s): EDU 775G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 866 - Dynamic Assessment: Complexities of Identification in LD,EBD, and IDD
Credits: 6
Teacher candidates who complete this clinical course gain an understanding of the legal and ethical issues, and the procedures involved in the evaluation and determination of educational disabilities, specific to learning disabilities, emotional/behavioral disorders and intellectual/developmental disabilities. Within the context of their school setting, teacher candidates apply their new knowledge of the use of formal and informal assessments within the on-going context of formative assessments to monitor K-12 student progress, and the effectiveness of instructional strategies.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 736G
Grade Mode: Letter Grading

EDC 867 - Behavioral Supports for Complex Behaviors
Credits: 4
Teacher candidates who complete this clinical course gain an understanding of the legal and ethical programming issues, and the procedures involved in the development, implementation, and evaluation of programs that address complex behaviors for students with significant behavior needs.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 737G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 868 - Advanced Assistive and Educational Technology
Credits: 4
Teacher candidates who complete this clinical course gain an understanding of the legal and ethical issues, and the procedures involved in the use of technology in the education of students with learning disabilities, emotional/behavioral disabilities and intellectual or developmental disabilities. The purpose of this course is twofold, focusing on the use of technology appropriate for all teaching and learning and the use of technology for students with significant learning needs.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 738G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 869 - Advanced Programming for Students with Learning Disabilities
Credits: 4
Teacher candidates who complete this clinical course gain an understanding of the legal and ethical programming issues, and the procedures involved in the development, implementation, and evaluation of programs for students with learning disabilities.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 739G
Grade Mode: Letter Grading

EDC 870 - Advanced Programming for Emotional/Behavioral Disabilities
Credits: 4
Teacher candidates who complete this clinical course gain an understanding of the legal and ethical programming issues, and the procedures involved in the development, implementation, and evaluation of programs for students with emotional and behavioral disabilities.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 741G
Grade Mode: Letter Grading

EDC 871 - Advanced Programming for Intellectual and Developmental Disabilities
Credits: 4
Teacher candidates who complete this clinical course gain an understanding of the legal and ethical programming issues, and the procedures involved in the development, implementation, and evaluation of programs for students with intellectual and developmental disabilities.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 743G
Grade Mode: Letter Grading

EDC 872 - Advanced Curriculum, Assessment and Instruction for Students with Learning Disabilities
Credits: 4
Teacher candidates who complete this clinical course develop a comprehensive awareness of theories, programs, and effective practices for students with learning disabilities. These practices will focus on prevention and remediation of difficulties in reading, math, writing, social skills, and study skills. This is the culminating teaching experience for the LD endorsement, and requires completion of the Teacher Candidate Assessment of Performance (TCAP).
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 740G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 873 - Advanced Curriculum, Assessment and Instruction for Emotional/Behavioral Disabilities
Credits: 4
Teacher candidates who complete this clinical course develop a comprehensive understanding of the theories, programs and effective practices for students with emotional/behavioral disabilities. These practices will focus on prevention and remediation of difficulties in literacy, mathematics, and science, that include appropriate supports and accommodations and that promote access to, and participation within, the general education curriculum. This is the culminating teaching experience for the EBD endorsement, and requires completion of the Teacher Candidate Assessment of Performance (TCAP).
Prerequisite(s): (EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B- and (EDC 866 with a minimum grade of B- or EDU 736G with a minimum grade of B- and (EDC 867 with a minimum grade of B- or EDU 737G with a minimum grade of B- and (EDC 868 with a minimum grade of B- or EDU 738G with a minimum grade of B- and (EDC 870 with a minimum grade of B- or EDU 741G with a minimum grade of B-.
Equivalent(s): EDU 742G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 874 - Advanced Curriculum, Assessment and Instruction for Intellectual and Developmental Disabilities
Credits: 4
Teacher candidates who complete this clinical course develop a comprehensive awareness of theories, programs, and effective practices for students with intellectual/developmental disabilities. These practices will focus on prevention and remediation of difficulties in literacy, mathematics, and science, that include appropriate supports and accommodations, and that promote access to, and participation within, the general education curriculum. This is the culminating teaching experience for the IDD endorsement, and requires completion of the Teacher Candidate Assessment of Performance (TCAP).
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 745G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 875 - Foundations of Language and Literacy Development
Credits: 4
In this course, students develop a comprehensive personal philosophy of reading/writing instruction. The development of this personal philosophy is based on in-depth research and analysis of this research, and is the foundation for program development, implementation and evaluation at both the school and district levels. Additionally, the students develops a personal three-year professional development plan to address areas of needed growth.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 730G
Grade Mode: Letter Grading

EDC 876 - Reading and Writing Disabilities: Assessment and Instruction
Credits: 4
In this clinical course, students examine, implement and evaluate both traditional and contemporary means of assessing reading/writing strengths and needs, as well as research-based developmental and corrective instruction for struggling readers and writers, kindergarten through grade 12.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 712G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 877 - Content Area Literacy
Credits: 4
In this clinical course, students examine, develop, implement and evaluate a variety of strategies to teach reading and writing in content areas. Additionally, they examine the critical role that all teachers play in developing literacy and thinking.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 713G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 878 - Developing Literate Students, K-12
Credits: 4
This clinical course provides preparation for teaching literacy and critical thinking in the middle and secondary grades. The focus is on planning, selecting, and using research -based strategies for reading and writing instruction, assessment, and evaluation of student study skills also are emphasized. This will include application of a wide range of strategies to comprehend, interpret, evaluate, and appreciate a variety of texts. Strategies for teaching linguistically and culturally diverse students will be explored. In addition, state and national standards in reading and language arts will be used to construct units and lessons.
Prerequisite(s): EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-.
Equivalent(s): EDU 748G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 879 - Role of the Reading and Writing Specialist I - Practicum
Credits: 6
This course is the first of a two semester practicum sequence in which students gain meaningful work experience and apply knowledge from previous coursework. The student works with a school-based literacy team to conduct a needs-assessment, prepares guidelines for selection of materials, develops a 2-year plan consistent with current research, and conducts in-service training. This course follows the K-12 academic calendar.
Prerequisite(s): (EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B-) and (EDC 875 with a minimum grade of B- or EDU 730G with a minimum grade of B-) and (EDC 876 with a minimum grade of B- or EDU 712G with a minimum grade of B-) and (EDC 877 with a minimum grade of B- or EDU 713G with a minimum grade of B-).
Equivalent(s): EDU 711G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 880 - Role of the Reading and Writing Specialist II - Practicum
Credits: 6
This culminating experience is the second semester of a two course, practicum sequence in which students gain meaningful work experience and apply knowledge from previous coursework. This capstone course builds upon the previous practicum, refines understanding and requires the learner to apply the essential competencies of a reading specialist and to evaluate his or her performance and progress. This course follows the K-12 academic calendar.
Prerequisite(s): (EDC 800 with a minimum grade of B- or EDU 700G with a minimum grade of B- and (EDC 879 with a minimum grade of B- or EDU 711G with a minimum grade of B-.
Equivalent(s): EDU 711AG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 885 - Culminating Teaching Experience and Seminar
Credits: 4
This clinical course is the culminating experience in the plan of study towards NH teacher certification. The culminating teaching experience meets the state standards for certification. The course gives students an opportunity to be mentored in their field of certification by experienced teachers and to practice the variety of methods and strategies that they have studied in their education program. Students have the opportunity to share their experiences, beliefs and best practices with other students during the culminating experience. Students enrolled in this course may be at different stages of acquiring the 360-400 minimum hours of clinical experience. Full admission to the post-baccalaureate teacher certification program and completion of all program requirements required. This is the final course in the student's plan of study. The student must complete all New Hampshire Department of Education test requirements and receive approval from Field Placement Faculty prior to registering for this course.
Equivalent(s): EDU 750G
Grade Mode: Letter Grading
Special Fee: Yes

EDC 885A - Culminating Teaching Experience and Seminar for Certified Teachers
Credits: 1
This 1-credit course is the culminating experience in the plan of study toward additional NH teacher certification for already certified teachers. The course gives students an opportunity to be mentored in their field of certification by experienced educators and to practice the variety of methods and strategies studied in the teacher preparation program. Teacher candidates enrolled in this course may be at different stages of acquiring the required hours of supervised teaching experience. Additionally, teacher candidates prepare and present the Credentialing e-Portfolio during the Exit Interview. Prior to taking this course the following is required; Full admission to the post-baccalaureate teacher certification program and completion of all program requirements. This is the final course in the teacher candidate's plan of study. The student must complete all New Hampshire Department of Education test requirements and receive approval from Field Placement Faculty prior to registering for this course.
Equivalent(s): EDU 750AG
Grade Mode: Letter Grading
Special Fee: Yes

EDC 890 - Leadership Essentials: Evaluation of Teaching and Learning
Credits: 3
The instructional leader promotes the learning and growth of all students and the success of all staff, cultivating a shared vision, to make powerful teaching and learning the central focus of schooling. Candidates will identify the skills and knowledge needed to develop and support a dynamic teaching and learning environment, to include instructional leadership, innovation, 21st Century demands, technology integration, data-driven decision-making and support of NH State Reform priorities. The primary focus will be a data-informed assessment and evaluation of curriculum and instruction.
Equivalent(s): EDU 803G
Grade Mode: Letter Grading

EDC 891 - Leadership Essentials to Develop and Support a Professional Culture
Credits: 3
Effective leaders promote the success for all students by nurturing and sustaining a school culture of reflective practice, high expectations and continuous learning for staff, to include instructional leadership, innovation, 21st Century demands, technology integration, data-driven decision-making and support of NH State Reform priorities. The primary focus will be a commitment to high standards, cultural proficiency, communications, continuous learning, shared vision, risk-taking and problem solving.
Equivalent(s): EDU 804G
Grade Mode: Letter Grading

EDC 892 - Capstone Project I: Leadership Essentials to Strategically Think, Plan, Implement & Evaluate
Credits: 3
This course is the first of a two term capstone sequence in which graduate candidates gain meaningful experience and apply knowledge from previous coursework. The candidate develops an authentic, critical, participatory action research project to include evaluation of teaching and learning and development of a professional culture to promote student success. Effective teacher are effective communicators and collaborators, supporting engagement, engendering shared responsibility while strategically supporting a shared goal and vision.
Equivalent(s): EDU 807AG
Grade Mode: Letter Grading

EDC 893 - Capstone Project II: Leadership Essentials to Strategically Think, Plan, Implement, & Evaluate
Credits: 3
This course is the second of a two term capstone sequence in which graduate candidates implement an authentic, critical, participatory action research project to include evaluation of teaching and learning and development of a professional culture to promote student success. Effective teacher are effective communicators and collaborators, supporting engagement, engendering shared responsibility while strategically supporting a shared goal and vision.
Prerequisite(s): EDC 892 with a minimum grade of B- or EDU 807AG with a minimum grade of B-.
Equivalent(s): EDU 807BG
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 #800 - 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, 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 801 - 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.
Grade Mode: Letter Grading
Special Fee: Yes

EDUC 803C - 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 803D - 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 803F - 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 803M - 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
Special Fee: Yes

EDUC #805 - Contemporary Educational Perspectives
Credits: 4
Students formulate, develop, and evaluate their own educational principles, standards, and priorities.
Grade Mode: Letter Grading
Special Fee: Yes

EDUC 806 - 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.
Grade Mode: Letter Grading
Special Fee: Yes

EDUC 807 - 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 licensure in art, biology, chemistry, earth science, general science, home economics, physical education, physics, or social studies.
Grade Mode: Letter Grading

EDUC 808 - Literacy Assessment for Elementary Classroom Teachers
Credits: 4
This is the first of a 2 course sequence for students earning an M.Ed. in Elementary Education, and is taken during the internship year. The course aims to prepare teachers to better understand individual readers in elementary classrooms in order to provide effective supports. The course integrates research and practical applications for elementary literacy assessments. Interns have the opportunity to apply their learning with students in their internship classrooms.
Co-requisite: EDUC 900
Prerequisite(s): EDUC 806 with a minimum grade of D-.
Grade Mode: Letter Grading

EDUC 809 - Supporting Readers in Elementary Classrooms
Credits: 4
This course is the second of a 2-course sequence for students earning an M.Ed. in Elementary Education, and is taken during the internship year. The course prepares teachers to better understand individual readers in elementary classrooms in order to provide effective supports. The course integrates research and practical applications for elementary literacy intervention strategies. Interns have the opportunity to apply their learning through one-on-one tutoring with students in their internship site.
Co-requisite: EDUC 901
Prerequisite(s): EDUC 806 with a minimum grade of D- and EDUC 808 with a minimum grade of D-.
Grade Mode: Letter Grading

EDUC 810 - 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 812 - 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 818 - 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 layers of context (i.e., history, politics economics, culture).
Grade Mode: Letter Grading

EDUC 820 - 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 833 - 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.
Grade Mode: Letter Grading

EDUC 834 - 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 839 - 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 850 with a minimum grade of D- and EDUC 851 with a minimum grade of D-.
Equivalent(s): EDUC 939
Grade Mode: Letter Grading

EDUC 840 - 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 839 with a minimum grade of D-.
Equivalent(s): EDUC 940
Grade Mode: Letter Grading

EDUC 841 - 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 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.
Prerequisite(s): MATH 601 with a minimum grade of D- or MATH 801 with a minimum grade of D-.
Grade Mode: Letter Grading

EDUC 845 - 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 850 - Introduction to Disability in Inclusive Schools and Communities
Credits: 4
A life span perspective of the social, psychological, and physical characteristics of individuals with exceptionalities including intellectual, sensory, motor, health, and communication impairments. Includes implications for educational and human service delivery.
Grade Mode: Letter Grading

EDUC 851A - 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
Special Fee: Yes

EDUC 851B - 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
Special Fee: Yes

EDUC 856 - 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 860 - Introduction to Young Children with Special Needs
Credits: 4
The needs of children (birth to eight years) with developmental problems 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 861 - 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 862 - 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 #867 - 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.
Equivalent(s): JUST 867
Grade Mode: Letter Grading

EDUC #868 - Students and Higher Education Law
Credits: 2
Higher education plays an important role in American society. It is a lever for developing human capital, a drier or economic growth, and the center for knowledge production. It influences policy agendas at the regional, state, and national levels. Because of its central role in society, achieving an understanding of the legal forces that structure higher education is important. This course explores the legal parameters that impact students. It is a companion to EDUC #869 Faculty and Higher Education Law.
Grade Mode: Letter Grading

EDUC #869 - Faculty and Higher Education Law
Credits: 2
The US system of higher education has tremendous impact on the social, political, and knowledge issues of our society. Knowledge of how, why, and what parameters impact the work of US colleges and universities is critical to understanding the institutions of higher education. the role of law is important and pervasive in society and is also of importance in higher education. This course focuses on the law of US higher education and how it structures and impacts the professoriate. It will explore such topics as academic freedom, employment, intellectual property, and discrimination.
Grade Mode: Letter Grading

EDUC 881 - Introduction to Statistics: Inquiry, Analysis, and Decision Making
Credits: 4
An applied statistics course that covers introductory level approaches to examining quantitative information. Students spend about half of class time in the computer lab analyzing real data from the behavioral and social sciences. An emphasis is placed on the role of statistics in making empirically-based policy decisions.
Grade Mode: Letter Grading

EDUC 882 - Introduction to Research Methods
Credits: 4
This course provides an introduction to research methods in education and the social sciences. Issues from a wide variety of perspectives on research are covered, including the formal procedures employed by experimental psychologists, qualitative perspectives, and techniques used by researchers involved in exploratory investigations in schools and other real-life settings. The design and implementation of research studies is contextualized in current educational and social science issues.
Grade Mode: Letter Grading

EDUC 884 - Educators as Researchers
Credits: 4
With the guidance and support of the instructor, program participants will select an issue in education to explore in detail. They will articulate question (s) for inquiry, conduct a literature review related to their question (s), design and undertake their research study, and report their findings. Program participants will present their work within the context of the course. This course should be taken towards the end of your studies.
Equivalent(s): EDUC 984
Grade Mode: Letter Grading

EDUC 885 - Introduction to Assessment
Credits: 4
In this course, we examine educational assessment within three different paradigms. First we study the bases for assessment. Next we learn how one designs and administers assessment tasks within the classroom setting. Finally, we examine how one should interpret and utilize the results from standardized tests. We work to become intelligent readers, critics, and consumers of educational assessments. The topics covered in this course are relevant to several other fields including (but not limited to) psychology, social work, family studies, and nonprofit management.
Grade Mode: Letter Grading

EDUC 886 - Issues in Assessment: Historical Contexts, Perennial Dilemmas, Current Trends
Credits: 4
This course examines educational assessment, broadly defined, from historical, practical, and critical perspectives and explores definitions, theories, and current issues in assessment. Through this course, students will look at assessment not only as a continual process for the teacher and administrator, but also a discrete process for measurement professionals. Students will analyze current research on and practices of classroom assessment, and will critique current educational assessment programs, policies, and issues that arise from No Child Left Behind, Race to the Top, Common Core State Standards, the achievement gap, competency-based assessment, and the assessment of teacher quality. Students will also explore alternative approaches to these policies with implications for evaluation and assessment, and generate ways to discuss with their communities the financial and human costs and benefits of these programs and policies.
Grade Mode: Letter Grading

EDUC 897 - Special Topics in Education
Credits: 1-4
An experimental course for the purpose of introducing a new course or teaching a special topic for a semester in an area of specialization in Education.
Grade Mode: Letter Grading
Special Fee: Yes

EDUC #899 - Master's Thesis
Credits: 1-10
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 10 credits.
Grade Mode: Graduate Credit/Fail grading

EDUC 900A - Internship and Seminar in Teaching
Credits: 2-6
A two semester, full-time, supervised internship consisting of less-than-full-time teaching responsibility in selected educational settings and programs. Weekly seminars and occasional workshops held concurrently with internship.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

EDUC 900B - Internship and Seminar in Early Childhood Education
Credits: 3 or 4
A two semester, supervised internship with a bi-weekly seminar. Admission by Application.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

EDUC 900C - Internship and Seminar in Special Education
Credits: 3 or 6
A two semester, supervised internship with a weekly seminar. Admission by application.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

EDUC 901A - Internship and Seminar in Teaching
Credits: 2-6
A two semester, full-time, supervised internship consisting of less-than-full-time teaching responsibility in selected educational settings and programs. Weekly seminars and occasional workshops held concurrently with internship.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

EDUC 901B - Internship and Seminar in Early Childhood Education
Credits: 3 or 4
A two semester, supervised internship with a bi-weekly seminar. Admission by Application.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

EDUC 901C - Internship and Seminar in Special Education
Credits: 3 or 6
A two semester, supervised internship with a weekly seminar. Admission by application.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

EDUC 902 - Doctoral Pro-seminar
Credits: 4
Introduces students to the range of scholarly inquiry undertaken in doctoral programs. Students develop a broad understanding of educational studies and analyze various research paradigms in terms of assumptions, methods, and outcomes. Coursework includes developing a proposal. Matriculated doctoral students only.
Grade Mode: Letter Grading

EDUC 904 - Qualitative Inquiry in Research
Credits: 4
Course will offer a theoretical background for conducting qualitative inquiry in social science research and practical experience in the design of research studies. Efforts focus on understanding how the type or tradition of qualitative inquiry shapes study design across conceptualization and research question formation phases as well as preliminary considerations about evidence. Critical perspectives in qualitative inquiry also explored. Through comparative analysis of different qualitative traditions, students will be prepared to make informed decisions about what approaches to use in their studies and why they are using them.
Grade Mode: Letter Grading

EDUC 905 - Critical Inquiry in Education
Credits: 4
Designed for advanced students to study philosophical methods needed for critical inquiry in education. Primary emphasis on practical mastery of: the construction and assessment of cogent argumentation; identification of common fallacies in reasoning; conceptual analysis; the appraisal of definitions, slogans, and metaphors in educational thought; and the disentangling of conceptual, factual, and normative claims associated with practical educational issues. Investigation of the difference between critique and criticism.
Grade Mode: Letter Grading

EDUC 906 - The Literature Review in Educational Research: Interdisciplinary Perspectives
Credits: 4
This course introduces graduate students to the rhetorical and analytic skills necessary for writing a well-structured, soundly presented literature review. This course covers systematic topics selection, research analysis, how to limit your research topic and focus your literature search, how to appraise your sources, negotiate the range of books, periodicals and reports you collect about your study, and writing, revising and editing strategies. Upon completing the course, students will have produced a literature review using a minimum of 30 self-selected research articles, books and digital resources. The course is appropriate for master's and doctoral students who are writing course papers, dissertations or theses.
Grade Mode: Letter Grading

EDUC 935A - Seminar and Practicum in Teaching
Credits: 4
For new graduate students admitted to the M.Ed. or M.A.T. program in the Department of Education. In-school experiences to develop introductory skills in observation and teaching. On-site seminars for analysis and evaluation. Assessment and advising related to teaching as a career. Prerequisite for further work toward a teacher licensure. Minimum of 7 hours a week, plus travel time, required.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

EDUC #942 - Socio-cultural Perspectives on Teaching and Learning
Credits: 4
Considers the growing body of knowledge on the role of play in children's development; includes examination of contemporary constructive theory. Organized around theme of teacher researcher. Assignments include research review and student-designed study of child development issue.
Grade Mode: Letter Grading

EDUC #948 - Leadership and Advocacy in Early Childhood Education
Credits: 4
Examination of roles and responsibilities of early childhood professionals, with emphasis on action research skills, analysis of contemporary problems, strategies for advocacy, and program leadership skills.
Grade Mode: Letter Grading

EDUC 950 - Understanding Culture in Research on Learning and Development
Credits: 4
Examines contemporary debates in the social sciences and educational interventions where notions of "culture" are particularly consequential. Four paradigmatic and pan-disciplinary orientations to understanding and researching cultural or contextual phenomena are examined - culture as: factor, practice, oppression, and liberation. Cultural psychology, anthropology, history, critical sociology, sociolinguistics, and cross-cultural research examined as challenge to contemporary theories of child development. Implications for educational theory and practice.
Grade Mode: Letter Grading

EDUC 956 - Developing Positive Behavior Supports to Ensure Success for All Learners
Credits: 4
Behavioral challenges are the most frequent reason students with significant disabilities are excluded from inclusive settings in schools and communities. This course will provide a baseline knowledge of the 3-tiered MTSS-B framework, including the key features, how services and supports are implemented for all students in the school, and specific interventions for students who show risk of developing an emotional or behavioral disorder (Tier II), and development of strategies to support students who experience challenging behavior and individualized interventions for students with significant impairment (Tier III). This course provides knowledge in behavior as communication, utilization of functional assessments, and development of strategies to support students who experience challenging behavior.
Grade Mode: Letter Grading

EDUC #957 - Collaborative Models of Teaching, Learning, and Leading
Credits: 4
Building professional communities that nurture and support learning across the career span is a complex process that includes building productive relationships with co-workers who hold a variety of positions in schools: teachers, administrators, counselors, specialist, interns and paraprofessionals. This course examines a range of collaborative practices in schools including mentoring, co-teaching, and collaborative supervision. The central question is, "How do collaborative versus noncollaborative environments affect teaching and learning for students, teachers and administrators?"
Grade Mode: Letter Grading

EDUC 958 - Analysis of Teaching and Learning
Credits: 4
Examination of and reflection on the nature of teaching will serve as the basis for analysis. A variety of strategies for analysis of teaching will be explored and implemented. Student-initiated inquiry into specific aspects of teaching will provide practical application of course material.
Grade Mode: Letter Grading

EDUC 959 - Issues in Education
Credits: 4
Emphasizes the development of understandings, dispositions, and skills necessary to effectively participate in P-12 reform discussion and decision-making. The course focuses on foundational issues related to a) the legitimacy of public education, b) accountability-based national reform efforts, and c) the goals and content of school curricula. This on-line course is required for the M.Ed. in Educational Studies or elective for other degrees.
Grade Mode: Letter Grading

EDUC 960 - Curriculum Development
Credits: 4
Students learn how to develop the curriculum for schools and school districts. The course builds skills and infuses an understanding of the role that curriculum development plays. It explores how current curricular issues influence the development of curriculum.
Grade Mode: Letter Grading

EDUC 962 - Educational Finance and Business Management
Credits: 4
Principles of financing education, budgetary procedures, computer simulations, and business management. Analysis of N.H. school funding system. Handling practical school finance problems is part of the project work.
Grade Mode: Letter Grading

EDUC 964 - Human Resources in Education
Credits: 4
Problems arising from the communications process. Implications of group problem-solving processes. Interpersonal relations and group dynamics among students, faculty, staff, administration, and the community. Application of theories.
Grade Mode: Letter Grading

EDUC 965 - Educational Supervision and Evaluation
Credits: 4
Theoretical foundations and practical applications of supervisory and instructional practices and procedures; consideration of observation instruments and techniques. Teacher evaluation and supervision reviewed. Each student conducts a field supervision project. Teaching experience required.
Grade Mode: Letter Grading

EDUC 967 - School Law
Credits: 4
Relationship of law to public education. Emphasis on federal constitution, New Hampshire statutes, and case law related to public interests served by elementary and secondary education. Special topics: church-state relationship, due process, desegregation, teacher employment, discrimination, negotiations, student rights, tort liability.
Grade Mode: Letter Grading

EDUC 968 - Collective Bargaining in Public Education
Credits: 4
An examination of collective bargaining as practiced by school boards, administrators, and teacher organizations. Consideration is given to collective bargaining statutes, case law, employee relations boards, unit determinations, exclusive representation, union security provisions, scope of bargaining, good faith, grievance procedures, bargaining strategies, strikes, public interest, mediation, fact finding, arbitration, and the administration of the negotiated contract.
Grade Mode: Letter Grading

EDUC 970 - Foundations for Leadership in Higher Education
Credits: 4
Seminar for master's and doctoral level students in education and related fields. Focus on the organization, structure, function, and dynamics of institutions of higher education, and the corollary roles and responsibilities of leaders in academic and student affairs. Intended for those currently in or planning to enter into leadership roles in a college or university.
Grade Mode: Letter Grading

EDUC 972 - Introduction to Educational Evaluation
Credits: 4
This is a graduate level course that provides a broad overview of evaluation methods that influence K-12 education, as well as the nonprofit sector. While educational assessments include a full range of procedures used to gain information about student learning (e.g., observations and paper-and-pencil tests), educational evaluation is the process of determining something about the merit, worth, or significance of that information. Therefore, the goal of this course is to provide students with an introduction to educational evaluation from both a practitioner and a programmatic perspective. To meet this goal students explore the importance of evaluation across educational contexts; evaluate student achievement; develop a program logic model; and conduct an evaluability assessment.
Grade Mode: Letter Grading

EDUC 973 - Policy, Politics, and Planning in Education
Credits: 4
Policy systems and fundamental values shaping the development and enactment of education policy at the federal, state, and local levels.
Grade Mode: Letter Grading

EDUC 974 - Educational Administrative Internship
Credits: 4
This course is a field-based internship for students enrolled in a variety of graduate programs including masters, education specialist, doctorate, and educational credential programs. Students can intern in educational settings including schools, school/districts, educational agencies, centers, and in a higher education. Supervision is provided by university faculty and a cooperating administrator or other appropriate official from the internship site.
Grade Mode: Graduate Credit/Fail grading

EDUC 975 - Advanced Education Field Project
Credits: 4
This course is field based. The student will work with an educational institution (e.g., school, school district, higher education) or agency (e.g., Department of Education, educational center, higher education) with a cooperating administrator/appropriate educator and a university supervisor. The field project will address a problem of practice of an educational institution, serve as a pilot study, or consist of an action research project.
Grade Mode: Graduate Credit/Fail grading

EDUC 976 - Policy and Governance in Higher Education
Credits: 4
Seminar for master's and doctoral level students in Education and related fields. Examination of federal and state policies and regulations affecting two-year and four-year colleges and universities, and governance practices necessary to achieve institutional mission. Consideration of rationales for public oversight and financing of higher education, controversial topics (e.g., affirmative action, accreditation, proprietary institutions, distance learning), and strategies for effective shared governance are included.
Grade Mode: Letter Grading

EDUC 977 - Leadership: The District Level Administrator
Credits: 4
Examines the school superintendency and other district level positions of leadership that comprise the administrative team, focusing on the complexity of the current role and relationships, the critical issues facing school leaders, and the skills necessary for success as an educational leader in today's climate. Students analyze contemporary issues of school governance and examine problems of practice to understand the role of school superintendent and other district level administrators from a theoretical, political, and contemporary perspective.
Grade Mode: Letter Grading

EDUC 978 - Applied Regression Analysis in Educational Research
Credits: 4
This course introduces students to simple and multiple regression analysis, specifically as the methods are applied to research questions in educational research. Students learn about the linear regression model and its assumptions, how to use SPSS to fit the model to data, and how to interpret results. Students will also learn how to: evaluate the tenability of the model's assumptions; conduct thoughtful model building; model the effects of categorical predictors and statistical interactions; and handle multi-collinearity. The use of statistical techniques are modeled in class and then students apply these new techniques to datasets of educational relevance from a variety of sources, including educational surveys, observational studies, and randomized experiments. Students learn how to interpret the outcomes of their analyses thoughtfully and meaningfully and are asked to communicate these interpretations clearly and concisely in writing.
Prerequisite(s): EDUC 881 with a minimum grade of D-.
Grade Mode: Letter Grading

EDUC 979 - Applied Multilevel Modeling
Credits: 4
This applied course in multilevel modeling is designed for graduate students in education and the social sciences who are interested in conducting statistical analysis to answer questions about (1) contextual effects on individual outcomes, and (2) individual change over time. Topics addressed include exploratory analyses of multilevel data, conditional and unconditional models, fixed and random effects, model assumptions, model fit, non-linear change, discontinuous change, time-varying predictors, unequally spaced measurement occasions, and three-level multilevel models.
Prerequisite(s): EDUC 978 with a minimum grade of D-.
Grade Mode: Letter Grading

EDUC 981 - Quantitative Inquiry: Methods and Techniques of Educational Research
Credits: 4
Conceptual aspects and practical realities of the research process applied to problems in education and human service disciplines. Develops skills necessary to use, as well as conduct, research.
Grade Mode: Letter Grading

EDUC 982 - Qualitative Fieldwork & Data Analysis
Credits: 4
This course provides guidance and fieldwork opportunities for students to apply principles and strategies for qualitative fieldwork and data analysis. It focuses on how qualitative researchers generate, use, and represent data to generate ideas and build theory.
Prerequisite(s): EDUC 904 with a minimum grade of D-.
Grade Mode: Letter Grading

EDUC 986 - Philosophy of Education
Credits: 4
Seminar in comparative analysis of educational theories and the philosophical foundations upon which they are based. Application of theoretical criteria for evaluating educational practices and for developing one's own philosophy of education.
Grade Mode: Letter Grading

EDUC 991 - Curriculum Theory I
Credits: 4
This course focuses on the historical, cultural, and political dimensions of curriculum theory in the United States and Canada. An emphasis is placed on the underlying philosophical perspectives that inform the field of curriculum theory, including, but not limited to feminist theory, critical race theory, queer, and post-colonial theory.
Grade Mode: Letter Grading

EDUC #992 - Curriculum Theory II
Credits: 4
The purpose of this course is (a.) to critically examine the various methodological approaches for conducting educational research within the broader field of transnational curriculum studies and (b.) to appraise the tension between a range of disciplinary frameworks that inform curriculum theory, government policy, and its respective implementation both inside and outside the classroom. Studies include analysis of alternative curricular arrangements within global, national, and local contexts. Curriculum Theory I is recommended, but not required.
Grade Mode: Letter Grading

EDUC 995 - Independent Study
Credits: 1-4
Opportunity for intensive investigation of a special problem or issue in the field of education.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

EDUC 998 - Special Topics
Credits: 1-4
Study of a particular theoretical, methodological, or policy issue. May be offered off campus as professional development.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading
Special Fee: Yes

EDUC 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Electrical & Computer Engineering (ECE)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ECE 814 - 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 algorithm implementation. Lab.
Grade Mode: Letter Grading

ECE 815 - 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.
Grade Mode: Letter Grading

ECE 817 - 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. Lab.
Grade Mode: Letter Grading

ECE #824 - 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.
Grade Mode: Letter Grading

ECE 857 - Fundamentals of Communication Systems
Credits: 4
Spectra of deterministic and random signals, baseband and bandpass digital and analog signaling techniques, transmitter and receiver architectures, performing analysis of digital and analog signaling in additive noise channels, carrier and symbol timing synchronization methods. Lab.
Grade Mode: Letter Grading

ECE 872 - 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. (Also offered as ME 872.) Lab.
Equivalent(s): ME 872
Grade Mode: Letter Grading

ECE 875 - 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. Lab.
Grade Mode: Letter Grading

ECE 884 - 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. Lab.
Grade Mode: Letter Grading

ECE 896 - Special Topics in Electrical or Computer Engineering
Credits: 1-4
New or specialized courses and/or independent study. Some sections may use credit/fail grading.
Grade Mode: Letter Grading

ECE 899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

ECE 900 - Research and Development From Concept to Communication
Credits: 4
The course will introduce students to the general tools of scientific research and technical communication, including topics on: 1. how to conduct research (and development), and general tools for formulating research questions and hypotheses; 2. how to effectively communicate in writing and in oral presentations, both for proposals and for reports on completed technical work.
Grade Mode: Letter Grading

ECE 910 - Graduate Seminar
Credits: 1
Graduate seminars presented by UNH faculty, graduate students and external speakers. Topics include new research ideas and results in areas relevant to electrical and computer engineering.
Grade Mode: Graduate Credit/Fail grading

ECE 915 - Advanced Active Circuits
Credits: 3
Investigation of devices and techniques used in advanced circuit design using discrete solid-state devices and integrated circuits. Oscillators, phase-lock systems, low noise techniques, etc.
Grade Mode: Letter Grading

ECE 920 - Wireless Communication Systems
Credits: 3
Principles of wireless communication systems including analysis of radio wave propagation and modeling, large scale and small scale signal fading, cellular communication architectures, multi-access systems, advanced modulation techniques, signal diversity systems, multiple antenna communications, cognitive radio, and software defined radio.
Grade Mode: Letter Grading

ECE 924 - Ubiquitous Computing
Credits: 3
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 ubiquitous computing through the review of recent research literature. Topics include the visions of ubicomp and some of its applications, software and hardware for ubicomp, human-computer interaction, context awareness, privacy, and security. Students undertake a ubicomp research project inspired by the literature review.
Grade Mode: Letter Grading

ECE 925 - Biosensors: Fundamentals and Applications
Credits: 3
An in-depth and quantitative view of device design and performance analysis. An overview of the current state of the art to enable continuation into advanced biosensor work and design. Topics emphasize biomedical, bioprocessing, environmental, food safety, and bio-security applications. College level general chemistry, calculus, differential equations, and linear algebra required prior to taking this course.
Grade Mode: Letter Grading

ECE 941 - Digital Signal Processing
Credits: 3
Discrete-time stochastic signals, signal modeling, parameter estimation, optimal filtering and decision making, with application to adaptive filters, echo cancellation, channel equalization and parametric spectral estimation. Requires prior coursework in discrete-time LTI systems, analysis and design of recursive and non-recursive linear digital filters, and Fournier based spectral estimation.
Grade Mode: Letter Grading

ECE 951 - Advanced Control Systems I
Credits: 3
State-space representation of multivariable systems, analysis using state transition matrix. Controllability and observability, pole placement using state and output feedback, Luenberger observers. Introduction to computer-controlled systems (sampling, discrete state representation, hybrid systems), nonlinear analysis (Liapunov, Popov, describing function). (Also offered as ME 951.)
Equivalent(s): ME 951
Grade Mode: Letter Grading

ECE 952 - Advanced Control Systems II
Credits: 3
Special topics in control theory: continuous and discrete systems; optimal control systems, including calculus of variations, maximum principle, dynamic programming, Weiner and Kalman filtering techniques, stochastic systems, and adaptive control systems.
Equivalent(s): ME 952
Grade Mode: Letter Grading

ECE 960 - Computer Architecture
Credits: 3
Advanced topics in computer organization. Parallel and pipeline processing, associative and stack computers, microprogramming, virtual memory, current topics.
Grade Mode: Letter Grading

ECE #965 - Introduction to Pattern Recognition
Credits: 3
Machine classification of data, feature space representation, multispectral feature extraction, Bayes decision theory, linear discrimination functions, parameter estimation, supervised and unsupervised learning, clustering, scene analysis, associative memory techniques, and syntactic methods of recognition.
Grade Mode: Letter Grading

ECE 966 - Robust Integrated Circuit Design and Verification
Credits: 3
This course covers the typical hardware failure causes, error control coding theories and their application in integrated circuit designs, fault tolerance techniques, hardware Trojan detection methods, and the principles of secure chip design. Knowledge of Digital Circuits and Computer Organization required.
Grade Mode: Letter Grading

ECE 992 - Advanced Topics in Electrical Engineering
Credits: 1-4
Special course covering advanced topics in electrical and computer engineering. Refer to section description for details about the covered topics. Course may be repeated, but not in duplicate subjects.
Grade Mode: Letter Grading

ECE 993 - Advanced Topics in Computer Engineering
Credits: 1-4
Example of recent topic: wireless communication networks. May be repeated.
Grade Mode: Letter Grading

ECE 994 - Advanced Topics in Systems Engineering
Credits: 1-4
Examples of recent topics: neural networks, advanced digital telecommunications. May be repeated.
Grade Mode: Letter Grading

ECE 998 - Independent Study
Credits: 1-3
Independent theoretical and/or experimental investigation of an electrical engineering problem under the guidance of a faculty member.
Grade Mode: Letter Grading

ECE 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

English (ENGL)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

ENGL 800 - Studies in Literature
Credits: 4
Students in the MAT, MEd, and MST programs, as well as non-degree students, can register for graduate course work in English under this number. The precise topics and focus of each section vary. Topics include Old English Literature, Medieval Literature, 16th century, 17th century, 18th century, English Romantic Period, Victorian Period, 20th and 21st Century, Drama, Novel, Poetry, Fiction, Nonfiction, A Literary Problem, Literature of the Renaissance, Postcolonial Literature, 20th to 21st Century American Literature. Barring duplication of subject, may be repeated for credit. Note: Students in the MA and PhD programs in English may not take English 800 for credit toward their degrees. English 800 will only be offered on the Manchester campus.
Grade Mode: Letter Grading

ENGL #803T - Travel Writing
Credits: 4
A graduate workshop devoted to reading 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 widely read essays of place by writers such as Tom Bissell, John Steinbeck, Pico Iyer, Stephanie Grist, and Eliza Griswold. Course may be repeated for credit with permission.
Co-requisite: INCO 589
Repeat Rule: May be repeated for a maximum of 8 credits.
Equivalent(s): ENGL 803
Grade Mode: Letter Grading
Special Fee: Yes

ENGL 804 - Advanced Nonfiction Writing
Credits: 4
This workshop embraces all forms of narrative nonfiction, including essays, memoir, literary journalism, and travel writing. Students write multiple pieces that serve as the heart of class discussion. In addition, the class discusses elements of craft and a myriad of selected readings that reflect the genre's range. May be repeated for credit with approval of the MFA director.
Repeat Rule: May be repeated for a maximum of 24 credits.
Grade Mode: Letter Grading

ENGL 805 - Advanced Poetry Workshop
Credits: 4
Workshop discussion of advanced writing problems and submitted poems. Individual conferences with instructor. Knowledge of writing poetry required. May be repeated for credit with the approval of the department chairperson.
Grade Mode: Letter Grading

ENGL 806 - The Art of Research for Creative Writers
Credits: 4
Many writers think that the heart of creative nonfiction is style, but in truth, the genre's soul is in its content. This course covers tools such as intimate reporting, periodicals, the Internet, and first-hand observation to research people, places, issues, and history. The skills learned will serve graduate students of all kinds of writing, from fiction to academic. Permission of instructor required.
Grade Mode: Letter Grading

ENGL 807 - Fiction: Form and Technique
Credits: 4
A writer's view of the forms, techniques, and theories of fiction. The novels, short stories, and works of criticism studied vary, depending on the instructor.
Grade Mode: Letter Grading

ENGL 808 - Nonfiction: Form and Technique
Credits: 4
A writer's view of contemporary nonfiction, emphasizing the choices the writer faces in the process of research and writing.
Grade Mode: Letter Grading

ENGL 809 - Poetry: Form and Technique
Credits: 4
A writer's view of the problems, traditions, and structures of poetry.
Grade Mode: Letter Grading

ENGL 810 - Teaching Writing
Credits: 1-6
An introduction to various methods of teaching writing. Combines a review of theories, methods, and texts with direct observation of teaching practice.
Grade Mode: Letter Grading

ENGL 812 - Writing the Creative Nonfiction Book
Credits: 4
In this course, students learn to flesh out an idea for a book of creative nonfiction, which could either be literary journalism - a tale based on reportage - or memoir. Students focus on pulling multiple themes together in a strong narrative. By semester's end, students have written a book proposal and a first chapter. Students are asked to arrive at the first class with a topic researched enough to begin the book process. Permission of instructor required.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

ENGL #814 - 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.
Grade Mode: Letter Grading

ENGL 815 - 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.
Grade Mode: Letter Grading

ENGL 816 - 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 objectives). Conduct ESL classroom observations, and engage in teaching demonstrations.
Grade Mode: Letter Grading

ENGL 817 - 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.
Grade Mode: Letter Grading

ENGL 818 - 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".
Grade Mode: Letter Grading

ENGL 819 - 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. Introduction to linguistics required prior to registering for this course.
Grade Mode: Letter Grading

ENGL 828 - 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.
Prerequisite(s): ENGL 405 with a minimum grade of D- or LING 405 with a minimum grade of D- or WS 401 with a minimum grade of D- or WS 405 with a minimum grade of D-.
Grade Mode: Letter Grading

ENGL 829 - Spec Top/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 the course descriptions available in the English Department.
Grade Mode: Letter Grading

ENGL 852 - 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.
Grade Mode: Letter Grading

ENGL #858 - Shakespeare
Credits: 4
A few plays studied intensively. Live and filmed performances included as available.
Grade Mode: Letter Grading

ENGL 865 - Literary Dublin Summer Program
Credits: 0
This is an administrative placeholder course for the UNH Literary Dublin summer study abroad program.
Grade Mode: Letter Grading
Special Fee: Yes

ENGL 879 - Linguistic Field Methods
Credits: 4
Devoted to the study, with use of an informant, of some non-Indo-European language that is unfamiliar to both the students and the instructor at the beginning of the class. The primary aim of the course is to give students a practical introduction to linguistic analysis without the support of a text. Theoretical concepts are introduced as needed.
Grade Mode: Letter Grading

ENGL 889 - 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.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

ENGL 890 - Special Topics in Linguistics
Credits: 4
An advanced course on a topic to be 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, language and culture, cross-disciplinary studies relating to linguistics. Barring duplication of subject, may be repeated for credit. (Not offered every year.)
Grade Mode: Letter Grading

ENGL 891 - 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 the teaching of English grammar.
Grade Mode: Letter Grading

ENGL 892 - 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.
Grade Mode: Letter Grading

ENGL 893 - Phonetics and Phonology
Credits: 4
The sounds and sound systems of English in the context of linguistic theory: comparisons of English to other languages. A basic linguistic course required prior to taking this course.
Grade Mode: Letter Grading

ENGL 894 - Syntax
Credits: 4
The relationship of grammar and meaning as 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. A basic linguistic course required prior to taking this course.
Grade Mode: Letter Grading

ENGL #896 - 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. Minimum GPA 3.0 required for registration.
Prerequisite(s): ENGL 419 with a minimum grade of D- and (ENGL 502 with a minimum grade of D- or ENGL 602 with a minimum grade of D-).
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

ENGL 897 - 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) Nonfiction; M) American Literature; N) A Literary Problem; O) Literature of the Renaissance. 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.
Grade Mode: Letter Grading

ENGL 898 - Special Studies in Creative Writing
Credits: 4
Courses offered under this number focus on topics within creative writing, such as poetic influences, the short story form, and writing the novel. The precise topics and methods of each section vary. Barring duplication of subject, course may be repeated for credit. For details, see the course descriptions available in the English Department.
Repeat Rule: May be repeated for a maximum of 12 credits.
Grade Mode: Letter Grading

ENGL 899 - Master of Fine Arts in Writing Thesis
Credits: 1-8
Eight credits required, that can be taken in any combination during the student's academic coursework. IA (Continuous grading).
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Graduate Credit/Fail grading

ENGL 901 - Advanced Writing of Fiction
Credits: 4
Workshop discussion of advanced writing problems and readings of students' fiction. Individual conferences with instructor. May be repeated for credit with the approval of the department chairperson.
Grade Mode: Letter Grading

ENGL 910 - Practicum in Teaching College Composition
Credits: 6
Seminar focuses on composition practical and theoretical issues of significance to the teaching writing to first-year students. A mentorship component creates opportunities for close supervision and support by experienced teachers in the writing program. Open only to teachers in the First-year Writing program.
Grade Mode: Letter Grading

ENGL #911 - Writing for Teachers
Credits: 4
Opportunity for teachers of composition to work intensively on their writing, to read as writers, and to discover the principles appropriate to the writing genre they are teaching. Because of its special focus, this course may not be applied to the M.A. in English/writing option. Topics may vary.
Grade Mode: Letter Grading

ENGL 912 - Historical and Theoretical Studies in Rhetoric
Credits: 4
The rhetorical tradition in Western culture, with a special focus on three critical periods: the classical period (Aristotle, Cicero, Quintillian), the eighteenth century (Blair and Campbell), and the modern era (Burke, Booth, Perelman, Ong, Weaver).
Grade Mode: Letter Grading

ENGL 913 - Theory and Practice of Composition
Credits: 4
Examination of major theoretical and pedagogical works in the field of composition. To include works on the writing process, writing development, response to writing, and other topics.
Grade Mode: Letter Grading

ENGL 914 - Special Topics in Composition and Rhetoric
Credits: 4
Topics chosen by instructor may include: A) Political, Philosophical, and Ethical Issues in Composition; B) Gender and Writing; C) Cognition and Composition; and D) Ethnographics of Literacy. May be repeated for credit, barring duplication of topic.
Grade Mode: Letter Grading

ENGL 916 - History of Composition
Credits: 4
Composition teaching and theory in American colleges and academics from the 18th century to the present.
Grade Mode: Letter Grading

ENGL 918 - Research Methods in Composition
Credits: 4
Overview of major research approaches including historical, case study, ethnographic, and textual; special emphasis on research design.
Grade Mode: Letter Grading

ENGL 920 - Issues in Teaching English and the Language Arts
Credits: 1-6
Special topics in the teaching of English and the language arts. Inquire at the English department to see what topics in the teaching of reading, writing, literature, or language arts may be scheduled. Open only to graduate students with a professional interest in teaching or to practicing teachers. 1-6 credits depending on the specific course.
Grade Mode: Letter Grading

ENGL 922 - Advanced Topics in Literacy Instruction
Credits: 1-6
Specialized study of literacy topics that may include: A) Nature Journaling; B) Gender and Literacy; C) Digital Storytelling; D) Multigenre Writing; E) Assessment; F) Capstone Project; and G) Literacy Problem.
Grade Mode: Letter Grading

ENGL 924 - Professional Preparation
Credits: 2
This 2-credit course, offered in alternate years, is designed primarily to help doctoral students prepare to enter the profession. It takes up such topics as writing a resume or curriculum vitae, presenting a conference paper, submitting an article, applying for a job, and interviewing.
Grade Mode: Graduate Credit/Fail grading

ENGL 925 - Graduate Study of Literature
Credits: 4
Techniques, resources, and purposes of literary study: close reading; practical criticism; critical theories and their values; pertinence of intellectual and historical backgrounds. Approaches applied to a specific area of literary study, which varies from year to year.
Grade Mode: Letter Grading

ENGL 935 - Seminar: Studies in American Literature
Credits: 4
Seminar: Studies in American Literature. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

ENGL 937 - Seminar: Studies in 19th Century American Literature
Credits: 4
Seminar: Studies in 19th Century American Literature. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

ENGL 938 - Seminar: Studies in 20th Century American Literature
Credits: 4
Seminar: Studies in 20th Century American Literature. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

ENGL 958 - Seminar: Studies in Shakespeare
Credits: 4
Seminar: Studies in Shakespeare. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

ENGL 959 - Seminar: Studies in Milton
Credits: 4
Seminar: Studies in Milton. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

ENGL #968 - Seminar: Studies in 18th Century Literature
Credits: 4
Seminar: Studies in 18th Century Literature. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

ENGL #971 - Seminar: Studies in the Victorian Period
Credits: 4
Seminar: Studies in the Victorian Period. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

ENGL 974 - Seminar: Studies in 20th Century British Literature
Credits: 4
Seminar: Studies in 20th Century British Literature. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

ENGL 981 - Seminar: Studies in Post-Colonial Literatures in English
Credits: 4
Seminar: Studies in Post-Colonial Literatures in English. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

ENGL 994 - Practicum in Teaching English to Speakers of Other Languages
Credits: 2-6
Students have an opportunity to observe and discuss ESL classes and to design and carry out their own lessons, with follow-up evaluation.
Grade Mode: Graduate Credit/Fail grading

ENGL 995 - Independent Study
Credits: 1-8
To be elected only with permission of the director of graduate studies and of the supervising faculty member.
Grade Mode: Letter Grading

ENGL 996 - Reading and Research
Credits: 2-8
Reading and Research.
Grade Mode: Graduate Credit/Fail grading

ENGL 998 - Master's Paper
Credits: 4
Master's Paper. IA (Continuous grading).
Grade Mode: Graduate Credit/Fail grading

ENGL 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Environmental & Resource Economics (EREC)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

EREC #860 - 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.
Prerequisite(s): ECON 605 with a minimum grade of D- and MATH 420 with a minimum grade of D-.
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 804 - 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. Introductory microbiology and microbiology lab AND one semester genetics recommended. Lab.
Equivalent(s): MICR 804
Grade Mode: Letter Grading
Special Fee: Yes

GEN 805 - Population Genetics
Credits: 3
Exploration of the forces (mutation, 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. One semester of genetics and one semester of statistics recommended.
Equivalent(s): ZOOL 805
Grade Mode: Letter Grading

GEN 806 - 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. One semester of genetics recommended.
Equivalent(s): ANSC 806
Grade Mode: Letter Grading

GEN 811 - 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. Medical, ethical and legal implications of genomic data. Computer lab provides exposure and experience in a range of bioinformatics approaches used in genome analysis. One semester of genetics recommended. Computer lab.
Equivalent(s): BCHM 811, MICR 811
Grade Mode: Letter Grading

GEN 812 - 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. One semester of bioinformatics and one semester of genetics recommended. Computer Lab.
Grade Mode: Letter Grading

GEN 813 - 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. Introductory microbiology and microbiology lab and one semester of genetics recommended.
Equivalent(s): MICR 813
Grade Mode: Letter Grading

GEN 815 - 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. One semester of genetics and one semester of statistics recommended. Computer lab.
Equivalent(s): ZOOL 815
Grade Mode: Letter Grading

GEN 817 - Molecular Microbiology
Credits: 5
Fundamental physiological and metabolic processes of archaea bacteria and fungi with a strong emphasis on prokaryotes. Literature-based course with lab. Topics include regulation and coordination of microbial metabolism, bacterial cell cycle, global control of gene expression, signal transduction, and microbial cell differentiation. Introductory microbiology and microbiology lab and one semester of genetics recommended. Lab.
Equivalent(s): MICR 817
Grade Mode: Letter Grading
Special Fee: Yes

GEN 821 - 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. One semester of genetics recommended.
Grade Mode: Letter Grading

GEN 825 - 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. One semester of genetics and one semester of statistics recommended.
Co-requisite: GEN 805
Grade Mode: Letter Grading

GEN 871 - 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. One semester of genetics recommended.
Equivalent(s): BCHM 871
Grade Mode: Letter Grading

GEN 872 - 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. One semester of genetics recommended prior to taking this course. Lab.
Equivalent(s): PBIO 872
Grade Mode: Letter Grading

GEN 874 - 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 for production of pharmaceuticals; controversies associated with this technology. Lab. One semester of genetics recommended.
Equivalent(s): PBIO 874
Grade Mode: Letter Grading
Special Fee: Yes

Geospatial Science (GSS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

GSS 800 - Elements of Geospatial Science
Credits: 4
This on-line course lays the foundation for Geospatial Science (GSS) thinking by exploring the definition, methods, data types, data sources, software, and equipment used within the field of GSS. The importance and structure of the regional GSS industry is discussed with emphasis on how GSS is used across multiple disciplines. Course includes some guest lectures from industry professionals. Lectures and tests are conducted on-line. Students are required to download and install some software and data to complete assignments.
Grade Mode: Letter Grading

GSS 805 - Applied Geographic Information Systems for Research
Credits: 4
This course teaches concepts and applied techniques of Geographic Information System tools and technologies to solve real world Geospatial Science problems across multiple disciplines. Technical topics covered include geospatial data collection, quality, conversion, management, analysis, visualization, and dissemination. Students hands-on-lab and independent exercises use the latest version of ArcGIS software. Development and implementation of a project proposal and an independent project are completed by students to forward individual interests.
Grade Mode: Letter Grading

GSS 807 - GIS for Earth and Environmental Science
Credits: 4
This course teaches concepts and applied techniques of Geographic Information System tools and technologies to solve Geospatial Science problems for Earth Science and Environmental Engineering. Technical topics covered include geospatial data collection, quality, conversion, management, analysis, visualization, and dissemination. Students hands-on-lab and independent exercises use the latest version of ArcGIS and other GIS software. Development and implementation of a project proposal and an independent project are completed by students related to course topics.
Grade Mode: Letter Grading

GSS #817 - Remote Sensing for Earth and Environmental Science
Credits: 4
Remote sensing provides insight into spatial and temporal aspects of environmental and earth systems. Students will learn digital image processing techniques, understand different sensor and platform technologies, and discuss new trends in remote sensing science. Focus on applied research questions and projects will be addressed. The course will include hyperspectral, lidar analysis, and unmanned aerial systems. Work will be done using ImageJ, Google Earth Engine and python. Programming background is not a requirement.
Grade Mode: Letter Grading
Special Fee: Yes

GSS 850 - Crowd Source Mapping
Credits: 4
Locational crowdsourcing is one of the most exciting new areas of data generation and delivery of geographic information. Traditionally, GIS has emphasized mapping and analyses based on layers produced with a high degree of quality control, but in the age of Web 2.0, data as collected from the general public has been increasingly utilized for emergencies and everyday use. This course will teach this form of data collection and use with hands-on labs exclusively online.
Grade Mode: Letter Grading

GSS 996 - Geospatial Science Independent Study
Credits: 1-4
May include research project, fieldwork or a relevant internship where students will build or apply GIS, Remote Sensing, GPS, or other Geospatial technologies. To be elected only with permission of program coordinator and with qualified supervision.
Grade Mode: Letter Grading
Special Fee: Yes

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 810 - Conflict & Human Security
Credits: 3
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 820 - Global Governance
Credits: 3
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 830 - International Development & Human Security
Credits: 3
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 840 - Sustainable Development: Gender-Environment Nexus
Credits: 3
The United Nations' 2030 Agenda for Sustainable Development provides an overarching set of goals to enhance fundamental well-being for all. Sustainable Development Goals (SDGs) are mutually reinforcing; for example, environmental sustainability impacts gender equality/women's empowerment and vice versa. This course examines environment-related SDGs through a gender lens. Topics include but are not limited to: SDG 2 (zero hunger), SDG 12 (responsible consumption and production), SDG 13 (climate change).
Grade Mode: Letter Grading

GCHS 850 - Peace and Human Security in the Post-Atrocity State
Credits: 3
Introduces theoretical and practical frameworks for understanding various stages of conflict with a focus on conflict transformation and peacebuilding in the post-atrocity state. Through the use of historical and contemporary case studies, explores practices of conflict transformation and security issues caused by regime change, state-sanctioned violence, civil war and conflict, and/or genocide. Topics include mediation, negotiation, facilitation and adjudication; methods of conflict prevention; the development and current state of transitional and restorative justice mechanisms; and the international community's role in peacebuilding and peacekeeping.
Grade Mode: Letter Grading

GCHS 860 - Research Methods
Credits: 3
Active learning course that introduces the concepts and elements of the research process. Explores quantitative and qualitative methods of data collection (i.e., surveys, focus groups, etc.) and data analysis. Topics include research design, sampling, measurement, reliability and validity, and ethical responsibilities of researchers.
Grade Mode: Letter Grading

GCHS 870 - Statistics & Data Analysis
Credits: 3
Provides an overview of how to use statistical data analysis techniques to explore problems and answer questions related to public management. Students learn to design quantitative research projects and collect, analyze, and interpret data using descriptive and inferential statistical techniques.
Grade Mode: Letter Grading

GCHS 880 - Project Design
Credits: 3
Provides an understanding of the essential aspects of development projects and the elements that contribute to sound project identification and design. Experiential learning opportunities to acquire and practice basic and advanced skills and techniques involved in the conceptualization and planning of development projects. Foundation course for monitoring and evaluation (M&E).
Grade Mode: Letter Grading

GCHS 890 - Project Management
Credits: 3
Monitoring & Evaluation II: provides in-class and hands-on knowledge and skills in a variety of social research techniques in order to [1] validate, verify and finalize the project's problem analysis, [2] construct the project logic model, [3] lay out the positive and negative factors that influence the project, and, if applicable, [4] commence the implementation of the project.
Grade Mode: Letter Grading

GCHS 892 - Special Topics
Credits: 3
New or specialized courses not normally covered in regular course offerings. May be repeated twice barring duplication of topic and with permission of the GCHS program coordinator.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

GCHS 895 - Independent Study
Credits: 1-3
Student works under faculty mentor to complete research. This course may substitute for a required course with permission by GCHS faculty program coordinator.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

GCHS 898 - Capstone: Non-Thesis
Credits: 3
The culminating activity of the Global Conflict and Human Security program. Provides opportunities to demonstrate and build on the knowledge and skills acquired throughout the GCHS program. Students work with a faculty mentor(s) to complete and evaluate projects begun in a previous term. Students present their findings and evaluative assessments of their projects.
Grade Mode: Letter Grading

Graduate School (GRAD)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

GRAD 800 - Continuing Enrollment
Credits: 0
All continuing graduate students who are not enrolled for course credits, thesis credits, Doctoral Research (999) or Master's Continuing Research (GRAD 900), and are not in residence, are required to register for GRAD 800 each semester of the academic year (or each summer for students in MATH M.S.T., and English M.S.T. and College Teaching M.S.T. programs). Students registered for GRAD 800 are considered part-time. Not graded.
Grade Mode: Not graded
Special Fee: Yes

GRAD 834 - Fundamentals of Citizen and Community Science
Credits: 3
This course introduces the emerging field of citizen science, including community science, exploring theories and applications in natural, physical, and social science fields. Students will develop competencies related to project design and implementation. The course will focus on best practices for effective projects and teams and include topics such as volunteer engagement, methods for data sharing, and issues of social justice in citizen science.
Grade Mode: Letter Grading

GRAD 844 - Fundamentals of Stakeholder and Community Engagement in Natural Resource Management
Credits: 3
Management of natural resources requires the effective involvement of stakeholder and community groups that often have differing perspectives on the path ahead. This course provides a foundation for students from various disciplines to develop a fundamental understanding of the theory and practice of stakeholder and community engagement in natural resource management across a range of ecosystem and governance scales (with a focus on the US Northeast). Students will explore various case studies and track topics of interest throughout the course.
Grade Mode: Letter Grading

GRAD 891 - 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: Graduate Credit/Fail grading

GRAD 900 - Master's Continuing Research
Credits: 0
Master's Continuing Research (GRAD 900) is for Master's students who are in residence and need to be full time but have already completed all course requirements, have previously registered for the maximum number of thesis or project credits. As this grants full-time status, students are also responsible for the full time mandatory fees. Effective Fall 2020, GRAD 900 may be taken only once. However, students who need to repeat this registration may do so with permission. Not Graded.
Grade Mode: Not graded
Special Fee: Yes

GRAD 901 - Master's Continuing Fieldwork
Credits: 0
This registration is for students who needed to take an incomplete for their fieldwork placements due to the COVID situation, and are completing their fieldwork during the semester of GRAD 901 enrollment. Students registered for GRAD 901 are considered full-time. Not graded. Permission from department required. Normally to be taken a maximum of one time.
Grade Mode: Not graded

GRAD 930 - Ethics in Research and Scholarship
Credits: 2 or 3
Individual, professional, institutional, and social issues related to the ethical conduct of research and scholarship. Uses case studies to demonstrate the application of pertinent regulations, policies, and guidelines.
Grade Mode: Graduate Credit/Fail grading

GRAD #941 - Special Topics: Fundamentals of Online Instruction
Credits: 1
This course is intended to familiarize UNH instructors with the fundamentals and best practices of teaching Online. The course objectives are centered on core instructional competencies with an emphasis on application, which are reinforced through modeling of best practices by the course facilitators. Participants are encouraged to apply strategies covered in the Fundamentals of Online Instruction as they begin the development of their own Online course. Topics covered include: the difference between Online and face-to-face instruction, quality standards, instructor presence, an Online syllabus template, learning design, active learning, content chunking, course outline and workload balance.
Grade Mode: Graduate Credit/Fail grading

GRAD 950 - Issues in College Teaching
Credits: 2
Issues faced within the classroom including evaluation methods, classroom climate and diversity, instructional approaches, teaching and learning resources, and student behavior. Case studies.
Equivalent(s): GRAD 940
Grade Mode: Graduate Credit/Fail grading

GRAD 951 - Teaching with Writing
Credits: 2
Examination of the issues, principles, and practices of using writing to enhance learning. Appropriate for all fields and disciplines. Participants design and field test assignments. Seminar requires field work and independent research.
Grade Mode: Graduate Credit/Fail grading

GRAD 961 - Cognition, Teaching, and Learning
Credits: 2
Cognitive theories and their application to classroom instruction. Examination of historical relation between cognition and education as well as current application of cognitive theory in the learning process. Cognitive skills involved in the learning process. Teaching strategies that enhance the use of cognitive skills and improve learning and teaching effectiveness.
Grade Mode: Letter Grading

GRAD 965 - Classroom Research and Assessment Methods
Credits: 2
Examination of methods used in classroom assessment and classroom research. The focus is on the improvement of teaching and learning in a teacher's own classroom. Research project is required.
Grade Mode: Letter Grading

GRAD 970 - Special Topics in College Teaching
Credits: 2-4
Formal courses in college teaching: A) field studies; B) disciplinary studies, C-Z other.
Repeat Rule: May be repeated for a maximum of 10 credits.
Grade Mode: Letter Grading

GRAD 995 - Independent Study in College Teaching
Credits: 1-4
Faculty supervised independent studies in college teaching.
Repeat Rule: May be repeated for a maximum of 12 credits.
Grade Mode: Letter Grading

GRAD #996 - Special Topics
Credits: 1-4
New or specialized courses not normally covered in regular course offerings. May be repeated barring duplication of topic.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

GRAD 998 - College Teaching Portfolio
Credits: 1
An integrative experience for the cognate in college teaching, culminating in an electronic teaching portfolio submitted to the Center for Excellence in Teaching and Learning.
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 898 - Special Topics
Credits: 1-8
Special Topics. Special fee on some topics.
Grade Mode: Letter Grading
Special Fee: Yes

Health Care (HLTC) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

HLTC 800 - Health Care Delivery and Innovations
Credits: 3
The course examines the political, legal, economic and fiscal components that impact and influence health care delivery systems. A focus within the course will be on developing and managing innovations that improve the value of health care. Management challenges and barriers to implementing change within the system will also be examined.
Equivalent(s): HLTC 800G
Grade Mode: Letter Grading

HLTC 801 - Health Care Financial Management
Credits: 3
This course provides a critical introduction to the financial structure and challenges of health care finance. The student will learn the impact of current changes in health care and the need for clinical and financial integration. Content includes information specific to revenue cycles, billing compliance, charity care, bad debt and payers (private and government). The student will understand the unique budgeting processes and financial reporting requirements of health care organizations. The course discusses the interprofessional roles in the day to day financial operations. High level communication skills in finance to engage in dialogue with stakeholders will be required.
Equivalent(s): HLTC 801G
Grade Mode: Letter Grading

HLTC 802 - Advocacy and Health Policy
Credits: 3
This course requires the student to employ analytical skills to evaluate the impact of institutional, regulatory and political policies on financial and health outcomes. Interprofessional health care roles will be introduced and integrated into decision-making and advocacy in health care. Issues specific to health insurance, socioeconomic challenges and barriers to health care will be included. The student will examine the impact of emerging regulations, organizational and political change to health care quality and cost.
Equivalent(s): HLTC 802G
Grade Mode: Letter Grading

HLTC 810 - Health Care Quality and Safety
Credits: 3
This course provides an in-depth analysis of the quality and safety priorities in the current health care environments. Students will contrast the strengths and weaknesses of current quality improvement models including aspects related to efficiency, accuracy, and timeliness as well as being ethical and culturally responsible. The master's student will engage in the promotion of high level communications and advocacy that are necessary for quality and safety initiatives. The course includes the impact of regulatory organizations in health care quality. The student will be prepared to plan, implement and evaluate the results of a quality improvement and specifically address the improvements to health care outcomes.
Equivalent(s): HLTC 810G
Grade Mode: Letter Grading

HLTC 811 - Health Care Technology and Informatics
Credits: 3
This course provides students with the opportunity to ethically manage data, information, knowledge, and technology. Students will focus upon the development and quality of data-driven outcomes. Students will critique and utilize research and evidence from data to inform decisions that impact the health care outcomes. In addition, the student will analyze emerging health care technologies as they are applied to environments, safety, cost and improvement of health. Ethics and privacy are emphasized in the evaluation of technology in health care.
Equivalent(s): HLTC 811G
Grade Mode: Letter Grading

HLTC 850 - Health Care Management Integrative Capstone
Credits: 3
This integrative course is the culminating course in the Master of Science in Health Care Management. All other required coursework must have been completed prior to receiving approval to register for this course. Students during the capstone experience will integrate health care management competencies, and acquired knowledge and skills that combine health care perspectives, theories, skills, and tools in an applied format. Final products include a comprehensive project that incorporates strategic and organizational components designed specific to health care systems. After documenting the above, students will discuss and defend their project orally.
Equivalent(s): HLTC 850G
Grade Mode: Letter Grading

Health Data Science (HDS)

HDS 800 - Mathematics and Statistics for Health Data Science
Credits: 3
This course covers the foundations of probability and inferential statistics as well as foundations of linear algebra and matrices. After completion of this course, students should be comfortable with performing basic analysis of data including descriptive statistics, data visualization and appropriate statistical tests. Different probability distributions will be introduced along with hypothesis testing, confidence intervals, linear regression, and ANOVA.
Grade Mode: Letter Grading

HDS 801 - The U.S. Healthcare System
Credits: 3
Focuses on the organization, financing, and delivery of healthcare in the U.S. Contrasts the private and public sectors and examines the effects of market competition and government regulation. Examines the ways that medical providers are paid, and explores the major issues currently facing physicians, hospitals, and the pharmaceutical industry. Discusses several potential small-scale and large-scale reforms to the healthcare system and evaluates their likely effects on healthcare spending, quality of care, and access to care.
Equivalent(s): ADMN 801
Grade Mode: Letter Grading

HDS 802 - Programming in Healthcare Environments
Credits: 3
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

HDS 803 - Translation of Health Data
Credits: 3
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.
Prerequisite(s): HDS 801 with a minimum grade of D-.
Grade Mode: Letter Grading

HDS 804 - Health Data Systems
Credits: 3
In this course, students will learn the landscape of data used in healthcare settings, engage in active case applications and case studies, and propose a decision support system improvement. It examines modern decision support systems, types of applications, both mobile and web based, enterprise versus cloud-based systems. Specifically examined will be the Electronic Health Record (EHR) and other clinical and administrative information systems. Also examined will be interoperability and regulatory requirements.
Prerequisite(s): HDS 801 with a minimum grade of D-.
Grade Mode: Letter Grading

HDS 805 - Applied Machine Learning in Healthcare
Credits: 3
This course covers the foundations of machine learning in healthcare systems including algorithms related to classification and regression prediction in supervised setting, clustering and dimension reduction in an unsupervised setting. Topics include data preprocessing and classification techniques such as logistic regression, support vector machines, KNN, Na'ive Bayes', ensemble methods such as random forests, boosted trees, XGBoost, dimension reduction techniques such as principal components analysis, t-distributed scholastic neighborhood embedding, ISOMAP, locally linear embedding, UMAP, multidimensional scaling.
Prerequisite(s): HDS 800 with a minimum grade of D- and HDS 801 with a minimum grade of D- and HDS 802 with a minimum grade of D-.
Grade Mode: Letter Grading

HDS 806 - Outcomes Research
Credits: 3
This course examines the evidence developed through the lens of outcomes research relative to clinical care and public/population health initiatives. It explores the development of study design, developing a workable research question and associated proposed study methods. The course explores frequently used study designs, techniques for evaluating/selecting health outcomes measures, and analytical approaches appropriate to conducting health outcomes research. Students will construct an independent research protocol, which will be developed in increments as course evolves.
Prerequisite(s): HDS 804 with a minimum grade of D-.
Grade Mode: Letter Grading

HDS 807 - Unstructured Health Data
Credits: 3
This course covers the essential unstructured data formats, storage platforms and methods of retrieving and analyzing such data in the healthcare system. Specifically, the course will cover electronics health records, patient health portals, telemedicine videos, ICU sensor data, genomic data, biomedical literature, social media data, biomedical image data and physician notes.
Prerequisite(s): HDS 805 with a minimum grade of D-.
Grade Mode: Letter Grading

HDS 808 - The Successful Healthcare Project
Credits: 3
This course supports the design and initiation of the Practicum Health Data Science project required for completion of the Master of Health Data Science program. Students may elect to enroll in this course before beginning the practicum or concurrently with the practicum. The course covers definition of a high value research topic, development of a project plan and project launch. Students will complete key project milestones including negotiation of a project charter, development of an approved analysis plan, and demonstrate access to required data.
Prerequisite(s): HDS 800 with a minimum grade of D- and HDS 801 with a minimum grade of D- and HDS 802 with a minimum grade of D- and HDS 803 with a minimum grade of D-.
Grade Mode: Letter Grading

HDS 811 - Health Data Science Practice
Credits: 3
In this course, students will work to develop a data science thesis project with both an outside mentor and a faculty advisor. This course essentially bridges the entire curriculum, but builds over the coursework to the final presentation at the students' second residency prior to completing the program. Each student on a team will be required to justify the completion of practicum hours.
Prerequisite(s): HDS 808 with a minimum grade of D-.
Grade Mode: Letter Grading

HDS 820 - Health Systems Informatics
Credits: 3
This course introduces students to data structures and data manipulation found in US Health Systems from the perspective of a data scientist in the role of health informaticist. Students will learn how to conceptualize the data ecosystem from input and data collection, secondary use, storage, retrieval and analysis. The course also promotes understanding of health data coding, applicability and validity. Students will explore health insurance claims data, public surveillance system data and administrative system data.
Prerequisite(s): HDS 801 with a minimum grade of D-.
Grade Mode: Letter Grading

HDS 821 - Big Data Algorithms in Biological Sciences
Credits: 3
This course covers several topics in computational biology with a focus on data science algorithms for processing massive sequencing data on the cloud, such as processing data on Amazon Web Services (AWS). Students will learn the prerequisites of data analysis on a cloud service including storage of virtual private clouds, file systems and security as well as the importance of maintaining a low-cost, high-efficiency work environment.
Prerequisite(s): HDS 802 with a minimum grade of D- and HDS 805 with a minimum grade of D-.
Grade Mode: Letter Grading

HDS 822 - AI and Deep Learning in Healthcare
Credits: 3
This course covers the essentials of deep learning artificial neural network models. The course will cover topics like basic structure of ANN, gradient descent, various cost functions, role of activation functions in ANN, shallow vs deep learning, hyper parameter tuning, model optimization for speed, regularization methods, transfer learning and the newest of all generative adversarial networks (GAN).
Prerequisite(s): HDS 807 with a minimum grade of D-.
Grade Mode: Letter Grading

HDS 823 - Advanced Statistics in Healthcare
Credits: 3
This course covers the essential advanced statistical techniques employed by Biostatisticians in clinical trials and healthcare research. After completion of this course, students should be comfortable with various advanced multivariate statistical techniques such as multiple discriminant analysis (MDA), multiple analysis of variance (MANOVA), Conjoint analysis, Factor analysis, multiple correspondence analysis (MCA), and hierarchical linear modeling (HLM).
Prerequisite(s): HDS 800 with a minimum grade of D-.
Grade Mode: Letter Grading

HDS 890 - HDS Independent Study
Credits: 3-6
This course will be designed by the student and the instructor. Course topics and deliverables will be established together and approved by the supervising faculty. Credit hours (not to exceed 6-credit hours) will be determined by the supervising faculty based on the size and scope of the student's intended project.
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 #812 - 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.
Equivalent(s): DATA #812
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 800 - Advanced Explorations
Credits: 1-4
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.
Repeat Rule: May be repeated for a maximum of 12 credits.
Grade Mode: Letter Grading

HIST 803 - 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.
Grade Mode: Letter Grading

HIST 805 - 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.
Grade Mode: Letter Grading

HIST 806 - History of the Early Republic
Credits: 4
Explorations in the histories of 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 formulations of national identity.
Grade Mode: Letter Grading

HIST 809 - United States Legal History Special Topics
Credits: 4
In-depth thematic exploration of the role of law in American life. Topics include Race and Equality in American Law; Community, Pluralism, and American Law; Property, Liberty, and Law; Gender and Law. May be repeated for credit with instructor's permission. Consult department listing for topics.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

HIST 811 - Civil War Era
Credits: 4
A survey of the period from the presidency of Andrew Jackson to the end of the Reconstruction, focusing on the 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.
Grade Mode: Letter Grading

HIST 812 - Emergence of Industrial America
Credits: 4
Investigates the economic transformation of 19th-century America from a rural, agricultural to an urban, industrial society. Explores the sweeping economic changes, focusing on such topics as changes in work and leisure, westward expansion and its effects on Native Americans, shifts in gender roles, growth of a consumer culture, rise of labor unions and populism, immigration, movements for reform and regulation, growth of American imperialism, and intellectual developments.
Grade Mode: Letter Grading

HIST 813 - 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.
Grade Mode: Letter Grading

HIST 815 - 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.
Grade Mode: Letter Grading

HIST #816 - 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 818 - American Environmental History
Credits: 4
This course 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.
Grade Mode: Letter Grading

HIST 819 - 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.
Grade Mode: Letter Grading

HIST 820 - 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.
Grade Mode: Letter Grading

HIST 821 - 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 824 - 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 832 - Topics in Latin American History
Credits: 4
Topics vary (see department listing for current semester). Seminar involves reading, discussion, and research on literature and documents related to the selected topic. It provides students with the opportunity to do research under close direction.
Grade Mode: Letter Grading

HIST 833 - Medieval England 800-1300
Credits: 4
The purpose of this course is to provide 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 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 communication skills through extensive class discussions dealing with the scholarly works read for this course, and in writing assignments.
Grade Mode: Letter Grading

HIST 834 - Medieval Empires
Credits: 4
This course explores the political, economic, administrative, military, religious, and intellectual 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.
Grade Mode: Letter Grading

HIST #840 - Holy War in the Holy Land: The Medieval Crusades
Credits: 4
Survey of 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.
Grade Mode: Letter Grading

HIST 841 - 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 covered in the course 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, and religious war and conflict.
Grade Mode: Letter Grading

HIST 842 - 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.
Grade Mode: Letter Grading

HIST 854 - Topics in History of Science
Credits: 4
Study of a selected topic in the history of European science since the Renaissance.
Grade Mode: Letter Grading

HIST 856 - 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.
Grade Mode: Letter Grading

HIST 862 - England in the Tudor and Stuart Periods
Credits: 4
Advanced study of England during the Tudor and Stuart periods. Political, religious, socioeconomic, and intellectual forces for change at work in England from the accession of Henry VII to the revolution of 1688-89.
Grade Mode: Letter Grading

HIST #864 - 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.
Grade Mode: Letter Grading

HIST 865 - Themes in Women's History
Credits: 4
In-depth examination of a selected topic in women's history, such as women and health, women in modern European political theory, comparative history of women and revolution. See "Time and Room Schedule" or department for specific topic. May be repeated for credit with permission of instructor.
Grade Mode: Letter Grading

HIST 871 - Museum Studies
Credits: 4
Introduction to theory, methods, and practice of museum studies. Examination of various museum functions, as well as historical controversies. May be repeated with departmental approval.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

HIST 872 - Studies in Regional Material Culture
Credits: 4
An introduction to 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 the permission of the graduate director.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

HIST 873 - Early History of Ancient Greece
Credits: 4
Greek history from the Minoan and Mycenaean eras through the Persian Wars of the early fifth century. Emphasis on original sources including the Homeric epics, Plutarch, Sappho, and Herodotus. Examination of the distinctive developments of political systems in Sparta, Athens, as well as issues of colonization, diplomacy, religion, and culture. Through discussion of types of available evidence and their integration into historical understanding.
Grade Mode: Letter Grading

HIST 874 - Historiography
Credits: 4
Analysis of ancient and modern historians. (Not offered every year.)
Grade Mode: Letter Grading

HIST 875 - Historical Methods
Credits: 4
Introduction to contemporary historical methods. Required of all entering Ph.D. candidates; open to undergraduates with permission.
Equivalent(s): HIST 870
Grade Mode: Letter Grading

HIST 876 - 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.
Grade Mode: Letter Grading

HIST 877 - History of Ancient Rome
Credits: 4
Covers pre-Roman Italy, the Etruscans, and the foundation of the Republic. Rome's expansion through the Punic Wars, and relations with the Hellenistic kingdoms. Disintegration and final collapse of the Republic. Includes discussion of Roman art, engineering, and political theory. Emphasis on Latin sources in philosophy, history, and literature.
Grade Mode: Letter Grading

HIST #878 - Roman Empire
Credits: 4
Collapse of the Roman Republic and creation of the Augustan principate through the division of the empire, with discussion of the fall of Rome in the west, and the eastern empire through Justinian. Discussion of Roman art, literature, philosophy, religious developments such as the proliferation of mystery religions and the rise of Christianity.
Grade Mode: Letter Grading

HIST 880 - 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 graduate director.
Repeat Rule: May be repeated up to 3 times.
Grade Mode: Letter Grading

HIST 890 - 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) 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. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Equivalent(s): HIST 801
Grade Mode: Letter Grading

HIST 895 - Tutorial Reading and Research
Credits: 1-6
A) Early American History; B) American National History; C) Canada; D) Latin America; E) Medieval History; F) Early Modern Europe; G) 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.
Repeat Rule: May be repeated for a maximum of 12 credits.
Grade Mode: Letter Grading

HIST 897 - 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.
Grade Mode: Letter Grading

HIST 898 - Internship in Museum Studies
Credits: 4
Supervised position with a museum, historical society, archive, or other history related site.
Repeat Rule: May be repeated for a maximum of 16 credits.
Grade Mode: Letter Grading

HIST 899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

HIST 939 - Readings in Early American History
Credits: 3
Introduces the chief themes and issues in the secondary literature of early American history from European settlement through the Early Republic. Students write a series of short analytical papers. Expected of all graduate students preparing a field in Early America. Permission required for those not enrolled in History Graduate Program.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

HIST 940 - Readings in Modern American History
Credits: 3
An introduction to major historians and historiographical issues in the history of the U.S. since 1820. Intended to serve as a foundation for research in the field and as preparation for graduate examinations. Permission required for those not enrolled in History Graduate Program.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

HIST 952 - Colloquium in Comparative History
Credits: 3
Intensive reading in comparative studies of U.S. history. Compares the experience of the United States and that of some other area or nation. For example, comparing legal history of Britain and the U.S.; the impact of colonization on native peoples in North and South America; the nature of slavery in the U.S., the Caribbean, and Brazil; or the experience of women in Europe and America. Topics vary and may be repeated with permission.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

HIST 970 - Graduate Seminar in Teaching History
Credits: 1
Introduction of fundamental issues in the teaching of history at the college level. Topics include basic pedagogical issues, such as leading effective discussions, evaluating students' work, and lesson planning, and also concerns related to history teaching, e.g., developing students' historical consciousness, use of media, and so forth. Required of all entering Ph.D. students and applicable to the Cognate in College Teaching. Course to be taken in the Fall and then repeated in Spring for a total of two credits.
Equivalent(s): GRAD 981
Grade Mode: Graduate Credit/Fail grading

HIST 971 - Professionalization for Historians
Credits: 2
This proseminar will introduce History graduate students (PhD and MA) to professional opportunities and expectations central to professional success. Topics and assignments explore making the most out of graduate school, demonstrating progress, presenting research to others, submitting research for publication, preparing for the job search, professional networking, and life after finding a job.
Grade Mode: Graduate Credit/Fail grading

HIST 981 - Doctoral Research Seminar in American History
Credits: 3
Students will write a lengthy research paper in any aspect of US History. The course will also include professional preparation assignments. May be repeated with a different topic.
Repeat Rule: May be repeated for a maximum of 12 credits. May be repeated up to 4 times.
Equivalent(s): HIST 989, HIST 990
Grade Mode: Letter Grading

HIST 989 - Research Seminar in Early American History
Credits: 3
Students will write a lengthy research paper in any aspect of early US history, to 1877. The course will also include professional preparation assignments. May be repeated with a different topic.
Repeat Rule: May be repeated for a maximum of 6 credits.
Equivalent(s): HIST 981
Grade Mode: Letter Grading

HIST 990 - Research Seminar in Modern American History
Credits: 3
Students write a lengthy research paper in any aspect of modern US history, roughly 1865 to the present. The course also includes professional preparation assignments. May be repeated with a different topic. Permission required for those not enrolled in History Graduate Program.
Repeat Rule: May be repeated for a maximum of 6 credits.
Equivalent(s): HIST 981
Grade Mode: Letter Grading

HIST 995 - Tutorial Reading and Research
Credits: 1-6
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.
Repeat Rule: May be repeated for a maximum of 12 credits.
Grade Mode: Letter Grading

HIST 997 - Directed Readings in Early American History
Credits: 1-6
Directed readings in Early American History. Supervised readings for students preparing for the Ph.D. examinations in Early American History.
Grade Mode: Graduate Credit/Fail grading

HIST 998 - Directed Readings in Modern United States History
Credits: 1-6
Supervised readings for students preparing for Ph.D. examinations in Modern U.S. History.
Grade Mode: Graduate Credit/Fail grading

HIST 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Homeland Security (HLS)

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.

Human Development & Family Studies (HDFS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

HDFS 834 - 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.
Equivalent(s): FS 834
Grade Mode: Letter Grading

HDFS 841 - Marital and Family Therapy
Credits: 4
This course provides an introduction to the theory and practice of marital and family therapy; major approaches to be examined include strategic, trans-generational, structural, experiential/humanistic, and behavioral.
Equivalent(s): FS 841
Grade Mode: Letter Grading

HDFS 843 - 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.
Equivalent(s): FS 843
Grade Mode: Letter Grading

HDFS 846 - 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 846
Grade Mode: Letter Grading

HDFS 857 - 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 the result of existing social, political, and economic institutions.
Equivalent(s): FS 857
Grade Mode: Letter Grading

HDFS 871 - Observation and Assessment of Young Children
Credits: 4
A 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. Permission. (Fall semester only.)
Equivalent(s): FS 871
Grade Mode: Letter Grading

HDFS 876 - Children, Adolescents and the Law
Credits: 4
This course is designed to familiarize students with the specialized laws and legal systems that govern children, adolescents and families. 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.
Equivalent(s): FS 876
Grade Mode: Letter Grading

HDFS 894 - 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 society. Students will become familiarized with the family court system and its role in regulating the family.
Equivalent(s): FS 894
Grade Mode: Letter Grading

HDFS 895 - Advanced Independent Study
Credits: 1-6
This course is designed for students in the HDFS graduate program to undertake advanced study in child development, adolescent development, or lifespan development in consultation with an HDFS faculty member. The result of the study is to be a significant written product of a quality. A learner/sponsor contract will be required.
Grade Mode: Letter Grading

HDFS 897 - Special Topics
Credits: 1-4
Focused examination of a particular theoretical, methodological, or policy issue.
Repeat Rule: May be repeated for a maximum of 8 credits.
Equivalent(s): FS 897
Grade Mode: Letter Grading

HDFS 898 - Marriage and Family Therapy Practicum
Credits: 1-8
Clinical experience under direct faculty supervision. Trainees develop competency in treating individuals in the context of their families and larger systems. May be repeated.
Equivalent(s): FS 898
Grade Mode: Letter Grading
Special Fee: Yes

HDFS 899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 10 credits.
Equivalent(s): FS 899
Grade Mode: Graduate Credit/Fail grading

HDFS 911 - Graduate Internship
Credits: 2-8
Advanced, supervised graduate internship in a professional setting related to Family, Child, or Adolescent Development.
Repeat Rule: May be repeated for a maximum of 8 credits.
Equivalent(s): FS 911
Grade Mode: Graduate Credit/Fail grading

HDFS 930 - Child Development in Context
Credits: 4
This course examines the advanced issues in child development within an ecological context. Theory and research on social, cultural, and development issues of early childhood will be the focus, with a particular emphasis on ecological and social constructivist frameworks. This seminar examines issues of diversity (race, ethnicity, religion, sexual orientation, and social class), and topics include attachment, socialization of emotions, parenting beliefs, father-child relationships, and child care and preschool.
Equivalent(s): FS 930
Grade Mode: Letter Grading

HDFS 942 - Advanced Systems of Marital and Family Therapy
Credits: 4
This course provides a critical analysis and integration of selected systems of marital and family therapy.
Prerequisite(s): HDFS 841 with a minimum grade of D-.
Equivalent(s): FS 942
Grade Mode: Letter Grading

HDFS 945 - Family Therapy Practice I
Credits: 4
This course is designed to develop beginning practice skills in structural, strategic, systematic family therapies; and assessment and treatment skills necessary to manage specialized problems (e.g., divorce, remarriage, substance abuse, suicidal behavior) encountered in practice.
Equivalent(s): FS 945
Grade Mode: Letter Grading

HDFS 946 - Critical Problems in Family Life
Credits: 4
This course provides an evaluation of the needs and resources of families with critical problems; maturational and situational sources of stress influencing the contemporary family; students demonstrate mastery of theoretical concepts by developing self-help strategies to be used by families experiencing stress.
Equivalent(s): FS 946
Grade Mode: Letter Grading

HDFS 947 - Family Therapy Practice II
Credits: 4
This course is designed to develop advanced skills in integrating structural, strategic, and systematic family therapies; sensitivity to gender differences and cultural diversity; and assessment and treatment skills necessary to manage specialized problems (e.g., physical, emotional, and sexual abuse; sexual dysfunction) encountered in practice.
Equivalent(s): FS 947
Grade Mode: Letter Grading

HDFS #950 - Contemporary Issues in Adolescent Development
Credits: 4
This course focuses on contemporary issues facing adolescents and emerging adults. The Human Development and Family Studies perspective guides the course's focus on the social ecology of adolescent development, which means understanding adolescents within the contexts of families, peers, schools, out-of-school activities, communities, and the broader culture. This course also emphasizes the application of the course content to enhance the lives of adolescents and emerging adults.
Equivalent(s): FS 950
Grade Mode: Letter Grading

HDFS 952 - Clinical Interventions in Couples Therapy
Credits: 4
This course explores interventions that target problems faced by couples at various ages and stages of their relationship. The focus will be on developing and implementing effective strategies for enhancing attachments as well as approaches for improving communication and problem-solving skills in Couples Therapy. The format will be interactive with illustrative demonstration. Majors to include: HDFS: Marriage and Family Therapy and Social Work.
Equivalent(s): FS 952
Grade Mode: Letter Grading

HDFS 954 - Sex Therapy
Credits: 4
This course begins preparing graduate student therapists to address sexual topics with clients. Using a foundation grounded in the physiology, psychology, and sociology of human sexual development, this course explores problems in sexual interaction and treatment options available through sex therapy, focusing on the integration of sex therapy with couples therapy. Students are encouraged to examine their own attitudes, values, and beliefs regarding sexuality, and will deconstruct "sexual dysfunction".
Equivalent(s): FS 954
Grade Mode: Letter Grading

HDFS 991 - Professional Issues for Family Specialists
Credits: 4
This course provides an exploration of major ethical, legal, and professional issues facing those working in the areas of marriage and family therapy and child and adolescent development. Focus on ethical decision making, values clarification, and development of professional identity.
Equivalent(s): FS 991
Grade Mode: Letter Grading

HDFS 993 - Theoretical Approaches to Human Development and Family Studies
Credits: 4
This course provides an in-depth understanding and appreciation of the most significant classic and emerging theoretical frameworks concerning the family and family dynamics. The application of each theory to work in the areas of marriage and family therapy and child and adolescent development will be examined in depth.
Equivalent(s): FS 993
Grade Mode: Letter Grading

HDFS 994 - Research Seminar
Credits: 4
This course is a graduate-level introduction to research methods in the social sciences with an emphasis o the fields of Human Development and Family Studies and Marriage and Family Therapy. This course is designed to help students conceptualize and write about research, understand and generate practice-relevant research, gain the foundation for research competency, and understand the research process.
Equivalent(s): FS 994
Grade Mode: Letter Grading

HDFS 995 - Seminar and Special Problems
Credits: 2-4
This course provides critical evaluation of the research and current literature and an examination of issues and trends. These seminars are open to graduate students with sufficient background and are not scheduled every semester. One or more semesters, maximum of 4 credits in one area.
Equivalent(s): FS 995
Grade Mode: Letter Grading

Human Services (HMSV) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

HMSV 800 - Principles of Human Service Management
Credits: 3
This course examines the key concepts of human services management and provides a broad overview of the history, purpose, theory, and current trends in the human services field. Students study various issues that impact the management of human services and gain an understanding of the role of the human services manager. An emphasis is placed on examining social systems, ethics, and skills related to human service delivery to individuals, groups, families, organizations, communities, and society in diverse practice settings.
Equivalent(s): HMSV 800G
Grade Mode: Letter Grading

HMSV 803 - Administration of Human Service Organizations
Credits: 3
This course explores the knowledge, theory, and skills in the administrative aspects of the human service delivery system. Issues of supervision, management, and development of paid and volunteer staff will be addressed. The concepts of coalition building, legislative advocacy and community organizing, and funding will also be introduced. The differences and similarities between the administration of public organizations and non-profit organizations will also be reviewed.
Equivalent(s): HMSV 803G
Grade Mode: Letter Grading

HMSV 805 - Ethical and Legal Practices in Human Services
Credits: 3
This course explores the concepts related to ethical competence in decision-making, policymaking, and ensuring the rights and wellbeing of clients and staff. It further examines current laws and regulations that dictate codes of ethics and levels of professionalism. Ethical dilemmas faced by leaders and their impact on the organization and the broader community are investigated through case studies and critical thinking through dialogue.
Equivalent(s): HMSV 805G
Grade Mode: Letter Grading

HMSV 850 - Human Services Administration Integrative Capstone
Credits: 3
This integrative course is the culminating experience for the Master of Science in Human Services Administration degree. All other required coursework must have been completed prior to receiving approval to register for this course. This course builds on the knowledge and skills learned through the degree program allowing the student to demonstrate competency in translating theory into practice. The course combines traditional coursework with a field-based experience, providing direct exposure to the field of human services administration. Final products include a comprehensive project to demonstrate mastery of professional practice. After documenting the above, students will discuss and defend their project orally.
Equivalent(s): HMSV 850G
Grade Mode: Letter Grading

Instructional Studies (INST) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

INST 803 - Foundations of Program Planning and Evaluation
Credits: 1
Effective programs share common themes: they clearly identify why they are needed, who they are targeted to, how they will evaluate activities, and what types of relevant activities and assignments will help participants succeed based on evidence. Weaving these elements together using persuasive and effective communication is an essential skill for anyone involved in program planning and evaluation. This course will provide a primer on essential steps in program planning and evaluation.
Equivalent(s): INST 803G
Grade Mode: Letter Grading

INST 823 - Program Planning and Evaluation: Project
Credits: 2
Effective programs begin by clearly identifying why they are needed, who they are targeted to, how they will evaluate activities, and what types of relevant activities and projects will help participants succeed. Selecting an appropriate evaluation strategy at the outset is critical to program design and development. This course will provide essential resources, practice opportunities, peer collaboration and coaching feedback to help learners develop a comprehensive program plan and evaluation strategy.
Prerequisite(s): INST 803 with a minimum grade of B- or INST 803G with a minimum grade of B-.
Equivalent(s): INST 823G
Grade Mode: Letter Grading

Integrated Applied Mathematics (IAM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

IAM 830 - Graduate Ordinary Differential Equations
Credits: 3
Course is a graduate-level course on ordinary differential equations. It is designed to be accessible to first-year graduate students from math, science or engineering backgrounds who have had a first undergraduate course in differential equations, along with a standard calculus sequence. The course is designed to begin with an intensive review of undergraduate differential equations and then will proceed to handle more advanced concepts, starting with multi-dimensional coupled systems of ordinary differential equations, exponential matrix solutions, using coordinate transformations for conversion to standard forms, nonlinear systems and transform-based solutions, using coordinate transformations for conversion to standard forms, nonlinear systems and transform-based techniques. The course will have an interdisciplinary and applied style and will cover the following topics: Intense review of undergraduate differential equations, Power Series and Fourier Series solutions, Multi-dimensional D.E.s, eigenvectors and Jordan forms, Numerical Methods, Nonlinear D.E.s Dynamical Systems and Chaos.
Grade Mode: Letter Grading

IAM 851 - Introduction to High-Performance Computing
Credits: 3
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. Working knowledge of a compiled programming language (C, C++ or Fortran) is required prior to taking this course.
Grade Mode: Letter Grading

IAM 932 - Graduate Partial Differential Equations
Credits: 3
Graduate level introduction to the analysis of linear and nonlinear partial differential equations. topics include: separation of variables, Fourier series, weak and strong solutions, eigenfunction expansions, the Strum-Liouville problem, Green's functions and fundamental solutions, method of characteristics, and conservation laws. A solid foundation in Ordinary Differential Equations and Linear Algebra is required prior to taking this course.
Grade Mode: Letter Grading

IAM 933 - Applied Functional Analysis
Credits: 3
Introduction to rigorous mathematical analysis from the perspective of applications. Topics include: metric and normed spaces; convergence; completeness; continuity; Lebesgue measure theory; convergence theorems; Banach, Hilbert, Lp, and Sobolev spaces; orthogonality, bases, and projections; Sturm-Liouville theory; spectral theory; distributions; and weak solutions. Applications including to differential and integral equations, are presented throughout. Knowledge of real analysis is required, or graduate level introductory courses in mathematical physics or applied mathematics should be taken prior to taking this course.
Grade Mode: Letter Grading

IAM 940 - Asymptotic and Perturbation Methods
Credits: 3
Introduction to the asymptotic analysis of linear and nonlinear algebraic equations, ODEs, and PDEs and the asymptotic approximation of integrals arising as transform solutions to ODEs/PDEs. Topics include: algebraic equations and dominant balance; asymptotic approximations; complex variable theory and the asymptotic evaluation of integrals via Laplace's method, stationary phase, and steepest descents; the method of matched asymptotic expansions (boundary-layer theory), coordinate straining, multiple scales, averaging, homogenization theory, and WKBJ analysis for singularly perturbed ODEs and PDEs.
Grade Mode: Letter Grading

IAM 945 - Pattern Formation
Credits: 3
Patterns arise spontaneously in myriad systems. This course provides an introduction to pattern formation theory in nonlinear forced-dissipative PDEs. Mathematical tools including linear, secondary, and energy stability analysis, Floquet theory, and multiple-scale and WKBJ asymptotic analysis will be introduced to develop quantitative theories of weakly and strongly nonlinear patterns. Applications will be drawn from fluid mechanics, biology, and ecology, among other areas.
Grade Mode: Letter Grading

IAM #950 - Spatiotemporal and Turbulent Dynamics
Credits: 3
Advanced graduate course on the dynamics of spatiotemporal patterns in nonlinear time-dependent PDEs. Topics include nonlinear pattern formation, bifurcations and symmetry, nonlinear WKB analysis, phase diffusion/amplitude modulation theory, unstable coherent structures in turbulence, and periodic orbit theory. Example systems include 1d and 2d Swift-Hohenberg equation, the 1d Kuramoto-Sivashinsky equation, Rayleigh-Benard convection, and Navier-Stokes in plane Couette and pipe flows. Knowledge of nonlinear dynamics is required prior to taking this course.
Grade Mode: Letter Grading

IAM 961 - Numerical Analysis I: Numerical Linear Algebra
Credits: 3
Introduction to numerical analysis and computational methods for linear systems. Topics include: IEEE floating point arithmetic; vector norms and induced norms; conditioning; projectors; LU decompositions; pivoting; Cholesky factorization; QR decompositions; Gram-Schmidt orthogonalization; Householder triangularization; Singular Value decompositions; least squares problems; stability; eigenvalue problems; power iterations; QR algorithm; Krylov methods; Arnoldi iteration; GMRES; Lanczos iteration; Conjugate gradient algorithms; and Preconditioning. Knowledge of computer programming and linear algebra is required prior to taking this course.
Grade Mode: Letter Grading

IAM 962 - Numerical Partial Differential Equations
Credits: 3
Numerical analysis applied to partial differential equations. Initial topics include the implementation of finite difference and spectral methods applied to the heat equation, wave equation, Burger's equation, and other model equations. The remainder of the course treats numerical analysis, starting with a brief review of function spaces. The primary topics include approximation theory for Sobolov spaces, projection operators, completeness, convergence, and error estimates.
Grade Mode: Letter Grading

IAM 995 - IAM Special Topics
Credits: 1-4
Investigations of graduate-level problems or topics in Integrated Applied Mathematics. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

IAM 998 - Independent Study/Reading Course
Credits: 1-4
Independent investigation of graduate-level problems or topics in Integrated Applied Mathematics under the guidance of a faculty member. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

IAM 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading

Intercollege (INCO)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

INCO 889 - Study Abroad Experience Short
Credits: 0
For graduate students enrolling in short term study abroad experiences in Fall and Spring semesters. Also for graduate students enrolling in January term and Summer Session study abroad experiences.
Grade Mode: Not graded
Special Fee: Yes

Interdisciplinary Studies (IDIS) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

IDIS 805 - Evidence-Based Decision-Making
Credits: 3
This course will guide students as they develop the necessary skills to identify, access, and incorporate the best available evidence using valid and reliable sources to make informed decisions. Students will explore the process of developing knowledge, innovation, and quality improvement principles of evidence-based decision-making. Ethical standards for protecting human subjects are integrated throughout the course.
Equivalent(s): IDIS 805G
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 801 - Graduate Seminar in Justice Studies
Credits: 4
Seminar on advanced material in which the instructor has specialized knowledge through research and study. Topics may include the death penalty, terrorism, psychology of the jury, immigration, history of the law. Content of specific sections will vary by section of the course. Course may be repeated for different topics.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

JUST 802 - Law and Society
Credits: 4
Provides students with a graduate level review of the law and society field. Interdisciplinary study of the relationship between law and society. Topics include how society shapes legal decision-making and dispute resolution, law as social control and as social change, and legal ideologies and legal consciousness.
Grade Mode: Letter Grading

JUST 803 - Professionalism in Justice Studies
Credits: 1
This course introduces Master's of Arts students in Justice Studies to the expectations, tools and opportunities central to their success. It provides the fundamentals to being effective research and teaching assistants. It also Justice Studies Master's of Arts students in developing the tools necessary to be successful candidates in positions throughout justice-related fields. Finally, it provides opportunities for them to interact with academics and professionals in justice studies. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Graduate Credit/Fail grading

JUST 805 - Quantitative Research Methods
Credits: 4
Introduction to the major quantitative methods used by criminologists and justice researchers. Focuses on methods which illuminate causes of crime and justice. Covers all aspects of the research process including conceptualization, design, sampling, data analysis, and dissemination of results. Does not assume prior statistical knowledge.
Grade Mode: Letter Grading

JUST 807 - Applied Research Methods
Credits: 4
This is the second course in the Justice Studies graduate program sequence on research methods and it focuses on how to conduct applied research in the Justice Studies field including how to use quantitative methods in more applied settings and specific research tools frequently used in applied settings (e.g. qualitative methods and program evaluation). Students will work on a class research project as well as their own individual projects.
Grade Mode: Letter Grading

JUST 830 - 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, 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. Course examines both historical sources and contemporary debates about the nature of justice.
Grade Mode: Letter Grading

JUST 850 - Capstone Preparation: Internship/Thesis
Credits: 4
Experience in research and/or a variety of justice settings including courts, law enforcement and victim services. Includes weekly seminar.
Prerequisite(s): JUST 901 with a minimum grade of B-.
Grade Mode: Letter Grading

JUST 865 - Special Topics
Credits: 4
New or specialized courses are presented under this listing. Staff present material not normally covered by the course offerings. Cross-listed courses. May be repeated but not duplicate content.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

JUST 895 - Reading and Research
Credits: 1-4
A) Criminology; B) Law and Society; C) Law and Psychology; D) Philosophy of Law; E) Courts. The students does independent work under the supervision of a faculty member. The student may plan (1) broad reading in an area; (2) intensive investigation of a special problem; or 3) empirical testing on a particular question. May be taken for 1-4 credits. This course is by permission only and requires a signed agreement/proposal prior to registration.
Prerequisite(s): JUST 802 with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

JUST 897 - Culminating Project
Credits: 4
Students conduct a project related to their internship under the supervision of a faculty member. Projects might include an evaluation of a community policing program, interviews with battered women in a shelter, or a survey of corporal punishment.
Prerequisite(s): (JUST 901 with a minimum grade of D- and JUST 905 with a minimum grade of D-) or JUST 907 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

JUST 899 - Masters Thesis
Credits: 1-8
Students conduct a masters thesis under the supervision of three graduate faculty members. Thesis projects might include an intervention study to reduce delinquency, a study of immigration law in the 1920s, or a survey of hate crimes.
Prerequisite(s): (JUST 901 with a minimum grade of D- and JUST 905 with a minimum grade of D-) or JUST 907 with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Kinesiology (KIN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

KIN 802 - Health Content and Youth Risk Behaviors
Credits: 4
This course explores 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 (Core Concepts) of the National Health Education Standards and better understand how health behaviors affect individual health and health instructions.
Grade Mode: Letter Grading

KIN 804 - Electrocardiography
Credits: 4
This course is designed to provide students exposure regarding basic interpretation and identification of electrocardiograms (ECGs). Included in this is detailed heart anatomy, coronary circulation, cardiac conduction system, electrocardiogram development, and all aspects pertaining to normal and abnormal ECGs.
Grade Mode: Letter Grading

KIN 805 - 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 aids and the influence of age and gender.
Grade Mode: Letter Grading

KIN 806 - Neurology
Credits: 4
A detailed study of the development, morphology, internal configuration, physiology, histology, function, and pathology of the human nervous system. Labs consist of clinical case studies, brain dissections, and videos/slides to enhance the understanding of material. Prereq: human anatomy and physiology. Lab.
Co-requisite: KIN 807
Grade Mode: Letter Grading

KIN 807 - 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. ZOOL 507 - ZOOL 508 or COMM 521 or equivalent required prior to taking this course.
Co-requisite: KIN 806
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

KIN 812 - Health Education Practicum
Credits: 4
The purpose of this practicum is to provide students with an opportunity to observe, develop, and teach in a health education classroom. Students are required to accumulate 60 hours of teaching experience in the schools over the course of the semester. Weekly seminars will integrate field experience with content knowledge in health, nutrition and physical activity.
Prerequisite(s): HPE 648 with a minimum grade of D-.
Grade Mode: Letter Grading

KIN 820 - Science and Practice of Strength Training
Credits: 4
Designed to provide graduate 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.
Grade Mode: Letter Grading

KIN 822 - 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.
Grade Mode: Letter Grading

KIN 824 - Exercise Metabolism: Acute and Chronic Adaptations
Credits: 4
An overview of the metabolic processes that occur during exercise and metabolic changes that occur as a result of exercise training. Topics covered 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.
Grade Mode: Letter Grading

KIN 831 - Inclusive Teaching Through Sport
Credits: 4
This hybrid course examines the practical application of inclusion through Paralympic and adapted sports including wheelchair basketball, sitting volleyball, goalball, boccia, table-top games and "traditional" sports. In-class sessions will be held the first three weeks while an on-line/independent portion will be conducted the last two weeks of the course. A variety of sporting activities will be introduced that provide educators with the needed tools to develop and implement physical and recreational programs for all.
Grade Mode: Letter Grading

KIN 836 - Fitness and Graded Exercise Test and Prescription
Credits: 4
This course is 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.
Grade Mode: Letter Grading

KIN 837 - 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. Aerobic and strength training programs in special populations are highlighted.
Prerequisite(s): KIN 836 with a minimum grade of D-.
Grade Mode: Letter Grading

KIN 840 - 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 services; and key legal issues.
Grade Mode: Letter Grading

KIN 841 - Social Issues in Contemporary Sports
Credits: 4
An investigation into interrelationships among sport, culture, and society in an attempt to understand better the role and function of sport in contemporary society. Broad overview of selected socio-cultural factors that influence participation and result from participation in sports.
Grade Mode: Letter Grading

KIN #842 - Advanced Assessment in Adapted Physical Activity
Credits: 4
This course provides students a experience to work with children with disabilities in physical activity and physical education settings. A blend of lectures (online and in-person) and practicum experiences in local schools will provide students the opportunity to learn how to apply adapted physical activity best practices and research to school contexts through class discussion, readings, and written assignments. This course provides an opportunity for refinement and continued development of teacher skills and practices for working with students with disabilities. A primary focus will be on assessment, planning, and implementation of physical education and physical activity programming for students with disabilities. In addition, a focus on how these assessments impact the individualized education program (IEP) will be emphasized.
Grade Mode: Letter Grading

KIN 848 - Skill Development and Assessment in Health Education
Credits: 4
Preparing students to face health challenges of the 21st century requires teaching health education in ways that increases individual health literacy and self-efficacy to lead a health-enhancing life. Teaching students the necessary skills is not enough, we must also assess student learning in authentic and meaningful ways that measure growth and levels of skill proficiency. Using the Performance Indicators of the National Health Education Standards as a guide, we will explore how to teach health education in a skills-based way and to develop formative & summative assessments that measure student learning & resulting proficiency. We will discuss strategies to develop health literate individuals who have the capacity & competence to make health-enhancing choices across the lifespan. Coursework includes readings, in-class work time, & development of tools you can use in your classroom.
Grade Mode: Letter Grading

KIN 864 - 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.
Grade Mode: Letter Grading

KIN 865 - 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 Sports 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): SPST 565 with a minimum grade of D-.
Grade Mode: Letter Grading

KIN 871 - Health Education Pedagogy
Credits: 4
This graduate-level course provides a pedagogical foundation for teaching health education in K-12 school settings. Class members will learn how to create a positive classroom environment that is conducive to teaching and assessment of the National Health Education Standards. Aligned with the CDC Characteristics for Effective Health Education Curricula, and through a culturally-responsive lens, the course builds on previous experience and prepares pre-service teachers to develop age and developmentally appropriate learning experiences.
Prerequisite(s): KIN 848 with a minimum grade of D- or HPE 648 with a minimum grade of D-.
Grade Mode: Letter Grading

KIN 880 - 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 to directed to strategies for coaches, teachers, and athletic trainers to utilize sport psychology in their professional practice. Introduction to Psychology required prior to taking this course.
Grade Mode: Letter Grading

KIN 881 - Inclusion in Physical Education
Credits: 4
The course examines the needs of individuals with disabilities in school based and physical activity settings. Legal mandates that define school policy and student placement are addressed while discussing the various teaching orientations that inform practice. This course also includes hands-on teaching experiences across a range of ages and disabilities that shape teaching competencies.
Grade Mode: Letter Grading

KIN 882 - 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.(Also listed as SW 882).
Equivalent(s): SW 882
Grade Mode: Letter Grading

KIN 883 - Psych Factors of Adventure Ed
Credits: 4
Adventure educators are often called to work with people facing short-term psychological challenges like being effective in a group or managing fear and discomfort in a vigorous learning environment. Because the adventure environment can be psychologically demanding, an understanding of basic psychology is an advantage both for effective practice and research. Course emphasizes the history of psychological research to provide a foundation for the adventure educator's work leading, designing and evaluating adventure-based programs.
Grade Mode: Letter Grading

KIN 884 - Historical Foundations of Outdoor Experiential Education
Credits: 4
Reviews the historical, conceptual, and political foundations of major 20th century educational reform initiative. It focuses in particular on the educational philosophy of John Dewey, the social reforms advanced by German educator Kurt Hahn(founder of Outward Bound), humanistic 'encounter' programs of the 1960s and 1970s, and scholarship on contemporary reforms. Class follows a seminar format; students complete independent presentations and a comprehensive final exam.
Repeat Rule: May be repeated up to 4 times.
Grade Mode: Letter Grading

KIN #885 - Program Models and Evaluation in Outdoor Education
Credits: 4
Provides an understanding of the major outdoor education program models currently being used. Students also analyze the principles underlying program development and examine current trends and program evaluation approaches. Topics include research methods, evidenced-based practices, and ethics.
Grade Mode: Letter Grading

KIN #886 - 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 the key factors necessary to manage a program. Field experience.
Grade Mode: Letter Grading
Special Fee: Yes

KIN 894 - 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. Course offering includes the addition of teaching experiences and real-patient case study assignments to better prepare the graduate student through increased application of knowledge and experiences to real-world situations.
Grade Mode: Letter Grading

KIN 895 - Advanced Studies
Credits: 2-4
Independent study problems.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

KIN 896 - Advanced Research in Exercise Science
Credits: 3 or 6
Students design and conduct original research that culminates in a paper of publishable quality. Completion of either this course or KIN 899 satisfies the department's research requirement for the master's degree. May be taken for 3 credits per semester in each of two semesters or 6 credits in one semester. IA (continuous grading).
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

KIN 897 - Advanced Topics in Outdoor Education
Credits: 2-6
Meets regularly to support students integrating advanced knowledge into independent projects that culminate in a substantial professional product, a paper of publishable quality, or a presentation to an outside professional audience. Completion of either this course or KIN 899 (thesis) satisfies the department's requirement for culmination of the master's degree. May be taken in combinations of 2, 3, or 4 credits over multiple semesters, or up to 6 credits in one semester. IA (Continuous grading).
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

KIN #898 - 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
Special Fee: Yes

KIN 899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

KIN #901 - Analysis of Professional Literature
Credits: 4
Critical interpretation of professional literature. This course focuses on the appropriate use of research methodologies and techniques.
Grade Mode: Letter Grading

KIN 902 - Colloquium
Credits: 1-2
Seminar format with readings, discussions, laboratory tutorials, and presentations of current research topics. A) exercise science; B) outdoor education; C) special physical education; D) sport studies.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Graduate Credit/Fail grading

KIN 910 - Curricular Issues in Health Pedagogy
Credits: 4
This course examines health education and curricular issues as they affect the teaching of health in social settings. Specific curricula designed to focus on health topics are discussed as well as appropriate and relevant teaching methods for elementary, middle and high school students. Students develop units (including lesson plans, handouts and assessments) for selected grade levels. Student also engage in peer teaching episodes related to various health content.
Grade Mode: Letter Grading

KIN #950 - Internship
Credits: 2-4
Experiential learning in a setting appropriate to the student's objectives. A 4-credit internship requires a minimum of 300 hours experience. Fewer credits require proportionally fewer hours. A) Exercise Science. Clinical work, normally in a hospital or laboratory setting, involving exercise physiology, graded exercise testing, exercise prescription, and/or cardiac rehabilitation. Must have completed all required coursework except thesis. B) Special Physical Education C) Sport Studies.
Grade Mode: Graduate Credit/Fail grading

KIN 993 - Teaching Practicum
Credits: 2
Students work with a faculty mentor to investigate, observe, and practice teaching methods using current pedagogical and assessment methods and theories. Includes use of various instructional technologies as tools to enhance the teaching/learning process. Designed for graduate students who wish to gain experience teaching at the collegiate level in KIN fields upon completion of the Master's or Ph.D. degree.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

Languages, Literatures & Cultures (LLC)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

LLC 891 - Methods of Foreign Language Teaching
Credits: 3
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 891
Grade Mode: Letter Grading

Leadership (LD) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

LD 804 - Leading Teams
Credits: 3
Leadership is the process of motivating people to achieve project goals, usually in a dotted-line organizational setting. The success or failure of the project, and by extension the manager, is dependent upon the manager's ability to assess the team as a whole, (strengths and weaknesses), and to then apply that analysis to the individual team members. Within the course, students will survey and discuss multiple methodologies used to evaluate teams. We will analyze how organizational dynamics and structure impact the manager, limit or increase their power, and their ability to perform their job.
Equivalent(s): LD 804G
Grade Mode: Letter Grading

LD 806 - Fundraising and Resource Development
Credits: 3
Fundraising is the act of soliciting contributions or pledges. Development refers to nurturing and building relationships over time between donors/philanthropists and organizations. The purpose of this course is to differentiate between fundraising, grant writing, and development strategies in organizations. This course will review ethics and transparency within fundraising, technology to facilitate resource development, social and business trends, and organizational adaptation.
Equivalent(s): LD 806G
Grade Mode: Letter Grading

LD 810 - Change Management and Communication
Credits: 3
This course provides students with an understanding of the principles of assessing change, managing change and the communication tools necessary to implement change effectively. Issues regarding client satisfaction, vendor satisfaction, morale and relationships will be explored. The effective manager must possess skills in adaptability to ensure that projects are responsive to changing conditions. This course develops a thorough understanding of strategic change within organizations.
Equivalent(s): LD 810G
Grade Mode: Letter Grading

LD 820 - Cultivating Your Leadership Capabilities
Credits: 3
In this course the student is introduced a variety of unique perspectives about leadership, which are drawn from different traditions in the literature, and from which the student selects to develop his or her own model of leadership. An action-based learning approach is conducted by each student to connect personal experiences with the theoretical construct.
Equivalent(s): LD 820G
Grade Mode: Letter Grading

LD 821 - Ethical Decision-Making
Credits: 3
The course focuses on the conflicts which arise when an individual's ethics are counter to the organization's practices. An historical review of various leader's actions taken and consequences faced when confronted with an ethical dilemma is conducted. Each student assesses their ethical framework in context to an effective leadership model.
Equivalent(s): LD 821G
Grade Mode: Letter Grading

LD 823 - Emergence of a Strategic Leader
Credits: 3
This course focuses on the strategy making process. Strategic leaders must consider multiple aspects when developing a strategic approach. Strategic leaders must evaluate the external and internal environment to determine the right course of action. Students investigate core concepts of strategy-making to aid in their development of a strategic mindset.
Equivalent(s): LD 823G
Grade Mode: Letter Grading

LD 825 - Volunteer Leadership
Credits: 3
Volunteers are increasingly important in the United States. Not only do financially strapped organizations use volunteers to enhance their capacity, but policy-makers and community leaders see volunteering as a vehicle to improve communities and solve public problems. This course covers topics of volunteer administration -planning, marketing, recruitment, screening and selection, training, supervision, evaluation and recognition. Students will gain an understanding of how the demographic of today's volunteers is changing, how best to deploy the talents of multi-generational volunteers, and understand how to provide a structured objective framework to be accomplished by the volunteer corps. Legal issues surrounding the use of volunteers and designing effective volunteer policies are also discussed.
Equivalent(s): LD 825G
Grade Mode: Letter Grading

LD 827 - Leading and Governing Nonprofit Organizations
Credits: 3
This course guides participants in understanding nonprofit organizations and their management. Topics include motivations for starting nonprofit organizations as well as theories and strategies to balance the unique needs of nonprofits within market economies. This course covers considerations for staffing and volunteer management, funding sources, asset management, program evaluation and leadership structures as elements of identifying qualities of successful nonprofit organizations at various stages of development. Projects may include interviewing, building a nonprofit business plan, and presentations.
Equivalent(s): LD 827G
Grade Mode: Letter Grading

LD 831 - Conflict Management & Negotiation
Credits: 3
Students will be introduced to different perspectives on conflict management and negotiation. Conflict will be explored in different contexts, including but not limited to intergroup conflict, cross-cultural conflict, and interpersonal conflict. An emphasis will be placed on interpersonal conflict. The course will utilize an applied approach by identifying effective strategies to manage conflict and negotiation, and provide appropriate methodologies for implementation.
Equivalent(s): LD 831G
Grade Mode: Letter Grading

LD 832 - Building Diverse & Multicultural Organizations
Credits: 3
Successful leaders must learn to integrate different viewpoints to enhance creative problems solving, leadership ability and organizational effectiveness. This course will provide an overview of cultural diversity and multiculturalism in today's organizations. Students will be exposed to key concepts, models and issues of diversity in the organization and global society. The ethical and legal implications of managing cultures and diversity will be examined.
Equivalent(s): LD 832G
Grade Mode: Letter Grading

LD 850 - Leadership Integrative Capstone
Credits: 3
This integrative course is the final course in the Master of Science in Leadership. All other required coursework must have been completed prior to receiving approval to register for this course. The focus of the course is on defining and researching a leadership issue or problem. The applied research provides the opportunity to utilize strategy, research skills, analytical tools and models, as well as decision sciences with a culminating research project that can be of strategic benefit to the student and/or a current organization. After documenting the above, students will discuss and defend their project orally.
Equivalent(s): LD 850G
Grade Mode: Letter Grading

Liberal Studies (LS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

LS #800 - Core Seminar
Credits: 4
An introductory seminar specially designed for and limited to students within the LS program. Core seminars are interdisciplinary explorations of significant issues, topics, themes, or perspectives in human life in general and the contemporary world in particular. Topics may change from semester to semester. The seminar must be taken within the first year of a student's matriculation in the program, preferably in the first semester.
Grade Mode: Letter Grading

LS 895 - Independent Study
Credits: 1-6
Independent study for graduate students in LS as part of their concentration.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

LS 896 - Independent Study
Credits: 1-6
See description for LS 895.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

LS 898 - Master's Project
Credits: 1-6
For LS students to work out a final project consistent with concentration and interests.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

LS 899 - Master's Thesis
Credits: 1-6
For LS students to work out a final thesis consistent with their concentration and interests.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

Life Sciences & Agriculture (LSA)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

LSA 900 - College Teaching
Credits: 2
An overview of teaching strategies identified at the college level. The planning, execution, and evaluation of instruction for meeting the teaching needs of undergraduate students. Recommended for those who want to teach in a college setting.
Equivalent(s): AOE 900, EDUC 989A, GRAD 975
Grade Mode: Graduate Credit/Fail grading

Management (MGMT) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MGMT 805 - Organizational Behavior
Credits: 3
This course reviews the fundamental concepts of organizational behavior in the context of an increasingly diverse and evolving society. The study of organizations encompasses several key knowledge areas essential to today's managers and leaders: Social diversity, perceptions and behaviors, culture, team and group dynamics, conflict and negotiation, decision-making, motivational factors, communication methods, change management, and organizational design and structure. Through various modes of engagement, these areas are analyzed to better understand and identify the influential components of organizational behavior as they relate to effectiveness and sustainability.
Equivalent(s): MGMT 805G
Grade Mode: Letter Grading

MGMT 815 - Financial Management for Nonprofit Organizations
Credits: 3
Nonprofit management is becoming a recognized specialty, and there are a growing number of individuals and entities specializing in nonprofit financial management as well. With this growth in numbers comes a comparable growth in the demand for sophisticated management. No longer is it enough just for one's financial records to be in order; one must be able to demonstrate good financial systems to meet all the other rising demands on today's nonprofit.
Equivalent(s): MGMT 815G
Grade Mode: Letter Grading

Marine Sciences (MARI)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MARI 801 - Coastal Resource Management and Policy Seminar
Credits: 1
Graduate students, faculty and invited presenters will discuss current topics in coastal science, management, and policy, including federal, tribal, state, and municipal policy developments, new scientific findings that might inform management, citizen and community science developments, stakeholder engagement, etc. Primarily focused on SMSOE Graduate Certificate enrollees, this one credit seminar is open to others as space allows. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Graduate Credit/Fail grading

MARI 802 - Arctic Research Methods I
Credits: 4
This course exposes students to tools and techniques for understanding how changing seasonality impacts cold regions and the Arctic. Training includes building and deploying environmental sensors, downloading and visualizing data, and analyzing patterns of seasonal change across data sets. Course will include regional field trips as well as emphasize the need for reciprocal research with local and Indigenous community partners.
Grade Mode: Letter Grading

MARI 805 - Introduction to Coastal and 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.
Grade Mode: Letter Grading

MARI 895 - 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 8 credits.
Grade Mode: Letter Grading

MARI 901 - Resource Management and Policy Practicum
Credits: 1
This course serves as the capstone experience for those enrolled in Graduate Certificates offered by the Marine School. Students apply knowledge developed through certificate related coursework to a student-designed experiential project developed in consultation with certificate program faculty and where possible conducted in partnership with a natural resource management related organization. May be repeated barring duplication of subject.
Grade Mode: Graduate Credit/Fail grading

MARI 902 - Arctic Research Methods II
Credits: 3
This course will build on Arctic Research Methods I, training students in methods needed to conduct Arctic convergence research projects. Techniques will including ground-based and remote sensing measurements of snow, ice, soil, vegetation, and built infrastructure. Students will also learn communication and education approaches necessary to facilitate collaboration between Arctic communities and researchers.
Grade Mode: Letter Grading

MARI 995 - Special Topics
Credits: 1-4
Investigations of graduate level problems or topics in marine science and ocean engineering.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter 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 817 - Lake Ecology
Credits: 4
Introduction to 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.
Equivalent(s): PBIO 817, ZOOL 817
Grade Mode: Letter Grading

MEFB #819 - 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. Lab.
Equivalent(s): PBIO 819, ZOOL 819
Grade Mode: Letter Grading
Special Fee: Yes

MEFB 825 - Marine Ecology
Credits: 4
Marine environment and its biota, emphasizing intertidal and estuarine habitats. Includes field, laboratory, and independent research project. (Not offered every year.)
Equivalent(s): PBIO 825, ZOOL 825
Grade Mode: Letter Grading
Special Fee: Yes

MEFB 847 - 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.
Equivalent(s): PBIO 847
Grade Mode: Letter Grading
Special Fee: Yes

MEFB 872 - 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 earn about the impacts of fishing on ecosystems.
Prerequisite(s): BIOL 411 with a minimum grade of D- and BIOL 412 with a minimum grade of D-.
Equivalent(s): ZOOL 872
Grade Mode: Letter Grading

Marketing (MKT) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MKT 805 - Marketing for Nonprofits
Credits: 3
The course explores the use of traditional and nontraditional channels to promote nonprofits to an array of actual and potential audiences for a variety of purposes. Most nonprofit organizations must be visible to the public in order to fulfill their missions. Nonprofit leaders must know how to promote their organizations to current and potential supporters, the broader public, and the mass media. Topics include program and organizational branding, targeting respective audiences, preparing materials for greatest effect, applying social media as appropriate.
Equivalent(s): MKTG 805G
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 #830 - Mechanical Behavior 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. Prior coursework in mechanics of materials and introductory materials science required.
Grade Mode: Letter Grading

MS #861 - Diffraction and Imaging Methods in Materials Science
Credits: 0 or 4
Introduction to x-ray diffraction and electron microscopy. Basic crystallography; reciprocal lattice; x-ray and electron diffraction, x-ray methods; transmission and scanning electron microscopy. Prior coursework in introductory chemistry and general physics II required. Lab.
Grade Mode: Letter Grading

MS 862 - 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.
Grade Mode: Letter Grading

MS 895 - Special Topics
Credits: 2-4
New or specialized courses and/or independent study. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

MS 899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

MS 900 - Seminar
Credits: 1
Topics of interest to graduate students and faculty; reports of research ideas, progress, and results; lectures by outside speakers. Continuing course: instructor may assign IA (continuous grading) grade at the end of one semester.
Repeat Rule: May be repeated for a maximum of 2 credits.
Grade Mode: Letter Grading

MS #905 - Macromolecular Synthesis
Credits: 3
Fundamentals of polymerization reaction mechanisms, kinetics, and chain structures as they are developed from the different chemistries available. Detailed discussions of the chemical mechanisms of step, free radical, ionic, and ring opening polymerizations. Treatment of the reaction parameters that control the rate of polymerization, molecular weight and chemical composition of the polymer chains. Introduction to stereo-chemical and catalytic polymerizations. Considerations of bulk, solution, and dispersion polymerization systems. Permission of instructor required. Open to Biochemistry, Chemical Engineering, Engineering: Chemical, Chemistry, Mechanical Engineering, Engineering: Mechanical, Materials Science, Engineering: Mat Science, and Physics majors only.
Grade Mode: Letter Grading

MS #910 - Macromolecular Characterization
Credits: 3
Molecular characterization of synthetic and natural macromolecules in solution and in the solid state. Emphasis on the principles of various analytical techniques designed to provide information on the chemical composition, polymer chain size and structure in solution and in the dry state. Extension to methods that measure the interaction and association between polymer molecules. Interpretations of data from important characterization techniques including liquid chromatography (GPC), spectroscopy (FTIR, NMR, MS), microscopy (TEM, AFM, Confocal Raman), thermal analysis (DSC), light scattering, sedimentation, and x-ray diffraction. Open to Biochemistry, Chemical Engineering, Engineering: Chemical, Chemistry, Chem: Chemistry Education, Mechanical Engineering, Materials Science, Engineering: Mat Science, and Physics majors only.
Grade Mode: Letter Grading

MS 960 - Thermodynamics and Kinetics of Materials I
Credits: 3
Classical and statistical thermodynamics are used to establish the conditions of equilibrium for simple and multi-component, heterogeneous materials. Additionally, the thermodynamics of phase diagrams, miscibility, interfaces, and defects are explored. Examples and problems apply these concepts to various types of materials, including metals, ceramics, and polymers.
Grade Mode: Letter Grading

MS #961 - Thermodynamics and Kinetics of Materials II
Credits: 3
Introduction to diffusion and phase transformations in materials, and detailed descriptions of interfacial regions. Mechanisms of phase separation by spinodal decomposition and homogeneous nucleation. Kinetic processes leading to changes in phase structure driven by chemical reaction, temperature and diffusive processes (e.g. Ostwald ripening) are treated quantitatively. Applications to metals, ceramics and polymers. Prior coursework in thermodynamics and kinetics of materials required.
Grade Mode: Letter Grading

MS 995 - Graduate Special Topics
Credits: 2-4
Investigation of graduate-level problems or topics in Materials Science.
Grade Mode: Letter Grading

MS 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Mathematics & Statistics (MATH)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MATH 800 - Introduction to Mathematics Education
Credits: 3
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. Two semesters of calculus and experience working in schools.
Mutual Exclusion: No credit for students who have taken EDC 831.
Grade Mode: Letter Grading

MATH 801 - Exploring Mathematics for Teachers I
Credits: 3
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. Credit offered only to M.Ed. and M.A.T., certificate students, and in-service teachers. (Not offered for credit if credit is received for MATH 821 or MATH 823.)
Prerequisite(s): (EDUC 500 with a minimum grade of D- or EDUC 935 with a minimum grade of B-).
Equivalent(s): MATH 821
Grade Mode: Letter Grading

MATH 803 - Teaching of Mathematics in Grades K-5
Credits: 3
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.
Prerequisite(s): MATH 801 with a minimum grade of D-.
Mutual Exclusion: No credit for students who have taken EDC 824, EDC 833.
Grade Mode: Letter Grading

MATH 805 - Introduction to Mathematics and Statistics Teaching
Credits: 1
This course introduces new graduate teaching assistants in mathematics and statistics to teaching in mathematics and statistics. Topics include group facilitation, active learning, grading, diversity and inclusion in the classroom, goal setting, classroom management, time management, designing rich mathematical tasks, and research on student learning.
Repeat Rule: May be repeated for a maximum of 2 credits.
Grade Mode: Graduate Credit/Fail grading

MATH 809 - Teaching of Mathematics in Grades 6-12
Credits: 3
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.
Prerequisite(s): MATH 800 with a minimum grade of D-.
Mutual Exclusion: No credit for students who have taken EDC 833, EDC 834.
Grade Mode: Letter Grading

MATH 831 - Mathematics for Geodesy
Credits: 3
A survey of topics from undergraduate mathematics designed for graduate students in engineering and science interested in applications to geodesy and Earth Sciences. Topics include essential elements from analytic geometry, geometry of surfaces, linear algebra and statistics, Fourier analysis, discrete Fourier transforms and software, filtering applications to tidal data.
Prerequisite(s): (MATH 645 with a minimum grade of D- or MATH 645H with a minimum grade of D- or MATH 762 with a minimum grade of D- or MATH 862 with a minimum grade of B-).
Grade Mode: Letter Grading

MATH 832 - 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.
Equivalent(s): MATH 859
Grade Mode: Graduate Credit/Fail grading

MATH 834 - Statistical Computing
Credits: 3
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.
Prerequisite(s): MATH 835 with a minimum grade of D- or MATH 838 with a minimum grade of D- or MATH 839 with a minimum grade of D-.
Grade Mode: Letter Grading

MATH 835 - Statistical Methods for Research
Credits: 3
This course provides a solid grounding in modern applications of statistics to a wide range of disciplines by providing an overview of the fundamental concepts of statistical inference and analysis, including t-tests and confidence intervals. Additional topics include: ANOVA, multiple linear regression, analysis of cross classified categorical data, logistic regression, nonparametric statistics and data mining using CART. The use of statistical software, such as JMP. S PLUS, or R, is fully integrated into the course.
Grade Mode: Letter Grading

MATH 836 - Advanced Statistical Modeling
Credits: 3
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.
Prerequisite(s): (MATH 835 with a minimum grade of B- or MATH 839 with a minimum grade of B-).
Grade Mode: Letter Grading

MATH 837 - Statistical Methods for Quality Improvement and Design
Credits: 3
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 will be 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. Students must have completed a calculus-based introductory statistics course.
Grade Mode: Letter Grading

MATH 838 - Data Mining and Predictive Analytics
Credits: 3
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 Tress (CART), Random Forests, Neural Nets, Support Vector Machines, Logistic 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. Students must have completed a calculus-based introductory statistics course.
Grade Mode: Letter Grading

MATH 839 - Applied Regression Analysis
Credits: 3
Statistical methods for the analysis of relationships between response and input variables: simple linear regression, multiple regression analysis, residual analysis model selection, multi-collinearity, nonlinear curve fitting, categorical predictors, introduction to analysis of variance, analysis of covariance, examination of validity of underlying assumptions, logistic regression analysis. Emphasizes real applications with use of statistical software. Students must have completed an introductory statistics course.
Grade Mode: Letter Grading

MATH 840 - Design of Experiments I
Credits: 3
First 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. Students must have completed an introductory statistics course.
Grade Mode: Letter Grading

MATH 841 - Survival Analysis
Credits: 3
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. (Offered in alternate years.)
Prerequisite(s): MATH 839 with a minimum grade of D-.
Grade Mode: Letter Grading

MATH 843 - Time Series Analysis
Credits: 3
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 Fourier transform, linear filters. parametric spectral estimation, dynamic Fourier 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 in to the course. Offered in alternate years in the spring.
Prerequisite(s): (MATH 835 with a minimum grade of B- or MATH 839 with a minimum grade of B-).
Grade Mode: Letter Grading

MATH 844 - Design of Experiments II
Credits: 3
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.
Prerequisite(s): MATH 840 with a minimum grade of B-.
Grade Mode: Letter Grading

MATH 845 - Foundations of Applied Mathematics I
Credits: 3
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. Students are required to have a mastery of differential equations and ordinary differential equations.
Grade Mode: Letter Grading

MATH 846 - Foundations of Applied Mathematics II
Credits: 3
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. Students are required to have a mastery of differential equations and ordinary differential equations.
Grade Mode: Letter Grading

MATH 847 - Introduction to Nonlinear Dynamics and Chaos
Credits: 3
An introduction to 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. Students taking this course are required to have some background in elementary differential equations, linear algebra, and multidimensional calculus. (Not offered every year.)
Grade Mode: Letter Grading

MATH 853 - Introduction to Numerical Methods
Credits: 3
Introduction to mathematical algorithms and methods of approximation. A wide survey of approximation methods are examined including, but not limited to, polynomial interpolation, root finding, numerical integration, approximation of differential equations, and techniques used in conjunction with linear systems. Included in each case is a study of the accuracy and stability of a given technique, as well as its efficiency and complexity. It is assumed that the student is familiar and comfortable with programming a high-level computer language. (Also offered as CS 853).
Grade Mode: Letter Grading

MATH 855 - Probability with Applications
Credits: 3
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.
Grade Mode: Letter Grading

MATH 856 - Principles of Statistical Inference
Credits: 3
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.
Prerequisite(s): MATH 855 with a minimum grade of B-.
Grade Mode: Letter Grading

MATH 857 - Mathematical Optimization for Applications
Credits: 3
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. Students are required to have a mastery of Calculus II and programming proficiency in MATLAB, R, Java, C, Python, or equivalent.
Equivalent(s): CS 857
Grade Mode: Letter Grading

MATH 861 - Abstract Algebra
Credits: 3
This course establishes the axiomatic framework that underlies number systems and similar mathematical structures, investigating basic properties of groups, rings, fields and their homomorphisms.
Grade Mode: Letter Grading

MATH 863 - Abstract Algebra II
Credits: 3
This course extends the investigations of MATH 861 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.
Prerequisite(s): MATH 861 with a minimum grade of B-.
Grade Mode: Letter Grading

MATH 865 - Introduction to Commutative Algebra and Algebraic Geometry
Credits: 3
Methods of determining solution sets of polynomial systems; affine varieties and their ideals; the 'algebra-geometry correspondence'; theory and applications of Grobner bases.
Grade Mode: Letter Grading

MATH 867 - One-Dimensional Real Analysis
Credits: 3
Theory of limits, continuity, differentiability, integrability.
Grade Mode: Letter Grading

MATH 868 - Real Analysis II
Credits: 3
Theory of integration; series; power series and uniform convergence of power series.
Grade Mode: Letter Grading

MATH 869 - Introduction to Differential Geometry
Credits: 3
Introduction to the study of the geometric properties of curves and surfaces in 3-dimensional space.
Grade Mode: Letter Grading

MATH 870 - Foundations of Number Theory
Credits: 3
Factorization and prime numbers, arithmetic functions, congruences, reciprocity laws, quadratic forms, Diophantine equations, computational number theory. Offered in alternate years.
Grade Mode: Letter Grading

MATH 872 - Combinatorics
Credits: 3
Graph theory (including planar graphs, graph coloring, Hamiltonian circuits, trees); counting principles (including permutations, combinations, pigeonhole principle, inclusion-exclusion principle); and related topics.
Grade Mode: Letter Grading

MATH 876 - Logic
Credits: 3
Induction and recursion; sentential logic; first-order logic; completeness, consistency, and decidability; recursive function. (Not offered every year.)
Grade Mode: Letter Grading

MATH 883 - Set Theory
Credits: 3
Axiomatic set theory, including its history, Zermelo-Fraenkel axioms, ordinal and cardinal numbers, consistency, independence, and undecidability. (Not offered every year.)
Grade Mode: Letter Grading

MATH 884 - Topology
Credits: 3
Open sets, closure, base, and continuous functions. Connectedness, compactness, separation axioms, and metrizability.
Prerequisite(s): (MATH 767 with a minimum grade of D- or MATH 867 with a minimum grade of B-).
Grade Mode: Letter Grading

MATH 888 - Complex Analysis
Credits: 3
Complex functions, sequences, limits, differentiability and Cauchy-Riemann equations, elementary functions, Cauchy's theorem and formula, Taylor's and Laurent's series, residues, conformal mapping.
Prerequisite(s): MATH 867 with a minimum grade of B-.
Grade Mode: Letter Grading

MATH 896 - Topics in Mathematics and Statistics
Credits: 1-4
New or specialized courses not covered in regular course offerings.
Repeat Rule: May be repeated for a maximum of 99 credits.
Grade Mode: Letter Grading

MATH 898 - Master's Project
Credits: 1-6
Master's Project.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

MATH #899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

MATH 900 - Bridges from the Classroom to Mathematics
Credits: 1
An introduction to the goals of the MST program. Students have the opportunity to explore mathematical problems; to complete activities that make connections between several areas of mathematics, including the mathematical content in the MST degree program and the secondary school mathematics classroom; and to participate in readings/on-line discussion on the nature of mathematics.
Grade Mode: Graduate Credit/Fail grading

MATH #902 - Classroom Mathematics Practicum
Credits: 1
A follow-up course to the six core mathematics content courses of the MST degree program. During the course, students choose a mathematical topic and/or set of concepts learned in one of the core MST courses and develop and teach a unit based on these concepts at the middle school or secondary school level.
Repeat Rule: May be repeated up to 3 times.
Grade Mode: Graduate Credit/Fail grading

MATH 905 - Euclidean and non-Euclidean Geometries from a Synthetic Perspective
Credits: 3
An axiomatic development of geometry, beginning with finite geometries; emphasis is given to the fundamental concepts of Euclidean and non-Euclidean geometries from a synthetic perspective.
Grade Mode: Letter Grading

MATH 906 - Analytic and Transformational Geometry
Credits: 3
Fundamental concepts of transformational, projective geometry, and inversive geometry, including properties of conics and quadratic surfaces.
Grade Mode: Letter Grading

MATH #909 - Probability and Statistics for Teachers
Credits: 3
Permutations and combinations; finite sample spaces; random variables; binomial distributions; statistical applications.
Grade Mode: Letter Grading

MATH 913 - Graph Theory and Topics in Discrete Mathematics
Credits: 3
Key theoretical and computational aspects of graph theory and related areas of discrete mathematics. Applications of graph theory as well as current "open" problems are explored.
Grade Mode: Letter Grading

MATH 915 - Algebraic Structures
Credits: 3
An exploration of the structural similarities between and among seemingly disparate number systems, beginning with counting numbers, and progressing to integers, the rational numbers, the real numbers, and the complex numbers; and leading to a discussion of polynomials as an integer analogue and to fields as polynomial "quotients" through the basic concepts of splitting fields and Galois Theory.
Grade Mode: Letter Grading

MATH 916 - Theory of Numbers for Teachers
Credits: 3
Divisibility and primes; congruences; quadratic reciprocity; number theoretic functions; Diophantine equations; perfect and amicable numbers.
Grade Mode: Letter Grading

MATH 918 - Analysis of Real Numbers
Credits: 3
An introduction to the fundamental concepts in real analysis that provide the mathematical foundation for calculus. Content focuses on properties of sequences and series; properties of functions, including continuity, the derivative and the Riemann integral.
Grade Mode: Letter Grading

MATH 925 - Problem Solving Seminar
Credits: 3
A study of variety of problem solving strategies and techniques in the context of solving mathematical problems. Problems will emphasize the connections between the core areas of algebra, geometry and analysis. Other mathematical topics may be included. Typically taken in conjunction with the Concluding Experience Problem Set.
Grade Mode: Graduate Credit/Fail grading

MATH 928 - Selected Topics in Mathematics for Teachers
Credits: 1-3
New or specialized topics not covered in the regular course offerings. May be repeated for credit barring duplication of topic.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

MATH 929 - Directed Reading
Credits: 1-3
A directed reading project on a selected topic in mathematics or mathematics education, planned in collaboration with a faculty member.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

MATH 931 - Mathematical Physics
Credits: 3
Complex variables, differential equations, asymptotic methods, integral transforms, special functions, linear vector spaces and matrices, Green's functions, and additional topics selected from integral equations, variational methods, numerical methods, tensor analysis, and group theory. Students are required to have a mastery of differential equations; linear algebra; multidimensional calculus.
Equivalent(s): PHYS 931
Grade Mode: Letter Grading

MATH 941 - Bayesian and Computational Statistics
Credits: 3
Current approaches to Bayesian modeling and data analysis and related statistical methodology based on computational simulation. Fundamentals of Bayesian estimation and hypothesis testing. Multi-level and hierarchical Bayesian modeling for correlated data. Introduction to Markov chain Monte Carlo based estimation approaches such as the Gibbs sampler and the Metropolis-Hastings algorithm. Mastery of intermediate statistics is required for this course, including: distributions, discrete and continuous random variables, transformation of variables (calculus based), bivariate and multivariate normal distribution, maximum likelihood estimation; working knowledge of linear regression and analysis of variance; basic linear algebra: vectors and matrices, linear spaces, matrix multiplication, inverse of a matrix, positive definiteness. Matrix-vector notation for linear regression and ANOVA.
Grade Mode: Letter Grading

MATH 944 - Spatial Statistics
Credits: 3
Frequentist and Bayesian methods for estimation of characteristics measured in space (usually 2-dimensional Euclidean space). Spatial averaging. Spatial point processes: models for clustering and inhibition. Cluster detection. Point referenced data: variogram estimation, Kriging, spatial regression. Lattice based data: spatial auto-regression, Markov random field models. Spatial regression models. Non-Gaussian response variables. Hierarchical Bayesian spatial models and Markov chain Monte Carlo methods. Multivariable spatial models. Mastery of intermediate statistics including basics of maximum likelihood estimation; linear regression modeling including familiarity with matrix notation, basic concepts of calculus including partial derivatives is required for this course.
Grade Mode: Letter Grading

MATH 945 - Advanced Theory of Statistics I
Credits: 3
Introduction to the theory and practice of statistical modeling and inference. Basic multivariate analysis: covariance and expectation, multivariate-normal and non-central chi-squared distributions, linear and quadratic forms. Basic inequalities for probabilities and expectations: Markov, Chebyshev, Jensen, and Cauchy-Schwartz. Basic decision theory, sufficiency, minimal sufficiency, ancillarity and completeness, Point estimation: method of moments, maximum likelihood, Bayesian procedures, likelihood procedures and information inequalities. Measures of performance, notions of optimality, and construction of optimal procedures in simple situations. Convergence in distribution and in probability.
Prerequisite(s): MATH 856 with a minimum grade of B-.
Grade Mode: Letter Grading

MATH 946 - Advanced Theory of Statistics II
Credits: 3
Asymptotic statistical inference: consistency, asymptotic normality and efficiency. Hypothesis testing: Neyman-Pearson lemma, uniformly most powerful test, generalized likelihood ration tests, Chi squared goodness-of-fit tests, Wald tests and related confidence intervals, pivotal quantities, optimality properties. Modern likelihood methods (quasi, pseudo and composite). Algorithmic inference: Gibbs sampling, bootstrapping, simultaneous inferences in high-dimensional data and functional data. Nonparametric and semiparametric estimation methods, asymptotic estimation theory and large sample tests.
Prerequisite(s): MATH 945 with a minimum grade of D-.
Grade Mode: Letter Grading

MATH 951 - Algebra I
Credits: 3
Groups and their homomorphisms, products and sums, structure of groups; rings and their homomorphisms, ideals, factorization properties.
Prerequisite(s): MATH 861 with a minimum grade of B-.
Grade Mode: Letter Grading

MATH 952 - Algebra II
Credits: 3
Field extensions; Galois theory; module theory.
Prerequisite(s): MATH 951 with a minimum grade of B-.
Grade Mode: Letter Grading

MATH 953 - Analysis I
Credits: 3
Measurable spaces and functions, measures, Lebesgue integrals, convergence theorems.
Prerequisite(s): MATH 867 with a minimum grade of B-.
Grade Mode: Letter Grading

MATH 954 - Analysis II
Credits: 3
Cauchy theory and local properties of analytic functions, Riemann mapping theorem, representation theorems, harmonic functions.
Prerequisite(s): MATH 888 with a minimum grade of B-.
Grade Mode: Letter Grading

MATH 955 - Topology I
Credits: 3
Subspace, product, and quotient topologies; embedding; separation and countability axioms; connectedness; compactness and compactifications; paracompactness, metrization, and metric completions.
Prerequisite(s): MATH 884 with a minimum grade of B-.
Grade Mode: Letter Grading

MATH 958 - Foundations of Math Education
Credits: 1
Topics include: major issues and trends in mathematics education research, the profession and infrastructure of mathematics education, theoretical perspectives, cultural and historical aspects of mathematics education, and the research-practice interface. Examples span the K-16 spectrum.
Grade Mode: Letter Grading

MATH 959 - Introduction to Research Design in STEM Education
Credits: 3
This course provides an overview of research design including preliminary considerations that go into selecting a qualitative, quantitative, or mixed methods design. Topics include the definition of the various approaches, developing research questions and/or hypotheses, reviewing the literature, understanding the use of theory, anticipating ethical issues, and developing writing strategies.
Grade Mode: Letter Grading

MATH 961 - Topics in Algebra I
Credits: 3
An introduction to topics chosen from algebra and number theory. May be repeated barring duplication of subject.
Prerequisite(s): MATH 951 with a minimum grade of D- and MATH 952 with a minimum grade of D-.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

MATH 966 - Topics in Algebraic Topology I
Credits: 3
An introduction to topics in algebraic topology.
Prerequisite(s): MATH 956 with a minimum grade of B-.
Repeat Rule: May be repeated for a maximum of 99 credits.
Grade Mode: Letter Grading

MATH 968 - Topics in Mathematics Education I
Credits: 3
A) The Teaching and Learning of Mathematics; B) Curriculum and History in Mathematics Education. Topics selected from: epistemologies of knowledge applied to mathematics; theories of learning and teaching mathematics; theoretical perspectives in research; mathematics education research programs K-16; research methods for studying mathematics teaching, learning, and curricula; theoretical frameworks for curriculum development, implementation of new curricula, and research on curricula; historical perspectives of research in mathematics education; the evolution and history or K-16 mathematics curricula both in United States and internationally. Versions A and B offered alternately.
Prerequisite(s): MATH 958 with a minimum grade of B-.
Repeat Rule: May be repeated for a maximum of 99 credits.
Grade Mode: Letter Grading

MATH 973 - Topics in Operator Theory
Credits: 3
Selected topics in operator theory.
Prerequisite(s): MATH 863 with a minimum grade of B-.
Repeat Rule: May be repeated for a maximum of 99 credits.
Grade Mode: Letter Grading

MATH 978 - Topics in Mathematics Education II
Credits: 1-3
An exploration of an area of research in mathematics education.
Repeat Rule: May be repeated for a maximum of 99 credits.
Grade Mode: Letter Grading

MATH 979 - Research Topics in Statistics
Credits: 3
An exploration of the main statistical issues and computational methods associated with research problems from such areas as survival analysis, reliability, latitudinal data, categorical data, spatio-temporal data, and industrial processes. Student term projects require: literature searches, presentation, use of modern statistical software, and written reports. May be repeated barring duplication of topic.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

MATH 997 - Statistics Seminar
Credits: 1
A seminar of weekly and bi-weekly meetings organized by the statistics Ph.D. students with supervision by a statistics faculty member. Informal presentations of faculty members, students, and outside guest presenters; also discussion of topics that are of mutual interest to its participants. Dissertation proposal presentations. Seminar presentations are open to the greater public. Statistics Ph.D. students are required to enroll for at least 3 semesters. Attendance is mandatory by those students who are enrolled in the seminar. Credits do not count towards the Master's degree.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

MATH 998 - Reading Courses
Credits: 1-6
A) Algebra; B) Analysis; C) Operator Theory; D) Geometry; E) General Topology; F) Algebraic Topology; G) Applied Mathematics; H) Mathematics Education; I) Probability and Statistics.
Grade Mode: Letter Grading

MATH 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Mathematics (MTH) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MTH 801 - Probability and Statistics
Credits: 4
In this course students study topics in data analysis including descriptive and inferential statistics, probability, odds and fair games, probability distributions, normal distributions, and estimation. Among the topics are numerical and graphical summaries for one and two variables, linear regression and correlation, confidence intervals and tests concerning means, sampling and experimentation, basic probability, confidence intervals, hypothesis testing, sampling distributions, two-sample t-tests for means, chi-squared tests, regress and correlation, and possible other topics. A standards statistical software package is used throughout the course to support the course format that includes: hands-on activities; computer-based simulations; creating and implementing student developed investigations; and actual secondary and middle school mathematics classroom activities. Throughout the course students are given opportunities to relate the mathematical concepts studied in this course to the mathematical concepts they will be teaching. Successful completion of PreCalculus required.
Equivalent(s): MATH 703G
Mutual Exclusion: No credit for students who have taken MATH 823.
Grade Mode: Letter Grading

MTH 802 - Mathematical Proof for Educators
Credits: 4
This course introduces students to the language and methods used to create and write mathematical proofs and solve problems. Methods of proof will include: direct, contrapositive, contradiction, and induction. Methods of problem solving will be based on Polya's four steps for solving problems. Students will learn about and utilize the many functions of proof including: verification, explanation, communication, discovery, justification, and inquiry. The course will also explore the relationship between problem solving and the process of proving. Students will explore fundamental abstract concepts in mathematics chosen from the following areas: functions and relations, set theory, number theory, and logic, Euclidian and non-Euclidian geometry, algebra, mathematical reasoning, proof, and problem solving. Connections to middle and secondary school mathematics curriculum emphasized. Students enrolled in this course at the 700 level will meet additional academic requirements including an applied project. Pre-calculus required prior to taking this course.
Equivalent(s): MATH 700G
Grade Mode: Letter Grading

MTH 803 - Number Systems
Credits: 4
This course examines the structure and properties of mathematics while focusing on the development of mental mathematics strategies and problem solving skills. Topics include sets, functions, applications of rational numbers, integers, fractions, decimals, percentages, and number theory. Appropriate grade level techniques are utilized to investigate algorithms, probability and statistics, counting techniques, scientific notation, complex numbers, exponents, geometry, and measurement. Students will also investigate ratios, proportion, data analysis, patterns, and the connections to algebra and geometry topics in the context of the 5-12 grades mathematics curriculum. Successful completion of PreCalculus required prior to taking this course.
Equivalent(s): MATH 701G
Mutual Exclusion: No credit for students who have taken MATH 821.
Grade Mode: Letter Grading

MTH 804 - Geometric Structures for Teachers
Credits: 4
This course will examine concepts in Euclidean and non-Euclidean geometries. Course topics include area and volume, two- and three-dimensional perspective, congruence and similarity, properties of and relationships among geometric shapes and structures. Students will investigate graphing, vectors, motion and symmetry. Students engage in course concepts through proofs, problem solving, dynamic geometric software, and through activities used in secondary and middle school mathematics. Throughout the course students will be given opportunities to relate the mathematical concepts studied to the mathematical concepts they will be teaching. Successful completion of PreCalculus required prior to taking this course.
Equivalent(s): MATH 702G
Mutual Exclusion: No credit for students who have taken MATH 822.
Grade Mode: Letter Grading

MTH 805 - Calculus I
Credits: 4
The first semester of a calculus sequence dealing with applications and modeling of the differential and integral calculus. Course will focus on functions and their graphs, limits, continuity, differentiation, integration, the derivative and its uses in optimization and mathematical modeling, as well as the Fundamental Theorem. Throughout the course students will be given opportunities to relate the mathematical concepts studied to the mathematical concepts they will be teaching. Graphing calculators are used throughout the course to explore and represent concepts. Students enrolled in this course at the 700 level will meet additional academic requirements including an applied project. Pre-calculus required prior to taking this course.
Equivalent(s): MATH 706G
Grade Mode: Letter Grading

MTH 806 - History of Mathematics
Credits: 4
This course addresses the historical development of major themes in mathematics, including calculation, numbers, geometry, algebra, infinity, and formalism in various civilizations ranging from the antiquity of Babylonia and Egypt through classical Greece, the Middle and Far East, and on to modern Europe. The course emphasizes how earlier civilizations influenced or failed to influence later ones and how the concepts evolved in these various civilizations.
Prerequisite(s): MTH 805 with a minimum grade of B- or MATH 706G with a minimum grade of B-.
Equivalent(s): MATH 708G
Grade Mode: Letter Grading

MTH 807 - Calculus II
Credits: 4
This course is the second semester of a calculus sequence dealing with applications of differential and multivariable calculus. Topics include the calculus of transcendental functions, applications of integration, some differential equations, sequences and series, differentiation and integration of trigonometric functions multidimensional calculus with applications, and an introduction to multivariable calculus. Throughout the course students are given opportunities to relate the mathematical concepts studies to the mathematical concepts they will be teaching. Graphing calculators are used throughout the course to explore and represent concepts.
Prerequisite(s): MTH 805 with a minimum grade of B- or MATH 706G with a minimum grade of B-.
Equivalent(s): MATH 707G
Grade Mode: Letter Grading

MTH 808 - Discrete Mathematics
Credits: 4
This course is designed to introduce students to discrete and abstract mathematical topics. Topics include propositional and predicate logic; elementary set theory; introduction to proof techniques including mathematical induction; sets, relations, functions, and relations; recurrence relations, graph theory, as well as the properties of groups, rings, and fields. Students study number systems, mathematical induction, algorithms and complex number systems, matrix manipulation, combinatorics, graph theory, and finite differences. Course activities are based on secondary and middle school mathematics curricula. This course considers the basic objects of mathematics through real-world examples and the methods used to elucidate their properties.
Prerequisite(s): MTH 805 with a minimum grade of B- or MATH 706G with a minimum grade of B-.
Equivalent(s): MATH 705G
Grade Mode: Letter Grading

MTH 809 - Linear Algebra
Credits: 4
This course will examine concepts in algebra including: Patterns and functions, arithmetic sequences, geometric sequences, arithmetic and algebra of the integers, least common multiple and greatest common divisor, inequalities, modular arithmetic and systems of numbers, properties of groups and fields, the field of complex numbers, polynomial arithmetic and algebra, linear equations. Course will develop the mathematical structures, algebraic properties, and applications of matrices, determinants, vectors, vector spaces, systems of linear equations, and linear transformations. Students will engage with these concepts through exploration, analysis, proof, and problem solving based on activities used in secondary and middle school mathematics. Throughout the course students will be given opportunities to relate the mathematical concepts studied to the mathematical concepts they will be teaching. Students enrolled in this course at the 700 level will meet additional academic requirements including an applied project.
Prerequisite(s): (MTH 802 with a minimum grade of B- or MATH 700G with a minimum grade of B- and (MTH 807 with a minimum grade of B- or MATH 707G with a minimum grade of B-.
Equivalent(s): MATH 704G
Grade Mode: Letter Grading

MTH 810 - Algebra Theory for Teachers
Credits: 4
This course will examine concepts in Algebra including patterns, functions, arithmetic sequences, geometric sequences, arithmetic and algebra of the integers, least common multiple and greatest common division, inequalities, basic properties of groups and fields, and polynomial arithmetic and algebra. Throughout the course students will be given opportunities to relate the mathematical concepts studied to the mathematical concepts they will be teaching.
Prerequisite(s): (MTH 802 with a minimum grade of B- or MATH 700G with a minimum grade of B- and (MTH 805 with a minimum grade of B- or MATH 706G with a minimum grade of B-.
Equivalent(s): MATH 709G
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 806 - 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 begins by giving an overview of U.S. energy usage and sources, as well as history and trends. Various renewable energy topics are then introduced and discussed. Where applicable, topics are discussed in detail from a fluid and thermal sciences point of view. Guest lectures and a field trip may be included. This course is open to all engineering graduate students. Prior coursework in thermodynamics and fluid dynamics required.
Grade Mode: Letter Grading

ME 807 - Analytical Fluid Dynamics
Credits: 4
Kinematics of flow; constitutive relationships; development of the Navier-Stokes equations; vorticity theorems; potential flow. Prior coursework in fluid dynamics required.
Grade Mode: Letter Grading

ME 809 - Computational Fluid Dynamics
Credits: 3
Conservation of mass, momentum, and energy, discretization and 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 810 - 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. Knowledge of Matlab programming required.
Prerequisite(s): ME 807 with a minimum grade of D-.
Grade Mode: Letter Grading

ME 812 - 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. Prior coursework in fluid dynamics required.
Grade Mode: Letter Grading

ME 817 - Marine Robotics and Applications
Credits: 3
This course covers (lecture/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. Graduate students will be assigned extra project work. Prior coursework in systems modeling, simulation and control required.
Equivalent(s): OE 817
Grade Mode: Letter Grading

ME 826 - 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. Prior coursework in mechanics of materials and introductory materials science required.
Grade Mode: Letter Grading

ME 827 - 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. Prior coursework in mechanics of materials required.
Grade Mode: Letter Grading

ME #835 - 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. Prior coursework in mechanics of materials required.
Grade Mode: Letter Grading

ME 842 - 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. Prior coursework in mechanics of materials and introductory materials science required.
Grade Mode: Letter Grading

ME 843 - Satellite Systems, Dynamics, and Control
Credits: 3
General satellite systems with emphasis on spacecraft dynamics and control. Course 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 will include attitude and orbit estimation, and automatic attitude control. Prior coursework in systems modeling, simulation and control required.
Grade Mode: Letter Grading

ME 872 - Control Systems
Credits: 4
Development of advanced control systems design concepts such as Nyquist analysis; lead-lag compensation; state feedback; parameter sensitivity; controllability; observability; introduction to nonlinear and modern control. Includes interactive computer-aided design and real-time digital control. Lab.
Equivalent(s): ECE 872, EE 872
Grade Mode: Letter Grading

ME 877 - 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. Prior coursework in strength of materials and fluid dynamics required.
Equivalent(s): EE 877
Grade Mode: Letter Grading

ME #882 - 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 885 - Solid Mechanics in Manufacturing
Credits: 4
Characterization of material properties will be studied with emphasis on plastic deformation. Also, numerical approaches to solve for the forces, stresses, and strains in manufacturing processes will be covered. In particular, two prominent mass production manufacturing areas, metal forming and cutting, will be examined. Prior coursework in introductory materials science and dynamics required.
Grade Mode: Letter Grading

ME 886 - 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. Prior coursework in mechanics of materials and heat transfer required. Lab.
Grade Mode: Letter Grading
Special Fee: Yes

ME 895 - Special Topics
Credits: 1-4
New or specialized courses and/or independent study. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

ME 899 - Master's Thesis
Credits: 1-8
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Graduate Credit/Fail grading

ME 909 - Viscous Flow
Credits: 3
Exact solutions of the Navier-Stokes equations; laminar boundary layers; wakes and jets; Stoke's flow; stability of parallel flows and boundary layers; transition to turbulence. Prior coursework in analytic fluid dynamics required.
Grade Mode: Letter Grading

ME 910 - Turbulence
Credits: 3
Modern analysis of turbulent flow: the governing equations; stationary random functions and the various averaging techniques; empirical results on turbulence; homogenous turbulence; the Kolmogorov theory for isotropic turbulence; upper bound theory; turbulence in the atmosphere and oceans; applications to problems in science and engineering.
Prerequisite(s): ME 807 with a minimum grade of D-.
Grade Mode: Letter Grading

ME 922 - Continuum Mechanics
Credits: 4
Cartesian tensors. Lagrangian and Eulerian description of a continuum. The material time derivative. Deformation gradient. Displacement and rotation. Strain tensors. Rates of deformation. Conservation of mass. Momentum balance equations. Cauchy and Piola-Kirchhoff stress tensors. Balance of energy: stress power, rate of work, and internal energy. Entropy and the second law of thermodynamics. Constitutive equations for elasticity and plasticity. Newtonian and non-Newtonian fluids. Inviscid and viscous flow. Naiver-Stokes equations. Ideal and rotational flows.
Grade Mode: Letter Grading

ME 927 - Theory of Plasticity
Credits: 4
Analysis of stress and deformation in inelastic solids; general development of stress invariants, variational principles, constitutive relations, and yield and loading functions. Special emphasis on ideal plasticity, strain-hardening, creep, limit analysis, and limit design.
Grade Mode: Letter Grading

ME 935 - Micromechanics of Composite and Porous Materials
Credits: 4
Classification of composites, periodic and random microstructures. Mechanics of materials approach to micro-mechanical modeling. Representative volume element, analytical and numerical modeling of the effective properties. Micromechanics of failure of composite and porous materials. Prior coursework in mechanics of composite materials required.
Grade Mode: Letter Grading

ME #944 - Nonlinear Control Systems
Credits: 4
Analysis and design of nonlinear control systems from the classical and modern viewpoints are discussed. Liapunov's stability theory; phase space methods; linearization techniques; simulation; frequency response methods; generalized describing functions; transient analysis utilizing functional analysis; and decoupling of multivariable systems. Prior coursework in control systems required.
Equivalent(s): ECE 944, EE 944
Grade Mode: Letter Grading

ME 951 - Advanced Control Systems I
Credits: 3
State-space representation of multivariable systems; analysis using state transition matrix. Controllability and observability; pole placement using state and output feedback; Luenberger observers. Introduction to computer-controlled systems (sampling, discrete state representation, hybrid systems): nonlinear analysis (Liapunov, Popov, describing function). Prior coursework in control systems required.
Equivalent(s): ECE 951, EE 951
Grade Mode: Letter Grading

ME 986 - Advanced Finite Element Analysis
Credits: 4
Topics include introduction to dynamics, treatment of nonlinear material behavior, and plate and shell element technology. Emphasis given to problems in solid mechanics and heat transfer. Prior coursework in finite element analysis required.
Grade Mode: Letter Grading

ME 992 - Master's Project
Credits: 4
The student works with a faculty member during one or two semesters on a well-defined research and/or original design problem. A written report and seminar are presented. IA (continuous grading).
Repeat Rule: May be repeated up to 1 time.
Grade Mode: Graduate Credit/Fail grading

ME 995 - Graduate Special Topics
Credits: 1-4
Investigations of graduate-level problems or topics in mechanical engineering.
Grade Mode: Letter Grading

ME 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Microbiology (MICR)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MICR 805 - 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. One semester of cell biology recommended.
Grade Mode: Letter Grading

MICR 808 - Virology Laboratory
Credits: 2
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.
Grade Mode: Letter Grading
Special Fee: Yes

MICR 815 - 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. Introductory microbiology and microbiology lab recommended.
Co-requisite: MICR 805
Grade Mode: Letter Grading
Special Fee: Yes

MICR 835 - 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 major human parasites. Introductory microbiology and microbiology lab and one semester of genetics and one semester of parasitology recommended.
Grade Mode: Letter Grading

Molecular, Cellular and Biomedical Science (MCBS)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MCBS 801 - Introduction to Careers in Biotechnology
Credits: 1
Overview of careers in the biotechnology and biopharmaceutical industries. Professional development activities include defining career goals, preparing a professional resume and cover letter to prospective employers, identification of potential internship opportunities, and networking. The course will also include an overview of the types of positions available within the biotechnology/biopharma sector, presentations by biotechnology career professionals, and presentations by UNH faculty whose research disciplines are relevant to the field of biotechnology and biopharmaceutics.
Repeat Rule: May be repeated for a maximum of 2 credits.
Grade Mode: Graduate Credit/Fail grading

MCBS 895 - Special Topics
Credits: 1-4
Special topics course.
Repeat Rule: May be repeated for a maximum of 16 credits. May be repeated up to 3 times.
Grade Mode: Letter Grading

MCBS 899 - Master's Thesis
Credits: 1-10
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 10 credits.
Grade Mode: Graduate Credit/Fail grading

MCBS 901 - Introduction to Research in the Life Sciences
Credits: 2
This two-credit graduate course is designed to acquaint first-year master's and doctoral students with facilities and tools for designing, conducting, and communicating research. Topics include: acquiring proper background information; the art of oral presentation; effective writing; data analysis and graphics using computers; ethics in science; and issues in research.
Grade Mode: Letter Grading

MCBS 905 - Contemporary Topics in Molecular, Cellular and Biomedical Sciences
Credits: 1
Presentation, discussion, and critical evaluation of current research literature in molecular/cellular life sciences and in biomedical sciences. Topics will vary each semester.
Repeat Rule: May be repeated for a maximum of 5 credits.
Grade Mode: Graduate Credit/Fail grading

MCBS 910 - Cell Signaling Networks Across the Kingdoms
Credits: 3
This course is a survey of contemporary problems in microbal, plant, protozoan, and animal cell and biosystems signaling. Topics to be covered include: evolution of extracellular signals, receptor systems, and signal transduction pathways that govern cell proliferation, survival, and development; current technical approaches for discovery and characterization of signal transduction factor networks; corrupted signal transduction in disease; disease control or therapy. Students should have knowledge of cell biology, biochemistry, genetics and/or molecular biology.
Grade Mode: Letter Grading

MCBS 913 - Applied Bioinformatics
Credits: 3
Genome-enabled biology is the exploration of basic biological questions by combining high-throughput data gathering approaches, such as DNA sequencing, with computational skills in the area of Bioinformatics. Course is designed to provide an opportunity for graduate students in the life sciences to develop sophisticated methods of data analysis by participating in a collaborative project.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

MCBS 995 - Special Topics
Credits: 1-4
Special topics course.
Repeat Rule: May be repeated for a maximum of 16 credits. May be repeated up to 3 times.
Grade Mode: Letter Grading

MCBS 997 - Seminar
Credits: 1
Graduate student and faculty presentations on current topics in the molecular life sciences and biomedical sciences. Graduate students are expected to present one seminar per year and attend all seminars each semester.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Graduate Credit/Fail grading

MCBS 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading

Music (MUSI)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

MUSI 801 - Topics in Music History
Credits: 3
Courses offered under this number feature a variety of topics having to do with music history. Topics in given semesters reflect faculty expertise in teaching and research. For topic examples, see "Courses Taught" on relevant faculty web pages. May be repeated for credit if topics differ.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

MUSI 803 - Music of the Renaissance
Credits: 3
Works of the 15th- and 16th-century composers from Dunstable to Palestrina.
Grade Mode: Letter Grading

MUSI 805 - Music of the Baroque Era
Credits: 3
Music of Europe from de Rore to Bach.
Grade Mode: Letter Grading

MUSI 809 - 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.
Grade Mode: Letter Grading

MUSI #811 - 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.
Grade Mode: Letter Grading

MUSI 813 - 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.
Grade Mode: Letter Grading

MUSI #815 - Survey of Opera
Credits: 3
History of the genre from Monteverdi to the present.
Grade Mode: Letter Grading

MUSI 831 - Advanced Instrumental 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.
Repeat Rule: May be repeated for a maximum of 12 credits.
Grade Mode: Letter Grading
Special Fee: Yes

MUSI 845 - Graduate 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
Special Fee: Yes

MUSI #848 - Graduate Cello
Credits: 1-4
Private instruction in cello. Special fee for non-majors.
Repeat Rule: May be repeated for a maximum of 99 credits.
Grade Mode: Letter Grading
Special Fee: Yes

MUSI 852 - Graduate 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
Special Fee: Yes

MUSI 853 - Graduate 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
Special Fee: Yes

MUSI 855 - Graduate 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
Special Fee: Yes

MUSI 856 - Graduate 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
Special Fee: Yes

MUSI #857 - Graduate 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
Special Fee: Yes

MUSI #860 - Graduate 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
Special Fee: Yes

MUSI 861 - Graduate 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
Special Fee: Yes

MUSI 865 - Introduction to Bibliography
Credits: 3
This course is a comprehensive survey of skills and resources fundamental for undertaking research projects in music. Topics include bibliography (a survey of standard reference works, periodicals, monographs, collected editions, and other important sources); research techniques; critical reading, thinking, and writing; oral presentation; and the planning and drafting of a research paper (including methods of citation). A reading knowledge of German, French, and Italian is helpful, but not required.
Grade Mode: Letter Grading

MUSI 869 - Musicology Seminar
Credits: 3
A seminar course that explores a specialized topic in musicology in depth. Students survey the principal primary and secondary materials for the given topic, present oral presentations related to it, and write an essay showing understanding of the literature and research issues involved. Topics change each time the course is offered.
Repeat Rule: May be repeated for a maximum of 9 credits.
Grade Mode: Letter Grading

MUSI #871 - 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.
Grade Mode: Letter Grading

MUSI 875 - Composition
Credits: 1-4
Construction of phrases, periods, and short compositions following classical models. Problems of text-setting.
Grade Mode: Letter Grading

MUSI 876 - Composition
Credits: 1-4
Construction of phrases, periods, and short compositions following classical models. Problems of text-setting.
Prerequisite(s): MUSI 875 with a minimum grade of D-.
Grade Mode: Letter Grading

MUSI 877 - Advanced Composition
Credits: 1-4
Continuation of MUSI 876. Individual compositional projects. May be repeated for credit.
Prerequisite(s): MUSI 876 with a minimum grade of D-.
Grade Mode: Letter Grading

MUSI 879 - Orchestration
Credits: 3
Characteristics of band and orchestral instruments both individually and in small (homogeneous) and large (mixed) groupings. Students study scores, write arrangements, and have arrangements performed if at all possible.
Grade Mode: Letter Grading

MUSI 881 - 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.
Grade Mode: Letter Grading

MUSI 891 - Research Seminar
Credits: 1-4
Guidance on individual research projects.
Grade Mode: Letter Grading

MUSI 894 - Theory Seminar
Credits: 3
Study of representative masterworks. Score analysis.
Grade Mode: Letter Grading

MUSI 895 - 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. May be repeated for credit with permission.
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 841 - 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.
Grade Mode: Letter Grading

MUED #847 - Techniques and Methods in Woodwind Instruments
Credits: 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.
Grade Mode: Letter Grading

MUED 849 - 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, French horn, trombone, euphonium, and tuba; methods, studies, solos, and ensembles most likely to be useful with school players of brass instruments.
Grade Mode: Letter Grading

MUED #851 - 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.
Grade Mode: Letter Grading

MUED #865 - 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 871 - Marching Band Methods
Credits: 2
Role of marching bands 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.
Grade Mode: Letter Grading

MUED 883 - Instrumental Literature and its Performance
Credits: 3
Exploration of representative solo and ensemble music for string, wind, and percussion instruments. Typical literature from each period of music is studied. As much as possible, live performance is included; recordings are used as required. Detailed attention given to interpretation. Project required.
Equivalent(s): MUED 983
Grade Mode: Letter Grading

MUED 891 - Teaching Secondary School Music
Credits: 3
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.
Grade Mode: Letter Grading

MUED 895 - 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 810 - National Security Policy and the Intelligence Community
Credits: 3
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 820 - Intelligence Analysis
Credits: 3
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

NSIA 830 - National Security Research Design and Methods
Credits: 3
In this class students explore the differences between academic research and intelligence analysis. We will explore research design and how to select a research approach based on intelligence requirements. You will learn about the ethical conduct of social science research. Building on the framework of intelligence requirements you will learn how to define a research problem and develop related research questions, hypothesis, and design research using appropriate methods.
Grade Mode: Letter Grading

NSIA 840 - National Security Qualitative Research Design and Analysis
Credits: 3
Qualitative research refers to meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions of phenomena for study in the natural world. In this class we make linkages to existing research theories and intelligence methodologies. We introduce case study research and design issues.
Grade Mode: Letter Grading

NSIA 850 - Intelligence Analysis Case Studies
Credits: 3
The evolution of intelligence analysis is examined in this class using case studies to highlight analytical approaches. Institutional and personal perspectives of the role of intelligence analysis and analysts are explored. We will define and discuss the politicization of intelligence. Both strategic and warning intelligence case studies are provided to students to read and interpret.
Grade Mode: Letter Grading

NSIA 856 - Comparative Security Systems
Credits: 1-3
Students go on a managed study abroad program designed and led by UNH faculty; good standing and consent instructor.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

NSIA 860 - Survey Design and Analysis
Credits: 3
In this course students will learn about surveys research. Questions such as “What is a survey?” and “Why conduct surveys?” will be posed and answered. Students will learn about ethical issues in survey design and methods. Additional topics include survey error, sampling, nonresponse issues, survey data collection strategies, and survey question design and errors.
Grade Mode: Letter Grading

NSIA 870 - National Security Quantitative Research Design and Analysis I
Credits: 3
Quantitative Design and Analysis I introduces students to data and data analysis. The course provides an overview of statistical learning. Students will learn approaches for stating and refining research questions. We will employ the epicycles of analysis approach to conduct exploratory data analysis. Students will learn how to describe data and use appropriate counting techniques. Basic data visualization will be employed using R.
Grade Mode: Letter Grading

NSIA 880 - Analytical Writing and Briefing Seminar
Credits: 3
Students in this course will investigate the cognitive science behind writing and intelligence analysis. Topics include heuristics and chunking, speaking and writing, writing schemes, creativity, analytical writing, organization, presentation, collaboration, editing, case studies, presenting technical information, and decision-maker feedback. Case studies on the psychology of political behavior are presented.
Grade Mode: Letter Grading

NSIA 890 - National Security Quantitative Research Design and Analysis II
Credits: 3
In this course students will develop a data science tool kit they may use to investigate research questions. The methodological approaches students will be exposed to include linear regression, classification, resampling methods, linear model selection, tree-based methods, unsupervised learning, and network analysis. Ethical approaches to the use of data science are reviewed in this class.
Grade Mode: Letter Grading

NSIA 898 - Master’s Capstone
Credits: 3
The capstone provides the opportunity to demonstrate the students’ mastery of program materials, areas of specialization, and professional goals, in a single intelligence product. In cooperation with a core faculty advisor, each student team designs, researches, and implements a project that is comprehensive and demonstrates their competency to perform as an analyst.
Grade Mode: Letter Grading

Natural Resources & Earth Systems Science (NRES)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

NRES 995 - Independent Study
Credits: 1-4
Independent Study.
Grade Mode: Letter Grading

NRES 996 - Environmental Science Seminar
Credits: 0
This course exposes students to a wide range of interdisciplinary presentations and interaction with accomplished speakers from across the country representing a variety of environmental science fields. Seminars address topics such as marine ecology, water resources management, agricultural ecology, climate change and its impacts, soil science, natural resources protection, microbial communities, ecosystem ecology, environmental policy and ethics, geology, forestry, carbon modeling, biochemistry, small mammal ecology, and other subjects of interest.
Grade Mode: Not graded

NRES 997 - Interdisciplinary Research in Natural Resources and Earth and Environmental Sciences
Credits: 1
This course provides NRESS students opportunities to build a peer network, discuss the nature of interdisciplinary/transdisciplinary research, and read papers from Natural Resources and Earth Systems primary literature. Weekly discussion of topics relevant to interdisciplinary research and careers, along with several guest speakers, are included. The course is facilitated by the NRESS faculty chair, and is required for incoming NRESS students.
Repeat Rule: May be repeated for a maximum of 2 credits.
Grade Mode: Graduate Credit/Fail grading

NRES 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Natural Resources (NR)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

NR 803 - 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. Lab/field trips.
Equivalent(s): WARM 803
Grade Mode: Letter Grading
Special Fee: Yes

NR 806 - 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. Lab.
Equivalent(s): SOIL 806
Grade Mode: Letter Grading
Special Fee: Yes

NR 807 - 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.
Equivalent(s): EOS 807
Grade Mode: Letter Grading

NR 820 - 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 (trans-boundary watersheds, water-bodies, 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.
Equivalent(s): EC 820
Grade Mode: Letter Grading

NR 824 - 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. Lab.
Equivalent(s): EC 824
Grade Mode: Letter Grading
Special Fee: Yes

NR 829 - 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.
Grade Mode: Letter Grading
Special Fee: Yes

NR 830 - 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.
Equivalent(s): EOS 830
Grade Mode: Letter Grading

NR 834 - 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 also addresses important global issues in the tropics, including climate change, land use change, diverse ecosystem services, and sustainable resource management.
Equivalent(s): FOR 834
Grade Mode: Letter Grading

NR 840 - 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. Lab.
Grade Mode: Letter Grading
Special Fee: Yes

NR 843 - Addressing Arctic Challenges I
Credits: 4
Students will gain knowledge on the effect of climate change on Arctic environmental, social, and built systems, and apply transdisciplinary approaches to addressing arctic challenges. This course employs inquiry-based, peer-to-peer, and self-driven approaches. Students will tackle a research project, including in-depth data analysis in R, with the aim of contributing new knowledge in the form of a proposal, peer-reviewed publication, policy brief, outreach product, or other.
Grade Mode: Letter Grading

NR 844 - 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.
Equivalent(s): EOS 813, EOS 844
Grade Mode: Letter Grading

NR 845 - 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.
Equivalent(s): FOR 845
Grade Mode: Letter Grading
Special Fee: Yes

NR 849 - 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.
Grade Mode: Letter Grading
Special Fee: Yes

NR 851 - 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. Lab.
Grade Mode: Letter Grading

NR 857 - 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. Lab.
Equivalent(s): GEOG 757
Grade Mode: Letter Grading
Special Fee: Yes

NR 859 - Digital Image Processing for Natural Resources
Credits: 4
Introduction to 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.
Prerequisite(s): NR 857 with a minimum grade of D-.
Grade Mode: Letter Grading

NR 860 - 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.
Prerequisite(s): NR 658 with a minimum grade of D-.
Grade Mode: Letter Grading

NR 861 - 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.
Grade Mode: Letter Grading

NR 882 - Forest Health
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.
Grade Mode: Letter Grading
Special Fee: Yes

NR 887 - Advanced Topics in Sustainable Energy
Credits: 4
This course will engage students in advanced topics in sustainable energy. Course reviews basic structure of our energy system, energy markets and economics, and the environmental, economic and technological of our energy landscape. Focus will be on electricity and building use with introductions to the transportation system. Students will 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.
Grade Mode: Letter Grading
Special Fee: Yes

NR 899 - Master's Thesis
Credits: 1-10
Master's Thesis. Usually 6 credits, but up to 10 credits when the problem warrants.
Repeat Rule: May be repeated for a maximum of 10 credits.
Grade Mode: Graduate Credit/Fail grading

NR 900 - Teaching Assistantship Practicum
Credits: 0
This course covers best practices, norms, and expectations in performing the duties of a teaching assistant. Strategies for effective grading, communication with students and instructors, and institutional policies are explored and reinforced.
Grade Mode: Graduate Credit/Fail grading

NR 903 - Approach to Research
Credits: 2
Provides incoming graduate students with an overview of the scientific method, peer review, and various research approaches and methods. Ethics, institutional and individual responsibilities, and effective communication are also addressed in a seminar and discussion format.
Grade Mode: Graduate Credit/Fail grading

NR 905 - Grant Writing
Credits: 2
The ability to secure financial support for research and outreach activities is becoming increasingly important. This course is intended for graduate and post-graduate level students who need to write proposals for their graduate work or to gain external funding from government agencies. Students will gain in-depth understanding of the proposal writing process through class discussions, insights shared by UNH faculty, and by writing a research proposal following the entire process.
Equivalent(s): SOIL 905, WARM 905
Grade Mode: Graduate Credit/Fail grading

NR 907 - Genomes to Phenomes Seminar
Credits: 1
This seminar-style class examines linkages between genotype, phenotype and fitness in natural populations through readings of the primary literature. Topics covered include organismal adaptation, evolutionary ecology, adaptive capacity, resilience to climate change, environmental genomics, microbiome evolution, and environmental DNA monitoring. Students will gain an appreciation for the role of genomics ecological, evolution, and conservation science.
Repeat Rule: May be repeated for a maximum of 2 credits.
Grade Mode: Graduate Credit/Fail grading

NR 908 - Landscape Genetics
Credits: 3
This course provides interdisciplinary training and overview of landscape genetics -- the application of genetic and genomic tools to the study of organismal connectivity, dispersal and gene flow across the landscape. The course caters to graduate students in both basic and applied ecology and ecological genetics/genomics. Through a combination of online lectures distributed across multiple participating institutions and in-class seminar-style format, students learn from international experts and discuss papers with local peers.
Grade Mode: Letter Grading

NR 909 - Analysis of Ecological Communities and Complex Data
Credits: 4
This course introduces you to a suite of tools appropriate for analyzing and interpreting multivariate data arising from agroecological (and other ecological) research. In this course we cover a variety of multivariate analyses, including clustering, ordination (principle components analysis, nonmetric multidimensional scaling, correspondence analysis), group comparisons (multi-response permutation procedures, PerMANOVA, indicator species analysis, discriminant analysis, mantel test), and other hypothesis-driven techniques, including structural equation modeling.
Grade Mode: Letter Grading

NR 913 - Hierarchical Modeling in Ecology
Credits: 4
This course uses modern Bayesian statistical modeling approaches to analyze ecological data, with an emphasis on applied hierarchical models. These models will be used to examine ecological systems and related topics including: population and community dynamics, experimental design, spatial patterns, species abundance and diversity, community organization, metapopulations, and landscape processes. To be successful in the course students should have taken a course in statistics and have working knowledge of the R programming language.
Grade Mode: Letter Grading

NR 947 - Ecosystem Science: Theory, Practice, and Management Applications for Sustainability
Credits: 4
This course is designed for graduate students to explore in detail the fundamental principles and practical application of ecosystem science. Emphasis will be placed on understanding historical context as well as the most recent peer-reviewed literature. Writing assignments will emphasize local, regional, and international applications of ecosystem science to address environmental sustainability.
Grade Mode: Letter Grading

NR 965 - Community Ecology
Credits: 4
This course investigates how community properties -- species richness, and abundance distribution -- are influenced by evolutionary history, landscape phenomena such as dispersal and migration, and local factors such as the physical environment, disturbance, competition, predation, and positive interactions. Mechanistic models of community dynamics, including succession, are discussed. The influence of species diversity on ecosystem function is discussed, and all aspects of the course are related to conservation science.
Equivalent(s): NR 865
Grade Mode: Letter Grading

NR 977 - Just Maps: Cartographies of Environmental Justice
Credits: 4
Maps are ubiquitous. We carry them in our pockets, hang them on walls. We use maps to orient ourselves and rely on them to make meaning of social-environmental information. But whose space and time to maps employ? How do maps construct knowledge and to what social and political ends? What power dynamics do maps reflect and how do they become powerful themselves? This course explores such questions with focus on environmental in/justice. Completion of a GIS/Mapping course required prior to taking this course.
Grade Mode: Letter Grading

NR 993 - Natural and Environmental Resources Seminar
Credits: 1 or 2
Presentation and discussion of recent research, literature, and policy problems in the natural and social sciences influencing resource use.
Grade Mode: Graduate Credit/Fail grading

NR 995 - Investigations
Credits: 1-4
Investigations in Natural Resources may include topics in environmental conservation, forestry, soil science, water resources, and wildlife management.
Grade Mode: Letter Grading

NR 996 - Natural Resource Education
Credits: 2
Responsibilities include set-up, teaching, and grading of one lab section per week or equivalent lecture experience. Meets the teaching requirement for M.S. degree students.
Grade Mode: Graduate Credit/Fail grading

NR 998 - Directed Research
Credits: 1-4
Student designs and conducts original research that culminates in a paper of publishable quality. Alternative to NR 899 for those choosing non-thesis degree option. IA (continuous grading).
Repeat Rule: May be repeated for a maximum of 4 credits.
Grade Mode: Graduate Credit/Fail grading

Nursing (NUR) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

NUR 802 - Translating and Integrating Research into Nursing Practice
Credits: 3
This course provides the foundations for master's level nursing practice to advance nursing practice. The student is required to integrate theory, evidence, clinical judgment and research to improve population health outcomes. Evidence-based practice is applied to the role of the master's level nurse and will examine the ethical implications of research and translational scholarship. The student must be able to articulate how evidence is the basis for practice decisions and include the credibility and relevance of the sources. Practice guidelines will be discussed and their impact on health outcomes.
Equivalent(s): NUR 802G
Grade Mode: Letter Grading

NUR 812 - Interprofessional Collaboration for Population Health
Credits: 3
This course discusses the value of interprofessional teams to develop and evaluate preventative interventions to improve population health. The role of the nurse within these teams are viewed in terms of advocacy, value and leadership. The course requires the student to utilize effective communication techniques to engage and lead these teams. The student will utilize data sources and evidence-based practice to develop culturally relevant and linguistically appropriate health education strategies.
Equivalent(s): NUR 812G
Grade Mode: Letter Grading

NUR 817 - Advanced Health Assessment for Nurse Educators
Credits: 2
This course builds upon the nurses' prior knowledge of health assessment to focus on the advanced application of this knowledge in clinical and didactic settings. The course will include comprehensive and focused data collection culminating in a differential diagnosis. An overview of appropriate protocols for performing health screening and interpreting diagnostic data is acritical focus. The advanced practice nurse educator must demonstrate these advanced skills.
Equivalent(s): NUR 817G
Grade Mode: Letter Grading

NUR 820 - Advanced Pathopharmacology for Nurse Educators
Credits: 4
This course builds upon the nurse's prior knowledge of pathophysiology and pharmacology to focus on advanced application of this knowledge in clinical settings. The course will address physiological and biological manifestations to include adaptive and maladaptive changes that occur in diseases. Advanced concepts in pharmacology are presented to provide the nurse a foundation for managing population health and within the role of a nurse educator.
Prerequisite(s): NUR 817 with a minimum grade of B- or NUR 817G with a minimum grade of B-.
Equivalent(s): NUR 820G
Grade Mode: Letter Grading

NUR 825 - Foundational Skills for Nurse Educators
Credits: 3
This course explores the process of teaching and learning in nursing education. The role of the nurse educator is examined along with relevant theories of adult learning and the process of curricular development in nursing. The role of the advanced practice nurse educator is emphasized specific to the competencies associated with teaching, scholarship, and service.
Prerequisite(s): NUR 817 with a minimum grade of B- or NUR 817G with a minimum grade of B-.
Equivalent(s): NUR 825G
Grade Mode: Letter Grading

NUR 830 - Curriculum Development, Teaching Methods and Integrating Technology in Nursing Education
Credits: 3
Teaching strategies based on theory and evidence are the foundation of nursing education. Students are expected to consider the unique teaching environments in nursing specific to the diverse needs of the students in the development of curriculum and provision of quality education. Utilization of current technologies to enhance the teaching learning process is required.
Prerequisite(s): NUR 825 with a minimum grade of B- or NUR 825G with a minimum grade of B-.
Equivalent(s): NUR 830G
Grade Mode: Letter Grading

NUR 833 - Assessment and Evaluation in Nursing Education
Credits: 3
The student will engage in the process of assessment and evaluation in nursing education, and explore the role of the nurse educator in program evaluation. Students will be asked to critically evaluate current trends in nursing education including competence assessment and evaluation methods.
Prerequisite(s): NUR 825 with a minimum grade of B- or NUR 825G with a minimum grade of B-.
Equivalent(s): NUR 833G
Grade Mode: Letter Grading

NUR 850 - Integrated Clinical Capstone for Nursing Leaders
Credits: 6
This integrative clinical capstone is the final course in the Master of Science in Nursing Health Care Leadership program. All other required coursework must have been completed prior to receiving approval to register for this course. Students in this course will have the opportunity to apply the principles learned in the entire program of study and will demonstrate competence by integrating and applying those skills to a real-world scenario. The course culminates in a project focused on enhancing nursing practice by improving population health outcomes. Student will be required to verbally present and defend their project and achieved outcomes.
Equivalent(s): NUR 850G
Grade Mode: Letter Grading

NUR 851 - Integrated Capstone Practicum in Nursing Education
Credits: 6
This practicum experience requires the advanced level registered nurse to actively engage in a clinical or academic education setting. The student will integrate prior learning in the program to demonstrate competencies required of an advanced practice registered nurse. Specific opportunities for application of the NLN Core Competencies for Nurse Educators is the focus of this course. Current RN licensure and clinical clearance is required for this course.
Equivalent(s): NUR 851G
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 801 - Health Policy and Nursing Practice
Credits: 3
This course provides a comprehensive view of the nature and functions of health care services from a systems perspective and explores the role of nursing and other health professionals. Students examine the interaction and effect of social, political, economic, ethical, professional, legal, and technological forces on health care systems. The course emphasizes the analysis of emerging issues that have an impact on the health care system and nursing. Students process their role as nursing advocates.
Equivalent(s): NURS #806, NURS 901
Grade Mode: Letter Grading

NURS #806 - Clinical Inquiry
Credits: 4
Theory course focuses on identifying problems and the role of the nurse in decision-making situations in nursing practice. Emphasizes using decision-making theories, patient education theories and practice, critical thinking, ethical concepts in decision-making, tools for organizing nursing information, and applying evidence based practice. In addition, learners are introduced to information management and nursing informatics as they apply to planning and delivery of nursing care.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 807 - Pathophysiology and Pharmacology
Credits: 4
Theory course focuses on concepts of human pathophysiology and pharmacology relevant to professional nursing practice. Physiologic response and manifestations of alterations in normal body functioning are analyzed. Pharmacological agents used for these alterations are examined. Application of concepts across the lifespan are incorporated through the discussion of pathophysiology and pharmacology. Provides the foundation for the clinical decision-making and management of care. In addition, learners are introduced to the professional nurse's responsibility for educating clients about basic pathophysiology and pharmacology issues. Nursing majors only.
Grade Mode: Letter Grading

NURS 810 - Families in Health and Illness
Credits: 3
Seminar focusing on the family environment as a context for the experience of health and illness. Current middle-range theories and research from nursing and other disciplines analyzed for their application to family health. Public policy initiatives related to family health will be explored.
Grade Mode: Letter Grading

NURS 811 - Clinical Reasoning Through Simulation
Credits: 2
The course further develops and refines critical thinking skills be student participation in increasingly complex simulated clinical scenarios and de-briefings. Students prepare for the care of patients in a simulated environment, using the nursing process, to demonstrate the effective delivery of planned patient care.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 812 - Advanced Pharmacology and Therapeutics
Credits: 3
This course includes concepts of pharmacology including pharmacotherapies, pharmacodynamics, and pharmacokinetics necessary for prescriptive authority for the advanced practice nurse in primary care across the lifespan.
Equivalent(s): NURS 907, NURS 912
Grade Mode: Letter Grading

NURS 813 - Health Assessment and Clinical Nursing Theory
Credits: 0 or 4
This course is designed to provide the student with evidence-based knowledge related to acquiring the psychomotor and assessment skills required for the safe delivery of nursing care to the adult client. Students develop foundational skills applicable to achieving program outcomes. The focus of the course will be on developing beginning health assessment, and clinical nursing skills while implementing critical thinking, and application of the nursing process, highlighting fundamental nursing concepts as they pertain to providing and improving client care.
Co-requisite: NURS 813C
Grade Mode: Letter Grading
Special Fee: Yes

NURS 813C - Health Assessment and Clinical Nursing
Credits: 2
Care of the adult clinical is designed to provide the student with the 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.
Co-requisite: NURS 813
Grade Mode: Letter Grading

NURS 814 - Advanced Health Assessment Across the Lifespan
Credits: 3
This course includes knowledge to complete a comprehensive history and health examination on individuals across the lifespan incorporates assessing wellness, screening, and chief complaint.
Equivalent(s): NURS 909, NURS 914
Grade Mode: Letter Grading
Special Fee: Yes

NURS 816 - Health Promotion Theory and Population Health
Credits: 3
Provides theoretical foundation and a framework for examining health promotion, population health, health equity and the implementation of community-based interventions. Using current data to improve outcomes. Students develop and evaluate evidence-based population health programs to empower community action.
Equivalent(s): NURS 916, NURS 944
Grade Mode: Letter Grading

NURS 818 - Foundations of Evidence Based Practice
Credits: 3
Provides a broad overview of evidence-based advanced practice nursing. Philosophical, conceptual, and theoretical perspectives as well as research methods are examined. Explore the application knowledge to inform, evaluate, and translate evidence for practice.
Equivalent(s): NURS 918, NURS 968
Grade Mode: Letter Grading

NURS 820 - Advanced Physiology and Pathophysiology Across the Lifespan
Credits: 3
This course offers an advanced understanding of concepts in human physiology and pathophysiology as a foundation for the advanced nursing practice role, The focus focus of this course is on principles, theories, and current research related to physiological and pathophysiological system alterations across the lifespan.
Equivalent(s): NURS 908, NURS 913
Grade Mode: Letter Grading

NURS 822 - Chronic Disease Management
Credits: 3
Theory course that explores concepts and foundations relevant to the chronic illness experience as defined as individual/family perceptions, beliefs, attitudes and response to disease. Analysis of biophysical and psychological function on patient engagement, decision-making processes and ethical considerations of care will be explored. The course emphasizes concepts of self-care, patient agency, informed decision making and problem solving to achieve patient centered care.
Equivalent(s): NURS #825
Grade Mode: Letter Grading

NURS #825 - Collaborative Care I: Care of Older Adult
Credits: 3
Theory course focuses on care outcomes for major functional and health transitions of older adults across health settings. Emphasizes nurse's advocacy in facilitating care collaboration based on informed practice utilizing current research and best practice models of care. Learners incorporate theories from nursing and other disciplines to achieve a broad perspective and understanding of the aging experience and cultural implications for nursing practice.
Grade Mode: Letter Grading

NURS 826 - Caring for People with Severe and Persistent Mental Illness
Credits: 2
This theory course is designed to provide an understanding of the neurobiological and psycho-social concepts of mental health and illness, factors influencing human behavior and interaction, current somatotherapies, and the role of the psychiatric nurse as part of the interdisciplinary team. Previous course knowledge and communication skills provide a theoretical foundation in explaining, guiding, and predicting nursing action.
Co-requisite: NURS 826C
Grade Mode: Letter Grading

NURS 826C - Caring for People with Severe and Persistent Mental Illness Clinical
Credits: 2
This clinical course provides students with the opportunity to participate in collaborative and interdependent health care relationships with professional and paraprofessional mental health partners. A special focus is placed on the integration of personal knowledge. Therapeutic use of self, and professional communication skills inherent in nurse-client relationships.
Grade Mode: Letter Grading

NURS 827 - Managing Acute and Complex Care of Individuals
Credits: 4
In this theory course students develop the knowledge base to refine their clinical judgment and decision-making skills in care of individuals from diverse populations with acute, critical, and chronic illnesses. Focuses on illness management, health restoration, and risk reduction in prototypic health care problems. Focuses on nurses' ability to use leadership skills and concepts of care collaboration with clients, families, peers, and members of the health care team to maximize client outcomes. Care experiences primarily center on the acute care environment.
Co-requisite: NURS 827C
Grade Mode: Letter Grading

NURS 827C - Managing Acute and Complex Care of Individuals Clinical
Credits: 2
In this clinical course students demonstrate the ability to apply knowledge to refine clinical judgment and decision-making skills while caring for individuals from diverse populations with acute, critical, and chronic illnesses. Focuses on illness management, health restoration, and risk reduction in prototypic health care problems. Focuses on nurses' ability to use leadership skills and concepts of care collaboration with clients, families, peers, and members of the health care team to maximize client outcomes. Care experiences primarily center on the acute care environment.
Co-requisite: NURS 827
Grade Mode: Letter Grading

NURS #828 - Public Health Nursing
Credits: 0 or 3
This course offers students the opportunity to engage in a public health project at the community and population level. Emphasis placed on the synthesizing concepts, theories, knowledge and practice from nursing, and public health sciences while engaging with the community to address a public health problem. Students demonstrate application of knowledge to the skills of community assessment, health promotion, health protection, illness prevention, and vulnerability from a public health nursing perspective.
Grade Mode: Letter Grading

NURS 831 - Childbearing and Childrearing Families
Credits: 2
This course offers students an opportunity to develop necessary knowledge, attitudes and skills required for the provision of safe care to developing families and their children, from an antenatal care through adolescence. This course focuses upon patient and family centered care, normal physiological human development, client advocacy and the provision of therapeutic, reflective nursing practice to support families along a wellness-illness continuum.
Co-requisite: NURS 831C
Equivalent(s): NURS 830
Grade Mode: Letter Grading

NURS 831C - Childbearing and Childrearing Families Clinical
Credits: 2
This clinical course focuses on the provision of health care for individuals within the context of the family during the childbearing and childrearing period. Healthy transitions and physical alterations are examined. This course integrates clinical opportunities in a variety of settings for the development of the advanced nurse generalist role.
Co-requisite: NURS 831
Equivalent(s): NURS 830C
Grade Mode: Letter Grading

NURS 835 - Leadership in Healthcare
Credits: 3
This course uses leadership as a guide for analyzing and attaining positive organizational health care outcomes. Careful consideration is given to the complex challenges of achieving quality care delivery and quality health outcomes for aggregates in an ever-changing, complex environment. Course content includes health systems analysis, shaping care delivery, and resource management. Course fosters student integration of knowledge in preparation for clinical nursing leadership responsibilities.
Equivalent(s): NURS 925
Grade Mode: Letter Grading

NURS 844 - Population Health
Credits: 3
Students examine the theoretical and empirical basis for health promotion and risk reduction assessment and interventions to improve population health outcomes. Health promotion and risk reduction are examined within an ecological perspective, including critical social, political, racial/ethnic, cultural and economic environments. Epidemiological and biostatistical approaches are used to analyze population data to identify and analyze the determinants of health, health promotion and risk reduction strategies, and to evaluate the distribution of health conditions.
Equivalent(s): NURS 944
Grade Mode: Letter Grading

NURS 850 - Foundations in Acute Care
Credits: 3
The first theoretical course preparing the student for the Adult-Gerontologic Acute Care Nurse Practitioner (AGACNP) role. The foundations of practice will explore the AGACNP role and transition, clinical documentation, and clinical practice. Clinical focus will include the topics of sepsis, shock, and cardiovascular emergencies. Didactic learning will occur through asynchronous learning consisting of multimedia, discussion boards, and case studies. This course may be taken with NURS 851: Foundations in Acute Care Clinical Practicum.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 851 - Foundations in Acute Care Clinical Practicum
Credits: 2
This clinical practicum course accompanies the Adult-Gerontology Acute Care Nurse Practitioner didactic courses and will highlight experimental learning. Students will need to complete a minimum 100 precepted clinical hours. Additional requirements include entering clinical documentation and hours into Typhon. Students will continue to formulate clinical knowledge and problem solving using foundational courses of advanced pathophysiology, physical assessment, and pharmacology, in conjunction with didactic content. May be taken with NURS 850 or NURS 852 only.
Grade Mode: Graduate Credit/Fail grading

NURS 852 - Adult-Gerontology Acute Care Nurse Practitioner I
Credits: 3
The second theoretical course for the preparation of the adult-gerontological acute care nurse practitioner. Clinical knowledge will focus upon cardiovascular and cardiothoracic diagnoses, diagnostics, and therapeutics in the adult and older adult. Course will also explore palliative care, end of life, and pronouncement. This course is to be taken in tandem with a AGACNP Clinical Practicum (I-IV).
Co-requisite: NURS 851
Prerequisite(s): NURS 850 with a minimum grade of B.
Grade Mode: Letter Grading

NURS 853 - Adult-Gerontology Acute Care Nurse Practitioner I Clinical Practicum
Credits: 2
This clinical practicum course accompanies the Adult-Gerontology Acute Care Nurse Practitioner didactic courses and will highlight experimental learning. Students will need to complete a minimum 100 precepted clinical hours. Additional requirements include entering clinical documentation and hours into Typhon. Students will continue to formulate clinical knowledge and problem solving using foundational courses of advanced pathophysiology, physical assessment, and pharmacology, in conjunction with didactic content. This practicum does not need to be taken sequentially.
Prerequisite(s): NURS 850 with a minimum grade of B and NURS 851 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

NURS 854 - Adult-Gerontology Acute Care Nurse Practitioner II
Credits: 3
The third theoretical course for the preparation of the adult-gerontological acute care nurse practitioner. This course will focus on pulmonary, immune and hematopoietic disorders, diseases, and therapeutics. Additional focus on standards of care in airway management and respiratory support. This course is to be taken in tandem with a AGACNP Clinical Practicum (I-IV). Will also include simulation activity pertaining to airway and ventilator management. Course should be taken with NURS 853 or NURS 855 or NURS 857.
Prerequisite(s): NURS 850 with a minimum grade of B and NURS 851 with a minimum grade of D-.
Grade Mode: Letter Grading

NURS 855 - Adult-Gerontology Acute Care Nurse Practitioner II Clinical Practicum
Credits: 2
This clinical practicum course accompanies the Adult-Gerontology Acute Care Nurse Practitioner didactic courses and will highlight experimental learning. Students will need to complete a minimum 100 precepted clinical hours. Additional requirements include entering clinical documentation and hours into Typhon. Students will continue to formulate clinical knowledge and problem solving using foundational courses of advanced pathophysiology, physical assessment, and pharmacology, in conjunction with didactic content. This practicum does not need to be taken sequentially.
Prerequisite(s): NURS 850 with a minimum grade of B and NURS 851 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

NURS 856 - Adult-Gerontology Acute Care Nurse Practitioner III
Credits: 3
The fourth theoretical course with a focus on HEENT, neurology and associated trauma, psychosocial and behavioral disorders, and care pertaining to the musculoskeletal and integumentary systems. Additional emphasis will be placed on the healthcare system/care continuum and discharge planning. Course should be taken with NURS 853 or NURS 855 or NURS 857.
Prerequisite(s): NURS 850 with a minimum grade of B and NURS 852 with a minimum grade of B and NURS 854 with a minimum grade of B and NURS 851 with a minimum grade of D-.
Grade Mode: Letter Grading

NURS 857 - Adult-Gerontology Acute Care Nurse Practitioner III Clinical Practicum
Credits: 2
This clinical practicum course accompanies the Adult-Gerontology Acute Care Nurse Practitioner didactic courses and will highlight experimental learning. Students will need to complete a minimum 100 precepted clinical hours. Additional requirements include entering clinical documentation and hours into Typhon. Students will continue to formulate clinical knowledge and problem solving using foundational courses of advanced pathophysiology, physical assessment, and pharmacology, in conjunction with didactic content. This practicum does not need to be taken sequentially.
Prerequisite(s): NURS 850 with a minimum grade of B and NURS 851 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

NURS 858 - Adult-Gerontology Acute Care Nurse Practitioner IV
Credits: 3
The fifth and final theoretical course for the preparation of the adult-gerontological acute care nurse practitioner. Clinical practice knowledge will focus upon endocrine, gastrointestinal, genitourinary, and nephrological disorders. Additional focus on quality improvement and evidence-based practice. Course should be taken with NURS 853 or NURS 855 or NURS 857 or NURS 859.
Prerequisite(s): NURS 850 with a minimum grade of B and NURS 852 with a minimum grade of B and NURS 856 with a minimum grade of B and NURS 851 with a minimum grade of D-.
Grade Mode: Letter Grading

NURS 859 - Adult-Gerontology Acute Care Nurse Practitioner IV Clinical Practicum
Credits: 2
This final clinical practicum course accompanies the Adult-Gerontology Acute Care Nurse Practitioner didactic courses and will highlight experimental learning. Students will complete a minimum 100 precepted clinical hours. Additional requirements include entering clinical documentation and hours into Typhon. Students will continue to formulate clinical knowledge and problem solving using foundational courses of advanced pathophysiology, physical assessment, and pharmacology, in conjunction with didactic content. This practicum can be taken in tandem with AGACP Clinical Practicums I-III.
Prerequisite(s): NURS 850 with a minimum grade of B and NURS 852 with a minimum grade of B and NURS 854 with a minimum grade of B and NURS 856 with a minimum grade of B and NURS 851 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

NURS 894 - Special Topics
Credits: 1-4
Formal course given on selected topics or special interest subjects. Several topics may be taught in one year or semester. May be repeated. Special fee on some sections.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

NURS 900 - Foundations of Scholarly Writing & Professional Communication
Credits: 3
Reinforces composition and writing skills for academic purposes. Students utilize citations and references in APA 7th edition format to assert that work reflects larger body of literature on the topic of interest. Supports written communication of ideas to inform and persuade a reader on the topic. Effective communication is emphasized as an essential skill for healthcare professionals.
Grade Mode: Letter Grading

NURS 901 - Health Policy
Credits: 3
Emphasizes identification of emerging issues that have an impact on the health care system and nursing in providing leadership to address these issues. Students analyze problems and process solutions from a nursing perspective with reasoned approach to their resolution.
Grade Mode: Letter Grading

NURS 902 - Advanced Physical Assessment
Credits: 2
This course focuses on providing the student with the knowledge and skills to perform a comprehensive health assessment. Emphasis is placed on physical, psychosocial, and cultural assessment necessary to perform a high quality health history, review of systems, and head-to-toe comprehensive physical exam for clinical decision making that can be communicated in both written and oral form to members of the multi-disciplinary health care team. The course builds on knowledge of anatomy, physiology, and pathophysiology.
Equivalent(s): NURS 909
Grade Mode: Letter Grading

NURS 907 - Advanced Pharmacology & Therapeutics
Credits: 3
Provides the knowledge and skills to assess, diagnose, and pharmacologically manage a patient's health problems in a safe, high quality, cost-effective manner. Emphasis on the development of therapeutic decision-making in drug selection for the patient based on health problems, individual variations, and economic considerations. Focus is on prescriptive practice, client education and monitoring therapeutic response to pharmacological agents in diverse clients across the lifespan.
Grade Mode: Letter Grading

NURS 908 - Advanced Physiology & Pathophysiology Across the Lifespan
Credits: 3
Provides an advanced understanding of concepts in human physiology and pathophysiology as a foundation for the advanced nursing practice role. Concepts related to biological sciences including cell biology, tumor biology, immunology, genetics, and pathology will be presented. The focus of this course is on principles, theories, and current research related to physiological and pathophysiological system alterations across the lifespan.
Grade Mode: Letter Grading

NURS 909 - Advanced Health Assessment Across the Lifespan
Credits: 3
Provides knowledge to complete a comprehensive history, physical and mental health exam leading to the development of a differential diagnosis. Incorporates assessing wellness, screening, and chief complaint.
Prerequisite(s): NURS 907 with a minimum grade of D- and NURS 908 with a minimum grade of D-.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 910 - Genomics & Ethics
Credits: 3
This course focuses on application of principles of genetics and genomics. The impact and challenges of genomics on health and outcomes, quality and safety of patient care are explored.
Prerequisite(s): NURS 912 with a minimum grade of D- and NURS 913 with a minimum grade of D- and NURS 914 with a minimum grade of D-.
Grade Mode: Letter Grading

NURS 911 - Diagnosis & Management - Diagnostic Reasoning
Credits: 3
This course emphasizes acquiring and analyzing relevant data to develop a comprehensive assessment for advanced practice nursing encompassing metacognition, clinical reasoning, differential diagnosis, and diagnostic error.
Prerequisite(s): NURS 912 with a minimum grade of D- and NURS 913 with a minimum grade of D- and NURS 914 with a minimum grade of D- and NURS 910 with a minimum grade of D-.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 915 - Leadership, Role & Collaboration
Credits: 3
Focuses on theories and principles of leadership, interprofessional collaboration, change management and systems thinking to improve outcomes. Students gain a historical perspective of the expanded roles of nursing as well as the evolution of advanced practice nursing.
Grade Mode: Letter Grading

NURS 917 - Biostats and Epidemiology
Credits: 3
Application and interpretation of statistical and epidemiological techniques appropriate for health sciences. Prepares students to think quantitatively and assess data critically. Examines principles of statistical inference and their application to the analysis and interpretation for answering practice questions. Students gain experience in interpreting quantitative data.
Grade Mode: Letter Grading

NURS 920 - FNP Health Management I - Didactic
Credits: 3
This course focuses on a patient centered comprehensive assessment, differential diagnosis, diagnostic reasoning, and plan of care of wellness, acute, and chronic conditions for the adult and geriatric populations.
Prerequisite(s): NURS 912 with a minimum grade of D- and NURS 913 with a minimum grade of D- and NURS 914 with a minimum grade of D- and NURS 910 with a minimum grade of D- and NURS 911 with a minimum grade of D-.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 921 - FNP Health Management I - Clinical
Credits: 4
This supervised clinical experience in the primary care management of patients includes biopsychosocial assessment, history taking, physical exam, development of differential diagnoses and evidence-based care. A preventative and wellness focused perspective is utilized for integration into practice. (250 clinical hours).
Prerequisite(s): NURS 912 with a minimum grade of D- and NURS 913 with a minimum grade of D- and NURS 914 with a minimum grade of D- and NURS 910 with a minimum grade of D- and NURS 911 with a minimum grade of D- and NURS 920 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

NURS 922 - FNP Health Management II - Didactic
Credits: 3
In this course a family centered comprehensive assessment, differential diagnosis, diagnostic reasoning, and plan of care of wellness, acute, and chronic conditions from infant to adolescence.
Prerequisite(s): NURS 912 with a minimum grade of D- and NURS 913 with a minimum grade of D- and NURS 914 with a minimum grade of D- and NURS 910 with a minimum grade of D- and NURS 911 with a minimum grade of D- and NURS 920 with a minimum grade of D- and NURS 921 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

NURS 923 - FNP Health Management II - Clinical
Credits: 4
A supervised clinical experience in the primary care management of the child and adolescent with a preventative and wellness focused perspective including biopsychosocial assessment, history taking, physical exam, development of differential diagnoses and evidence-based care. (250 clinical hours).
Prerequisite(s): NURS 912 with a minimum grade of D- and NURS 913 with a minimum grade of D- and NURS 914 with a minimum grade of D- and NURS 910 with a minimum grade of D- and NURS 911 with a minimum grade of D- and NURS 920 with a minimum grade of D- and NURS 921 with a minimum grade of D- and NURS 922 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

NURS 924 - FNP Health Management III - Didactic
Credits: 3
This course focuses on diagnostic reasoning and decision making of women's health and complex health population based on theory, evidence, ethics, and equity.
Prerequisite(s): NURS 912 with a minimum grade of D- and NURS 913 with a minimum grade of D- and NURS 914 with a minimum grade of D- and NURS 910 with a minimum grade of D- and NURS 911 with a minimum grade of D- and NURS 920 with a minimum grade of D- and NURS 921 with a minimum grade of D- and NURS 922 with a minimum grade of D- and NURS 923 with a minimum grade of D-.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 925 - Leadership, Role & Collaboration
Credits: 3
Focuses on theories and principles of leadership, interprofessional collaboration, change management and systems thinking to improve outcomes. Students gain a historical perspective of the expanded roles of nursing as well as the evolution of advanced practice nursing.
Grade Mode: Letter Grading

NURS 933 - Applied Analytics for QI in Health Care
Credits: 3
Demonstrate the ability to reflect on one's own learning. Use technology to improve learning and understand models of health care systems. Application of theory, review of the literature and population data to frame the QI change project to drive cost-effective safe care.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 935 - FNP Health Management I - Didactic
Credits: 3
Emphasis on thorough assessment, physical and mental health exam, differential diagnosis, diagnostic reasoning and plan of care for individual common conditions with a focus on wellness. Apply behavior change theory to improve health and ethical principles to care of patients. Role development toward independent practice.
Prerequisite(s): NURS 911 with a minimum grade of D-.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 936 - FNP Health Management I - Clinical
Credits: 3
Clinical practice preceptorship with faculty oversight to develop physical and mental health exam, differential diagnosis, diagnostic reasoning and plan of care for individuals with common conditions. Integration of behavior and wellness theory into practice, wellness, and prevention. Seek out clinical experience for prevention and common illness. Practice with respect and dignity.
Prerequisite(s): NURS 935 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

NURS 937 - Primary Care of Families II
Credits: 3
Lecture/discussion course covering the primary care management of children across the health-illness continuum, including assessment and management of common acute and chronic clinical problems. A developmental perspective is taken to examine child-health evaluation and maintenance from infancy through adolescence.
Co-requisite: NURS 938
Prerequisite(s): NURS 935 with a minimum grade of D- and NURS 936 with a minimum grade of D-.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 938 - Primary Care of Families II Practicum
Credits: 3
Supervised clinical experience in the primary care management of the child and adolescent, including assessment and management of common acute and chronic clinical problems. A family-centered developmental perspective is taken to provide child-health services from infancy through adolescence. Nursing care, family, and rehabilitation issues related to various health problems are investigated in practice.
Co-requisite: NURS 937
Prerequisite(s): NURS 935 with a minimum grade of D- and NURS 936 with a minimum grade of D-.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 939 - Seminar and Practicum in the Primary Care of Families III
Credits: 6
Final integrative clinical course that allows for intensive application of primary care knowledge and skills in practice. Seminar allows for in-depth analysis of various clinical problems, scope of practice and professional role issues. This course provides students the opportunity to develop objectives for their own learning experiences in order to complete their individual achievement of the family nurse practitioner expected outcomes. Course provides the opportunity for extensive clinical experience under the guidance of a preceptor.
Prerequisite(s): NURS 937 with a minimum grade of D- and NURS 938 with a minimum grade of D-.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 940 - FNP Health Management III - Clinical
Credits: 4
This is a supervised clinical experience in women's health and complex patients synthesizing evidence-based practice and technologies to improve community and population health outcomes (250 clinical hours).
Prerequisite(s): NURS 912 with a minimum grade of D- and NURS 913 with a minimum grade of D- and NURS 914 with a minimum grade of D- and NURS 910 with a minimum grade of D- and NURS 911 with a minimum grade of D- and NURS 920 with a minimum grade of D- and NURS 921 with a minimum grade of D- and NURS 922 with a minimum grade of D- and NURS 923 with a minimum grade of D- and NURS 924 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

NURS 944 - Health Promotion Theory & Population Health
Credits: 3
Provides theoretical foundation and a framework for examining health promotion, population heath, health equity and the implementation of community-based interventions. Using current data to improve outcomes. Students develop and evaluate evidence-based population health programs to empower community action.
Grade Mode: Letter Grading

NURS 947 - DNP Systems Thinking Seminar I
Credits: 3
Apply leadership principles in working with members of the healthcare team. Seek collaboration with other professionals to explore the economic, financial, and policy factors. Demonstrate how information and technology guides change. Strategize to reduce error and promote quality and safety in the development of a QI change project. Use theories, methods, and evidence to develop a QI change project implementation plan and obtain baseline data.
Grade Mode: Graduate Credit/Fail grading

NURS 948 - DNP Systems Thinking Seminar II
Credits: 3
Analyze systems that advance evidence-based principles, patient safety, interprofessional teamwork, and continuous learning. Utilize effective communication in transferring information to all stakeholders. Analyze policy implication on aspect of advanced nursing practice. Continue QI change project with mid and final evaluation point. Expand knowledge of self in your DNP role.
Prerequisite(s): NURS 947 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

NURS 949 - DNP Systems Thinking Seminar III
Credits: 3
Apply theory and scientific practice to complete, evaluate and disseminate QI change project finding and improvement plan. Include recommendations for system impact as well as economic, financial and policy implication at the local, state, and national levels. Seeks opportunities to translate and disseminate evidence-based practices to improve system level care and leadership to promote evidence-based change.
Prerequisite(s): NURS 948 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

NURS 952 - Clinical Nursing Leadership
Credits: 2
This seminar course focuses on the integration of systems thinking when engaged in clinical nursing leadership. Emphasizes the development of the clinical nurse leader role at the micro-system level and with an aggregate focus (e.g., long term care; community/public health agencies; ambulatory care clinics; health centers; schools; and acute care settings). Seminars focus student reflection on leadership experiences and emerging issues in health care delivery systems.
Co-requisite: NURS 952C
Grade Mode: Letter Grading

NURS 952C - Clinical Nursing Leadership Clinical
Credits: 6
This clinical course focuses on the integration of systems thinking when engaging in clinical nursing leadership and the application of systems theory in analyzing dynamic health systems. This course immerses the student in a clinical microsystem to facilitate the development of the clinical nurse leader role with an aggregate focus (e.g., long term care, community/public health agencies; ambulatory care clinics; health centers; schools; and acute care settings).
Co-requisite: NURS 952
Grade Mode: Letter Grading
Special Fee: Yes

NURS 953 - Promoting Quality Management
Credits: 3
This course focuses on frameworks for the collection and analysis of quality data. Students are introduced to the creation and execution of action plans for quality improvement at the microsystem level. Changing processes, structures and outcomes using date are emphasized.
Grade Mode: Letter Grading

NURS 955 - Practicum in Advanced Nursing Practice
Credits: 3-12
Students acquire the specialty knowledge and skills required in the area of their master's study. Students work with their faculty mentor to propose performance competencies, learning activities, settings, and resource persons for this supervised practicum. Practicum must include a minimum of 112 hours of supervised practice. May be repeated. Must hold RN license in state of practicum.
Co-requisite: NURS 956
Grade Mode: Letter Grading
Special Fee: Yes

NURS 956 - Capstone Project Seminar
Credits: 3
This seminar course requires students to focus on nursing practice issues and to work as individuals or groups to develop solutions. As the capstone course for the evidence-based nursing track, the students are required to complete this scholarship project under the direction of a faculty member. Must hold RN license in state of project.
Co-requisite: NURS 955
Grade Mode: Graduate Credit/Fail grading

NURS 958 - Clinical Nurse Leader Capstone
Credits: 6
This 6 credit capstone (200 hour) course requires students to complete a scholarly project that defines and/or implements strategies that will address/resolve a substantive nursing practice issue that impacts the quality and safety of patients. As the capstone course for the clinical nurse leader nursing track, the students are required to complete and present this scholarship project under the direction of course faculty and masters-prepared preceptor in the clinical agency. Prereq: majors only, all previous nursing courses in the CNL track.
Prerequisite(s): NURS 901 (may be taken concurrently) with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

NURS 960 - Healthcare Finance Management
Credits: 3
This course explores healthcare finance from the perspective of managing healthcare services. Students develop the knowledge and understanding of financial principles to make decisions in the current economic state of healthcare delivery. Sound fiscal responsibilities are taught within the context of legal and ethical considerations, and students learn to examine financial statements, balance sheets, and cash flow statements in order to make administrative decisions regarding operations and resource allocation.
Grade Mode: Letter Grading

NURS 963 - Biostats and Epidemiology
Credits: 3
Application and interpretation of statistical and epidemiological techniques appropriate for health sciences. Prepares students to think quantitatively and assess data critically. Examines principles of statistical inference and their application to the analysis and interpretation for answering practice questions. Students gain experience in interpreting quantitative data.
Grade Mode: Letter Grading

NURS 964 - Information Systems and Technology Improvement
Credits: 3
Focuses on nursing informatics knowledge and skills needed to assess, evaluate, and optimize health information systems/technology to support communication, the delivery of high-quality care, and improvement of population health. Emphasis on health care technology design and implementation that addresses industry-specific requirements and the integration of data and systems.
Grade Mode: Letter Grading

NURS 966 - Creative Leadership: Embracing Disruption and Innovation
Credits: 3
Leaders in healthcare must possess dynamic skills that enable them to guide their organizations and teams through tough times of change. This course will address innovation strategy, creativity and complexity as well as a traditional focus on personal leadership development. Students will learn how to approach issues that arise in the workplace, evaluate strategic challenges in healthcare and self-assess personal leadership skills. Tools will be used to develop solutions specific to challenges facing healthcare leaders today.
Grade Mode: Letter Grading

NURS 967 - Evidence Based Practice Methods
Credits: 3
Application and evaluation of clinical evidence to drive practice decisions that result in high quality care and are cost effective. Identify a problem, plan change to improve a process or outcome, or develop innovative solutions related to health care delivery.
Prerequisite(s): NURS 968 with a minimum grade of D-.
Grade Mode: Letter Grading

NURS 968 - Foundations of Evidence Based Practice
Credits: 3
Provides a broad overview of evidence-based advanced practice nursing. Philosophical, conceptual, and theoretical perspectives as well as research methods are examined. Explore the application knowledge to inform, evaluate, and translate evidence for practice.
Grade Mode: Letter Grading

NURS 969 - Health Systems Policy, Economics & Financial Planning
Credits: 3
Provides a comprehensive, systems thinking approach to include policy, economics and financial principles to promote high quality the health care delivery to individual, populations and communities. Focuses on healthcare issues and advocacy, which influence patient centered policy development and implementation.
Grade Mode: Letter Grading

NURS 970 - Clinical Practicum for Advanced Practice Nurse
Credits: 2
This clinical practicum is designed to provide the student with the opportunity to implement the role of the advanced practice nurse while under the supervision of other health care professionals in practice. Student will focus on clinical application of knowledge in a self-designed practicum. Student may complete up to 250 clinical practicum hours in this course, and may repeat this course one time.
Repeat Rule: May be repeated for a maximum of 4 credits.
Grade Mode: Graduate Credit/Fail grading

NURS 973 - Quality & Safety
Credits: 3
Explores the theoretical foundations and application of quality improvement methods, tools and strategies needed to increase organizational effectiveness. Focuses on measurement and accountability in health care delivery systems through the examination and analysis of data, structures, processes, and outcomes. Prepares students to lead and practice in organizations that advance high reliability principles, patient safety, interprofessional teamwork, and continuous learning.
Grade Mode: Letter Grading

NURS 977 - Neurobiology of Mental Disorders Across the Lifespan
Credits: 2
This course builds on the advanced provider's knowledge of anatomy, physiology, and pathophysiology, focusing on major mental disorders across the lifespan. Disorders are examined including various factors such as developmental, genetic, injury, trauma, infection, degeneration, and substance use disorders. Complex networks necessary for maintaining homeostasis within the brain and between the brain and body are examined in relation to these disorders.
Grade Mode: Letter Grading

NURS 978 - Psychopharmacology of Mental Health Disorders Across the Lifespan I
Credits: 2
This course provides an overview of the principles and best practices for using psychopharmacology to treat mental disorders across the lifespan. Clinical uses, neuropharmacological mechanisms, risks, benefits, and outcomes of commonly used psychotropic drugs in the context of a comprehensive treatment plan will be explored. This course requires critical thinking and problem-solving skills to apply psychopharmacologic principles for treating chronic and acute clinical conditions across the lifespan. Part 1 of a 2- part course.
Co-requisite: NURS 991
Prerequisite(s): NURS 977 with a minimum grade of D- and NURS 983 with a minimum grade of B-.
Grade Mode: Letter Grading

NURS 979 - Psychopharmacology of Mental Health Disorders Across the Lifespan II
Credits: 2
This course provides an overview of the principles and best practices for using psychopharmacology to treat mental disorders across the lifespan. Clinical uses, neuropharmacological mechanisms, risks, benefits, and outcomes of commonly used psychotropic drugs in the context of a comprehensive treatment plan will be explored. This course requires critical thinking and problem-solving skills to apply psychopharmacologic principles for treating chronic and acute clinical conditions across the lifespan. Part 2 of a 2- part course.
Co-requisite: NURS 992
Prerequisite(s): NURS 978 with a minimum grade of B- and NURS 977 with a minimum grade of B- and NURS 983 with a minimum grade of B- and NURS 991 with a minimum grade of B-.
Grade Mode: Letter Grading

NURS 980 - Doctoral Scholarly Project I
Credits: 3
This course focuses on models and methods of translating evidence into practice, including synthesis of evidence, program planning and evaluation, and preparation of an evidence-based research proposal. Students lay the foundation for their DNP Scholarly Project and may begin their 500 required clinical hours.
Grade Mode: Graduate Credit/Fail grading

NURS 981 - Doctoral Scholarly Project II
Credits: 3
This course encourages further exploration and analysis of the selected client, population, and/or system. Students use their own evidence-based analysis and data from either clinical practice and/or epidemiological studies to guide the design and implementation of the practice dissertation including human subjects review, intervention and analysis. The course includes a clinical practice immersion in the DNP role.
Prerequisite(s): NURS 980 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

NURS 982 - Doctoral Scholarly Project III
Credits: 3
This final course focuses on interpretation and presentation of findings of the DNP Project and a clinical immersion. Students identify additional goals and activities to meet the minimum requirement of 500 practicum hours.
Prerequisite(s): NURS 981 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

NURS 983 - Foundations of Psychiatric-Mental Health Practice and Assessment
Credits: 3
This course provides an introduction to standardized bio-psycho-social data collecting tools and psychiatric rating scales will provide structure for the assessment/interview process. Students will further their development and progression of mental disorders with an overview of the classification system in the DSM 5 and introduction of medical/psychiatric disorders. The culmination of these activities is designed to foster critical thinking and help students develop a broader view of mental disorder formulation.
Co-requisite: NURS 977
Grade Mode: Letter Grading
Special Fee: Yes

NURS 986 - Psychiatric-Mental Health Nurse Practitioner Practicum I
Credits: 2
This course provides students an opportunity to synthesize and apply psychotherapeutic theories and concepts as they develop interview and assessment skills. (Minimum of 150 clinical hours and successful navigation of course competencies).
Co-requisite: NURS 990
Prerequisite(s): NURS 978 with a minimum grade of B- and NURS 977 with a minimum grade of B- and NURS 983 with a minimum grade of B- and NURS 979 with a minimum grade of B- and NURS 991 with a minimum grade of B- and NURS 992 with a minimum grade of B-.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 987 - Psychiatric-Mental Health Nurse Practitioner Practicum II
Credits: 3
This course provides the student with knowledge and skills to perform advanced clinical differential diagnoses and management of individuals with mental disorders across the lifespan reinforcing knowledge of the diagnostic criteria of the DSM-5 and application of psychopharmaceutical and treatment planning skills. (Minimum of 200 clinical hours and successful navigation of course competencies).
Prerequisite(s): NURS 978 with a minimum grade of B- and NURS 977 with a minimum grade of B- and NURS 983 with a minimum grade of B- and NURS 979 with a minimum grade of B- and NURS 991 with a minimum grade of B- and NURS 992 with a minimum grade of B- and NURS 990 with a minimum grade of B- and NURS 986 with a minimum grade of B-.
Grade Mode: Letter Grading

NURS 988 - Psychiatric-Mental Health Nurse Practitioner Practicum III
Credits: 3
This course will provide an opportunity to apply and synthesize psychiatric principles and policies with targeted information on management of complicated care and crisis management. Course will continue to build on previously attained competencies from clinical and didactic coursework (Minimum of 200 clinical hours and successful navigation of course competencies).
Prerequisite(s): NURS 978 with a minimum grade of B- and NURS 977 with a minimum grade of B- and NURS 983 with a minimum grade of B- and NURS 979 with a minimum grade of B- and NURS 991 with a minimum grade of B- and NURS 992 with a minimum grade of B- and NURS 990 with a minimum grade of B- and NURS 986 with a minimum grade of B- and NURS 987 with a minimum grade of B-.
Grade Mode: Letter Grading
Special Fee: Yes

NURS 989 - Psychiatric-Mental Health Nurse Practitioner Practicum IV
Credits: 3
This course provides the student with knowledge and skills to synthesize all advanced KSA's for patients with mental disorders across the lifespan to include knowledge of the diagnostic criteria of the DSM-5, application of psychopharmaceutical skills, and therapeutic modalities ensuring evidenced based practice, optimal outcomes, and adherence to ethical guidelines. It will assist the novice PMHNP with bridge to practice competencies. (Minimum of 200 clinical hours and successful navigation of course competencies).
Prerequisite(s): NURS 978 with a minimum grade of B- and NURS 977 with a minimum grade of B- and NURS 983 with a minimum grade of B- and NURS 979 with a minimum grade of B- and NURS 991 with a minimum grade of B- and NURS 992 with a minimum grade of B- and NURS 990 with a minimum grade of B- and NURS 986 with a minimum grade of B- and NURS 987 with a minimum grade of B- and NURS 988 with a minimum grade of B-.
Grade Mode: Letter Grading

NURS 990 - Mental Health & Special Populations
Credits: 3
This course will enhance the student's understanding of addiction medicine and the effects of trauma from a microscopic, mesoscopic, macroscopic, and generational perspective. By weaving elements of basic science, assessment, and diagnosis, students will learn to understand and manage these disorders by integrated knowledge to propose evidenced based approaches for treatment. Special attention will focus on co-occurring disease processes and treatment approaches.
Grade Mode: Letter Grading

NURS 991 - Diagnosis & Management of Mental Health Disorders Across the Lifespan I
Credits: 3
The advanced provider will develop knowledge, skills, and competencies to perform advanced clinical impressions, diagnostic differential diagnosis, and management of individuals with mental disorders across the lifespan. By using evidence-based research, bio-psychosocial formulations and best practice, students will acquire knowledge of the diagnostic criteria of the DSM-5. Students will also focus on the foundational elements and strategies used to care for individuals with mental health disorders using psychotherapeutic modalities. Part 1 of a 2-part course.
Prerequisite(s): NURS 983 with a minimum grade of B- and NURS 977 with a minimum grade of B-.
Grade Mode: Letter Grading

NURS 992 - Diagnosis & Management of Mental Health Disorders Across the Lifespan II
Credits: 3
The advanced provider will develop knowledge, skills, and competencies to perform advanced clinical impressions, diagnostic differential diagnosis, and management of individuals with mental disorders across the lifespan. By using evidence-based research, bio-psychosocial formulations and best practice, students will acquire knowledge of the diagnostic criteria of the DSM-5. Students will also focus on the foundational elements and strategies used to care for individuals with mental health disorders using psychotherapeutic modalities. Part 2 of a 2-part course.
Prerequisite(s): NURS 977 with a minimum grade of B- and NURS 983 with a minimum grade of B- and NURS 978 with a minimum grade of B- and NURS 991 with a minimum grade of B-.
Grade Mode: Letter Grading

NURS 996 - Independent Study
Credits: 1-3
Opportunity for study and/or practice in an area of choice. Objectives are developed by students and must be approved by faculty. May be repeated.
Grade Mode: Letter Grading

NURS 997 - Clinical Placement Continuation
Credits: 0
This course represents the continuation of the online Post-Master's Psychiatric Mental Health Nursing Practitioner clinical placement courses (NURS 976 and NURS 985). PM-PMHNP students who are registered for one of those courses are also registered for NURS 900 and are considered enrolled. The grade for each course is awarded upon completion of the clinical placement experience. Registration requires departmental permission.
Grade Mode: Not graded

Nutrition (NUTR)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

NUTR 800 - 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 809 - 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.
Prerequisite(s): NUTR 400 with a minimum grade of D- and (PSYC 402 with a minimum grade of D- or SOC 502 with a minimum grade of D- or BIOL 528 with a minimum grade of D-).
Grade Mode: Letter Grading

NUTR 810 - 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.
Prerequisite(s): NUTR 400 with a minimum grade of D- and BMS 507 with a minimum grade of D- and BMS 508 with a minimum grade of D-.
Grade Mode: Letter Grading

NUTR 815 - Advanced Sports Nutrition
Credits: 4
The focus of the course is placed on the application of evidence-based knowledge to sport-specific scenarios. Insight and skills gained in this course will expand students' abilities in assisting and recommending proper nutritional strategies for athletes during training and competition. Additionally, this discusses strategies to combat common issues athletes may encounter, such as injuries, illness, eating disorders, and gastrointestinal discomfort.
Grade Mode: Letter Grading

NUTR 820 - 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.
Prerequisite(s): NUTR 400 with a minimum grade of D-.
Grade Mode: Letter Grading

NUTR 829 - Dietetics: Intro to Dietetics Principle and Practice
Credits: 2
Dietetics professionals are engaged in multiple arenas that demand familiarity with community food access, public health, food system challenges and health care practices. Resources and strategies to identify reliable sources of information, critical thinking skills, professional development and professional standards of behavior will be considered throughout the course. Simulation and extensive practicum-based training are critical components of this course as students prepare for extensive practicum placements in food service, community and clinical care settings.
Repeat Rule: May be repeated up to 1 time.
Grade Mode: Letter Grading
Special Fee: Yes

NUTR 830 - 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 prospective. 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. Introductory nutrition course required.
Grade Mode: Letter Grading

NUTR 831 - Dietetics: Clinical Theory and Practice
Credits: 10
Integration of clinical theory and practice in dietetics care. Bi-weekly seminars, on-line assignments and supplemental readings provide a mechanism to examine the nutritional basis of diet and disease relationships and consider appropriate nutritional interventions. Clinical rotations (500-600 hours) provide the opportunity to explore the application of nutritional science principles and practices within inpatient and outpatient environments. Staff responsibility, coupled with an in-depth case study presentation of a current patient with multiple nutrition risk factors, serves as the capstone practicum project.
Prerequisite(s): NUTR 829 with a minimum grade of D- or NUTR 832 with a minimum grade of D-.
Grade Mode: Letter Grading
Special Fee: Yes

NUTR 832 - Dietetics: Food Service and Community
Credits: 10
Pre-professional work experiences with continued examination and application of theory and practice in the dietetic profession. Concepts include foodservice management topics such as facility and human resources management, translation of nutrition into foods/menus, procurement, distribution and service within delivery systems, and food safety and sanitation. Community nutrition topics include nutrition screening and assessment, nutrition counseling and education, food security and sustainability, program development and evaluation, as well as exploration of health promotion and disease prevention theory and application. Assignments and supplemental reading reinforce practicum experiences. Practicum experience (500-600 hours) is integrated into the course design.
Prerequisite(s): NUTR 829 with a minimum grade of D- or NUTR 831 with a minimum grade of D-.
Grade Mode: Letter Grading

NUTR 836 - Sustainable Food Systems and Culinary Arts Practicum
Credits: 3
The Sustainable Food Systems and Culinary Arts experience is designed to provide both theoretical and practical information that builds upon core values of population and planetary health. Students will use a food systems lens to review food costs, evaluate food access and food security, consider the role of culture and place in food selection and conduct nutrient analysis. They will expand their culinary skills, while integrating knowledge of local, organic and sustainable food concepts.
Grade Mode: Letter Grading
Special Fee: Yes

NUTR 840 - Nutrition for Children with Special Needs
Credits: 4
Understand the nutrition concerns and care of children with special health needs and the need for medical nutrition therapy. Insight and skills gained in this course will expand students' abilities in assessing and recommending proper nutritional strategies for children affected by a variety of medical conditions. Specifics of the nutrition care process for these conditions will be examined. Introductory nutrition course and enrollment in graduate program required prior to taking this course.
Grade Mode: Letter Grading

NUTR 850 - Nutritional Biochemistry
Credits: 4
Digestion, absorption, transport, and utilization of food nutrients. Role of macro- and micro-nutrients as substrates and catalyst for metabolic pathways, and the role of these pathways in maintaining human health at the cellular, organ and whole-body levels. Two semesters anatomy and physiology; one semester biochemistry required.
Equivalent(s): ANSC 850
Grade Mode: Letter Grading

NUTR 851 - 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, and metabolic and biomedical functions, as well as the biochemical and clinical consequences of their deficiency or excess.
Prerequisite(s): NUTR 850 with a minimum grade of D-.
Grade Mode: Letter Grading

NUTR 855 - Concepts and Controversies in Weight Management
Credits: 4
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.
Equivalent(s): NUTR 856
Grade Mode: Letter Grading

NUTR 860 - Behavioral Nutrition and Counseling
Credits: 4
Apply current theories and techniques of counseling appropriate to nutrition. Emphasis on effective communication, client-centered counseling methods, motivational interviewing, behavior change, and factors affecting nutritional intake. Nutrition psychology and principles of group counseling/facilitation will also be explored.
Grade Mode: Letter Grading

NUTR 873 - Clinical Nutrition
Credits: 4
Principles and mechanisms of disease that result in altered nutrient requirements in humans. One semester introductory nutrition; two semesters anatomy & physiology; one semester biochemistry required.
Equivalent(s): ANSC 873
Grade Mode: Letter Grading

NUTR 875 - 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.
Equivalent(s): ANSC 875
Grade Mode: Letter Grading

NUTR 876 - Advanced Pathophysiology and Clinical Care
Credits: 4
Designed to integrate scientific principles and clinical knowledge with emphasis on clinical decision-making related to providing optimal nutrition care. Course will emphasize understanding the pathophysiology of diseases and mastery of their nutritional implications and interventions. Students build and expand on knowledge and emphasize applications into their clinical care process. Active participation in lecture discussions and lab simulation is an integral part of class.
Prerequisite(s): (NUTR 773 with a minimum grade of D- or NUTR 873 with a minimum grade of D-) and (NUTR 775 with a minimum grade of D- or NUTR 875 with a minimum grade of D-) and (NUTR 750 with a minimum grade of D- or NUTR 850 with a minimum grade of D-).
Grade Mode: Letter Grading
Special Fee: Yes

NUTR 880 - Critical Issues in Nutrition
Credits: 4
Critical review and analysis of controversial topics in nutrition; emphasis on developing oral and written communications skills and critical thinking skills.
Prerequisite(s): NUTR 873 with a minimum grade of D-.
Equivalent(s): ANSC 880
Grade Mode: Letter Grading

NUTR 895 - Investigations
Credits: 1-4
Investigations.
Grade Mode: Letter Grading

NUTR 899 - Master's Thesis
Credits: 1-6
Graduate students must enroll for a total of 6 credits for this course. Students may enroll in 1-6 credits per semester.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

NUTR 927 - Nutrition and Gut Microbes in Human Health
Credits: 4
This course explores the role of nutrition and the gut microbiota in underlying biochemical, metabolic, and immunological processes of chronic and infectious diseases. The course first provides an overview of organs, systems, metabolic processes, and their modulation by nutrients and the gut microbiota, with a focus on human health. The second half of the course covers the mechanistic links between nutrition, the gut microbiota, and chronic and infectious diseases, where students have an opportunity to apply the concepts learned in the first half of the course. To be successful in this course students will need to have taken courses in biochemistry, nutrition, or nutritional biochemistry, or have instructor permission.
Grade Mode: Letter Grading

NUTR 960 - Research Methods in Nutritional Science I
Credits: 4
Course is designed to provide students with an understanding of research methods, terminology, and improved ability to be consumers of research literature, and the skills necessary to conduct applied nutrition research studies (e.g. writing a research proposal, interpreting research results and critically evaluating research), as well as communicate scientific information (research presentation). Students will gain experience with data collection methodologies relevant to human nutrition.
Grade Mode: Letter Grading

NUTR 961 - Research Methods in Nutritional Science II
Credits: 4
Course is designed to provide students with an understanding of research methods, terminology, and improved ability to be consumers of research literature, and the skills necessary to conduct applied nutrition research studies (e.g. writing a research proposal, interpreting research results and critically evaluating research), as well as communicate scientific information (research presentation). Students will gain experience with data collection methodologies relevant to human nutrition.
Prerequisite(s): NUTR 960 with a minimum grade of D-.
Grade Mode: Letter Grading

NUTR #995 - Non-thesis Investigations
Credits: 1-4
Advanced investigations in a research project, exclusive of thesis project. Elective only after consultation with the instructor. (Offered both fall and spring semesters.)
Repeat Rule: May be repeated for a maximum of 4 credits.
Equivalent(s): NUTR 896
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 810 - OT Practice and Professional Roles
Credits: 3
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.
Grade Mode: Letter Grading
Special Fee: Yes

OT 815 - 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 830 - 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.
Co-requisite: OT 830L
Grade Mode: Letter Grading

OT 830L - Assistive Technology for Enhancing Occupational Performance Lab
Credits: 1
Co-Requisite Laboratory for OT 730/830 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.
Co-requisite: OT 830
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

OT 831 - Introduction to Assistive Technology Principles
Credits: 2
This course presents an overview of the various assistive technology service delivery models, assessments tools, legislation, funding, and assistive technology across the lifespan.
Grade Mode: Letter Grading

OT 832 - Introduction to Assistive Technology Practices
Credits: 2
This course provides an overview of various service delivery models 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.
Grade Mode: Letter Grading
Special Fee: Yes

OT 833 - 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 and electronic devices. Intensive hands-on AT exploration will be completed on campus or virtual evidence provided will be accepted.
Grade Mode: Letter Grading

OT 834 - 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 835 - 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 836 - 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 841 - 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. This course is writing intensive.
Grade Mode: Letter Grading

OT 844 - 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.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

OT 845 - Administration and Management for Occupational Therapy Practice
Credits: 3
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 and OT Asst Tech Certificate majors only.
Grade Mode: Letter Grading

OT 846 - Fieldwork and Professionalism-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.
Prerequisite(s): (OT 744 with a minimum grade of D- or OT 844 with a minimum grade of D-) and (OT 792 with a minimum grade of D- or OT 892 with a minimum grade of D-).
Grade Mode: Letter Grading

OT 850 - 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.
Grade Mode: Letter Grading

OT 851 - Mind Body Systems/Neurologically-based Function and Dysfunction
Credits: 3
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 prerequisites for courses in specific occupational therapy assessment and intervention. Neurology is required prior to taking this course.
Grade Mode: Letter Grading

OT 852 - Human Movement and Environmental Effects on Everyday Occupations
Credits: 3
Students will integrate their prerequisite knowledge of occupation. The course will develop 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 will be emphasized. The analysis of environment as it relates to human movement and participation in desired occupations will be explored.
Co-requisite: OT 852L
Grade Mode: Letter Grading
Special Fee: Yes

OT 852L - Human Movement and Environmental Effects on Everyday Occupations Lab
Credits: 1
Lab.
Co-requisite: OT 852
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

OT 853 - Mind Body Systems: Neurologically-based Function and Dysfunction--Pediatric Conditions
Credits: 4
This course is the first course in a two-part sequence that uses a life span approach, drawing on occupational science perspectives to study conditions diagnosed during childhood (birth through age 20). 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 in pediatric practice.
Prerequisite(s): KIN 706 with a minimum grade of D-.
Grade Mode: Letter Grading

OT 854 - Level II Fieldwork, I
Credits: 8
This course is a 12-week, full-time internship that takes place after completion of the first graduate year, either in the summer or the fall. Level II fieldwork provides students with opportunities to: experience in-depth delivery of occupational therapy services to clients; focus on the application of purposeful and meaningful occupation and/or research, administration and management of occupational therapy services. Level II fieldwork is designed to promote clinical reasoning and reflective practice, to transmit values and beliefs that promote ethical practice and to develop professionalism and competence as career responsibilities.
Grade Mode: Graduate Credit/Fail grading

OT 855 - Level II Fieldwork Discussion
Credits: 1
OT 855 Level II Fieldwork, I, online discussion is a co-requisite course that accompanies OT 854 and OT 856: Level II Fieldwork. Students respond to instructor-led discussion prompts as well as to postings of their classmates. The online discussion provides the opportunity for students to relate fieldwork experiential learning to all areas of UNH coursework including: mind-body systems, health-and-human systems of care; assessment; intervention; documentation; evidence-based practice; client-centered and occupation-centered practice; and application of research to practice. Students engage in on-going discussion about professional identity and the transition from student to professional as they describe and discuss fieldwork challenges and successes across a variety of practice settings.
Grade Mode: Graduate Credit/Fail grading

OT 856 - Level II Fieldwork, II
Credits: 8
This course is the second 12-week, full-time internship. It takes place after two semesters in the second graduate year. OT 856 provides students with opportunities to evaluate, develop and implement in-depth delivery of occupational therapy services in population-based practice and to focus on research and/or administration and management of occupational therapy services.
Grade Mode: Graduate Credit/Fail grading

OT 857 - 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.
Prerequisite(s): KIN 706 with a minimum grade of D- and (OT 753 with a minimum grade of D- or OT 853 with a minimum grade of D-).
Grade Mode: Letter Grading

OT 860 - 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 860L, OT 860R
Grade Mode: Letter Grading

OT 860L - Psychosocial Evaluation and Intervention Lab
Credits: 1
This is the co-requisite lab for OT 860. 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.
Co-requisite: OT 860
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

OT 860R - 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 860. This recitation allows students the opportunity to develop the skills needed to work in mental/behavioral health settings.
Co-requisite: OT 860
Grade Mode: Graduate Credit/Fail grading

OT 862 - OT Evaluation and Intervention for Children
Credits: 3
Students will gain foundation knowledge of OT evaluation intervention process. Students apply the clinical reasoning process for the evaluation and treatment of children with various conditions, and across age groups. Students learn common assessment tools used by occupational therapists, and how to select and critique evaluation methods. Select cases will be used for the application of knowledge, interventions, and frames of reference used with children.
Co-requisite: OT 862L, OT 862R
Grade Mode: Letter Grading

OT 862L - OT Evaluation and Intervention for Children - Lab
Credits: 1
This is the corequisite lab for OT 862, Evaluation and Intervention for Children. Students develop technical skills in administering evaluation tools, methods and procedures, in making clinical decisions about intervention planning and implementation. Students learn, practice and demonstrate many intervention techniques used with children, and complete a number of clinical case studies.
Co-requisite: OT 862, OT 862R
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

OT 862R - OT Evaluation and Intervention for Children Recitation
Credits: 0
Students hone their professional reasoning abilities and sharpen their observation skills as they provide developmentally appropriate activities with children.
Co-requisite: OT 862, OT 862L
Grade Mode: Graduate Credit/Fail grading

OT 863 - Occupational Therapy Intervention for Adults
Credits: 3
Students gain foundation knowledge of the OT evaluation and intervention process with adults with neurological and orthopedic conditions. Students apply the clinical reasoning process to clinical practice with adults with various types of medical conditions. Students learn about common assessment tools available to occupational therapists for adults, where, when, and how to apply them. Students develop technical skills in administering selected evaluation tools, in integrating assessment data, and demonstrate clinical decisions about intervention planning and implementation. Selected cases are used for application of knowledge, and the course covers the application of common intervention strategies used by occupational therapists with adults.
Co-requisite: OT 863L
Grade Mode: Letter Grading
Special Fee: Yes

OT 863L - Occupational Therapy Evaluation and Intervention for Adults - Lab
Credits: 1
Students develop technical skills in administering selected evaluation tools, in integrating assessment data, and demonstrate clinical decisions about intervention planning and implementation.
Co-requisite: OT 863
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

OT 863R - Adult Evaluation and Intervention Recitation
Credits: 0
Adult Evaluation and Intervention Recitation provides additional hands-on and reflective discussion for acquiring skills needed for acute care/ hospital in-patient settings.
Co-requisite: OT 863
Grade Mode: Not graded

OT 865 - Occupational Therapy Practice and Professional Reasoning
Credits: 3
Develops professional reasoning by building upon level II fieldwork experiences. Students develop a population-based intervention plan, explore occupational therapy in an emerging or specialized practice setting, and implement a plan for continuing professional development. Students prepare for their OT board certification examination, and complete a culminating capstone experience.
Grade Mode: Letter Grading

OT #866 - AMPS Training
Credits: 4
The Assessment of Motor and Process Skills (AMPS) provides a client-centered, occupation-based assessment of a person's ADL ability. The course supports occupation-based intervention. Students learn to reliably administer the AMPS and use it in the context of occupational therapy practice.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

OT 871 - Enabling Participation in Community Groups
Credits: 3
Students will work in an organization, learn about the people served by this organization, conduct therapeutic groups within the organization. Emphasis of content includes group process, clinical documentation, intervention planning and OT services with adults with cognitive impairments.
Grade Mode: Letter Grading
Special Fee: Yes

OT 871L - 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.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

OT 875 - Leadership in Occupational Therapy Systems of Practice
Credits: 3
Students will integrate concepts, principles, and strategies that are fundamental to the provision of occupational therapy services in the changing U.S. health care system. This course links system management, reimbursement mechanisms, and public policy found in occupational therapy practice settings to the populations served. Knowledge of leadership, management, ethics and marketing principles that are necessary for success in today's health care industry are emphasized.
Grade Mode: Letter Grading

OT 881 - 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.
Grade Mode: Letter Grading

OT 882 - 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.
Prerequisite(s): OT 781 with a minimum grade of D- or OT 881 with a minimum grade of D-.
Grade Mode: Letter Grading

OT 883 - Engagement in Research
Credits: 3
Students engage in activities of systematic inquiry and research under the mentorship of a research-active faculty mentor. Students gain experience with aspects of the research process, which may include conducting a literature review, developing a research proposal, data collection, data analysis, writing a research paper, and the presentation of research findings. Students also apply ethics for the use of human participation in research, and learn about funding avenues for different areas of research.
Prerequisite(s): (OT 781 with a minimum grade of D- and OT 782 with a minimum grade of D-) or (OT 881 with a minimum grade of D- and OT 882 with a minimum grade of D-).
Grade Mode: Letter Grading

OT 886 - Engagement in Research
Credits: 3
Students engage in activities of systematic inquiry and research under the mentorship of a research-active faculty mentor. Students gain experience with aspects of the research process, which may include conducting a literature review, developing a research proposal, data collection, data analysis, writing a research paper, and the presentation of research findings. Students also apply ethics for the use of human participation in research, and learn about funding avenues for different areas of research. OT and OT Asst Tech Certificate majors only.
Grade Mode: Letter Grading

OT 887 - Upper Extremity Rehabilitation and Splinting
Credits: 4
This graduate course is designated to expose students to the specialized area of upper extremity rehabilitation including a detailed, working knowledge of hand anatomy, biomechanics, kinesiology, surgical techniques, and splinting in order to effectively treat upper extremity clinical problems. Students also learn about the common diagnoses seen in upper extremity rehabilitation, critically analyze treatment protocols, and precautions for these common diagnoses, and develop splinting and other evaluation and intervention techniques for this population.
Grade Mode: Letter Grading
Special Fee: Yes

OT 888 - Application of Physical Agent Modalities in Occupational Therapy Practice
Credits: 3
This course is designed to instruct occupational therapy students and practicing occupational therapists in proper application of physical agent modality techniques through a physiologically based approach. The course will link the underlying physical and biological principles of PAMS interventions with their use as preparatory methods for enhancement of occupational performance, improving client outcomes when applied in a client centered, occupation based approach.
Prerequisite(s): OT 863 with a minimum grade of D-.
Grade Mode: Letter Grading
Special Fee: Yes

OT 889 - Using iPads to Support Children with Disabilities
Credits: 2
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 890 - Occupational Therapy and Sensory Integration
Credits: 4
This course presents, integrates and applies Ayres sensory integration (SI) theory in the context of occupational therapy for children. Content related to the theoretical constructs upon which sensory integration functions is emphasized. Current views related to sensory processing disorders, diagnostic considerations, patterns of sensory integration dysfunction, and SI deficits commonly associated with disorders such as autism and attention disorders are covered. Intervention planning and implementation are covered through video case studies, and observation and analysis of occupational therapy sessions using SI strategies. Students apply their understanding of normal and abnormal child development, and clinical reasoning skills for providing OT services for children with sensory integration problems in clinical, early intervention and school-based settings.
Prerequisite(s): OT 862 with a minimum grade of D- and OT 862L with a minimum grade of D-.
Grade Mode: Letter Grading

OT 892 - Level I Fieldwork
Credits: 1
During a two-week fieldwork, students observe an occupational therapist and participate in the planning and implementation of the occupational therapy evaluation and intervention process for a client. The Level I Fieldwork placement is scheduled between fall and spring of their first graduate year.
Grade Mode: Graduate Credit/Fail grading

OT 893 - Special Topics
Credits: 2-4
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. Special fee on some topics.
Repeat Rule: May be repeated for a maximum of 12 credits.
Grade Mode: Letter Grading
Special Fee: Yes

OT 895 - Readings and Research in Occupational Therapy
Credits: 1-6
Independent work under the guidance of an instructor. 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.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Letter Grading

OT 901 - Introduction to Capstone
Credits: 2
This is the first course of a three-part course that introduces students to the doctoral capstone experience and project. Students will gain an understanding of the overall purpose and expectations of the doctoral capstone, identify an area of focus for their individual capstone, and begin planning for their doctoral capstone. Students will develop initial ideas for capstone experiences including potential sites or partners for their experience.
Grade Mode: Letter Grading

OT 902 - Capstone Preparation
Credits: 3
The purpose of this course is to operationalize capstone ideas and timelines through program planning. Students will utilize various methods to create and complete a needs assessment that supports the implementation of their doctoral capstone experience. Students will build on the knowledge gleaned throughout the OTD curriculum to plan for their culminating capstone experience in one of six areas: clinical practice skills, research skills, administration, leadership, program and policy development, advocacy, education, and theory development.
Prerequisite(s): OT 901 with a minimum grade of D-.
Grade Mode: Letter Grading

OT 903 - Capstone: Project Implementation, Evaluation and Dissemination
Credits: 12
Students develop and demonstrate leadership and scholarship by implementing a capstone project with an organization that reflects an identified area of need related to occupational therapy practice. Students further synthesize outcomes of their project by demonstrating their understanding of advanced occupational therapy concepts and by disseminating the findings/outcomes from the project as OT scholars. The experience is guided by a learning contract with individualized objectives, and plans for supervision/mentoring, and responsibilities of the student, mentor at the project site, and faculty supervisor. The capstone is a minimum of 14 weeks (560 hours) and no more than 20% of the 560 hours can be completed off site from the mentored practice site.
Prerequisite(s): OT 901 with a minimum grade of D- and OT 902 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

OT 964 - Age Well: Occupational Therapy with Older Adults
Credits: 3
This course is designed to extend the students' knowledge of aging and application of theoretical and practice skills in occupational therapy settings. Lectures on established theories, policies and best practices will be complimented by hands-on learning and focused discussions. Students will plan and implement client centered programming using various approaches, types, and service delivery methods in case-based and simulated scenarios for older adults with various abilities in medical and community-based settings.
Grade Mode: Letter Grading

OT 965 - Occupational Therapy Practice and Professional Reasoning
Credits: 3
This course enables students to reflect, analyze, critique, and build upon their knowledge and experience from level II fieldwork to expand their capacity to provide occupational therapy services to meet individual and population needs in diverse practice settings. Students will consider the profession's history and future to become reflective practitioner to best meet the needs of populations in various settings. A final population-based educational plan will be completed with a designated community partner of need.
Grade Mode: Letter Grading

OT 975 - Leadership in OT Systems of Practice
Credits: 3
Students will integrate concepts, principles, and strategies fundamental to providing OT services in the U.S. health care system and other systems of practice. This course links system management, reimbursement mechanisms, public policy, and population health in OT settings. It focuses on building student knowledge of leadership, management, and ethics that are necessary for success in various OT systems. Students will develop concepts of professional leadership and develop leadership skills that will support them in practice.
Prerequisite(s): (OT 745 with a minimum grade of D- or OT 845 with a minimum grade of D-) and OT 854 with a minimum grade of D- and OT 856 with a minimum grade of D-.
Grade Mode: Letter Grading

OT 983 - Engagement in Research
Credits: 3
In this course, students will engage in activities of systematic inquiry and research, under the mentorship of the course instructor. Students will undertake research projects to better understand the process and apply the knowledge gained from their previous research methods courses to complete a research project involving some or all the aspects of research process: a) data collection; b) data analysis; c) writing up the research findings; and d) presentation of research findings.
Prerequisite(s): (OT 781 with a minimum grade of D- and OT 782 with a minimum grade of D-) or (OT 881 with a minimum grade of D- and OT 882 with a minimum grade of D-).
Grade Mode: Letter Grading

OT 998 - Recent Advances in Neurological Evaluation and Intervention
Credits: 3
This course combines didactic in class experiences paired with collaborative opportunities with community partners to explore how current and emerging neurological clinical practice improves occupational performance. Students will synthesize past theoretical and clinical knowledge with current evidence based literature to prepare them for doctoral level clinical practice.
Prerequisite(s): (OT 752 with a minimum grade of D- or OT 852 with a minimum grade of D-) and (OT 763 with a minimum grade of D- or OT 863 with a minimum grade of D-).
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 817 - Marine Robotics and Applications
Credits: 3
This course covers (lecture/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. Graduate students will be assigned extra project work.
Equivalent(s): ME 817
Grade Mode: Letter Grading

OE 853 - 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; momentum theorem; turbulence and boundary layers are developed with ocean applications.
Prerequisite(s): MATH 527 with a minimum grade of D- and (CEE 650 with a minimum grade of D- or ME 608 with a minimum grade of D-).
Grade Mode: Letter Grading

OE 854 - 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 eave 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. Requires knowledge of calculus-based physics and differential equations.
Equivalent(s): EOS 854
Grade Mode: Letter Grading

OE 857 - Coastal Engineering and Processes
Credits: 3
Introduction to 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. Requires knowledge of fluid dynamics.
Grade Mode: Letter Grading

OE 858 - Design of Ocean Structures
Credits: 3
The foundational information necessary for the design of ocean structures. Topics include 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. Requires knowledge of mechanics of materials, fluid mechanics, differential equations, and ocean waves and tides.
Grade Mode: Letter Grading

OE 864 - 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. Students enrolled at the 800 level provide data for analysis. One year of calculus is required.
Equivalent(s): ESCI 864
Grade Mode: Letter Grading

OE 865 - 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. Requires knowledge of differential equations and college physics.
Grade Mode: Letter Grading

OE 871 - 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. Requires knowledge of calculus and college physics.
Equivalent(s): ESCI 871
Grade Mode: Letter Grading

OE 874 - 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. Progressions through typical configurations involving single beam, sidescan, phase differing and multibeam systems. Integration of asynchronous 3D position, orientation and sound speed measurements with sonar-relative acoustic travel times and angles. Analysis of impact offsets, mis-alignments and latency in all integrated sensors.
Equivalent(s): ESCI 874
Grade Mode: Letter Grading

OE 875 - Advanced Topics in Ocean Mapping
Credits: 4
The second of two courses covering the principles and practices of hydrography and ocean mapping. In this course the following topics are covered: Verification and Field QA/QC, Water Levels (Tides); Mapping Standards; Survey Planning, Execution and Reporting; Terrain Analysis; Optical Remote Sensing; Data Presentation; Seafloor Characterization; Electronic Navigational Charts; Hydrography for Nautical Charting, Product Liability and contracts; and the United Nations Convention for the Law of the Sea (UNCLOS).
Prerequisite(s): (OE 874 with a minimum grade of D- or ESCI 874 with a minimum grade of D-) and MATH 831 (may be taken concurrently) with a minimum grade of D-.
Equivalent(s): ESCI 875
Grade Mode: Letter Grading

OE 892 - Master's Project
Credits: 3
The student works with a faculty member during one or two semesters on a well-defined research and/or original design project. A written report and seminar are presented. IA (continuous grading).
Grade Mode: Graduate Credit/Fail grading

OE 895 - Special Topics
Credits: 1-4
New or specialized courses and/or independent study. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

OE 899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

OE 965 - Advanced Underwater Acoustics
Credits: 3
Focused topics varying from year to year depending on student interests and need. Topics may include one or more of the following: sonar systems engineering; underwater acoustic transducers; volume and surface scattering; underwater acoustic propagation; fisheries acoustics. Spring semester; offered every other year.
Prerequisite(s): OE 765 with a minimum grade of D- or OE 865 with a minimum grade of D-.
Repeat Rule: May be repeated for a maximum of 9 credits.
Grade Mode: Letter Grading

OE 972 - Hydrographic Field Course
Credits: 4
A lecture, lab, and field course on the methods and procedures for the acquisition and processing of hydrographic and ocean mapping data. Practical experience in planning and conducting hydrographic surveys. Includes significant time underway (day trips and possible multi-day cruises) aboard survey vessel(s).
Prerequisite(s): OE 875 with a minimum grade of D- and OE 871 with a minimum grade of D-.
Equivalent(s): ESCI 972
Grade Mode: Letter Grading

OE 990 - Ocean Seminars I
Credits: 1
Various topics, including marine systems design, marine vehicle operation, data collecting and processing, and marine law.
Grade Mode: Graduate Credit/Fail grading

OE 991 - Ocean Seminars II
Credits: 1
Various topics, including marine systems design, marine vehicle operation, data collecting and processing, and marine law.
Grade Mode: Graduate Credit/Fail grading

OE 995 - Graduate Special Topics
Credits: 1-4
Investigation of graduate-level problems or topics in ocean engineering.
Repeat Rule: May be repeated for a maximum of 16 credits.
Grade Mode: Letter Grading

OE 998 - Independent Study
Credits: 1-4
Independent theoretical and/or experimental investigation of an ocean engineering problem under the guidance of a faculty member.
Grade Mode: Letter Grading

OE 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Oceanography (OCE)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

OCE 898 - Directed Research
Credits: 2
Research project on a specified topic in Oceanography, guided by a faculty member. Oceanography M.S. majors only.
Grade Mode: Graduate Credit/Fail grading

OCE 899 - Master's Thesis
Credits: 1-6
Master's thesis research in Oceanography. Oceanography M.S. majors only.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

OCE 999 - Doctoral Research
Credits: 0
Doctoral Research in Oceanography.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Operations Management (OPS) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

OPS 800 - Principles of Operations Management
Credits: 3
The purpose of this elective within the MSPM program is to enable students an opportunity to learn about the functions an operations manager provides and the different purposes of each function. In this course, students will explore the multidisciplinary roles of operations managers including budgetary obligations, performance management, and a variety of objectives to achieve in support of the organization's operational and strategic goals. The course will provide opportunities to integrate functions and processes such as determining resource requirements, risk analyses, and budgets, with similar functions required of an operations manager.
Equivalent(s): OPS 800G
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 805 - Experimental Physics
Credits: 4
Experiments in nuclear, solid-state, and surface physics. Includes discussion of laboratory techniques, data analysis, and data presentation. Special projects assigned to individual students.
Repeat Rule: May be repeated up to 1 time.
Grade Mode: Letter Grading

PHYS 806 - Introduction to Physics Research and Teaching
Credits: 1
This course introduces new graduate students to both research and teaching. The teaching portion focuses on facilitating group work, problem solving, and deeper student thinking. The research portion focuses on research currently conducted at UNH, library resources, responsible conduct in research, how research differs from coursework, and how research results are presented in the research community.
Grade Mode: Graduate Credit/Fail grading

PHYS 810 - 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).
Equivalent(s): EOS 810
Grade Mode: Letter Grading

PHYS 811 - 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.
Prerequisite(s): PHYS 810 with a minimum grade of D-.
Grade Mode: Letter Grading

PHYS 812 - Introduction to Space Plasma Physics
Credits: 4
Introduction to the subject of space plasma physics including solar physics, heliospheric physics, magnetospheric physics, and ionospheric physics. The course provides 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.)
Equivalent(s): EOS 812
Grade Mode: Letter Grading

PHYS 818 - Introduction to Solid-State Physics
Credits: 4
Crystal structure, diffraction, lattice vibrations, electronic and optical properties of metals and semiconductors; selected topics in modern condensed matter physics. Coursework in statistical mechanics and quantum mechanics required. (Normally offered every other year.)
Grade Mode: Letter Grading

PHYS 820 - 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. Introductory coursework in quantum mechanics, electricity and magnetism required.
Grade Mode: Letter Grading

PHYS 864 - 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.)
Grade Mode: Letter Grading

PHYS 895 - Independent Study
Credits: 1-8
Individual project under direction of a faculty adviser.
Grade Mode: Letter Grading

PHYS 899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

PHYS 931 - Mathematical Physics
Credits: 3
Complex variables, differential equations, asymptotic methods, integral transforms, special functions, linear vector spaces and matrices, Green's functions, and additional topics selected from integral equations, variational methods, numerical methods, tensor analysis, and group theory.
Equivalent(s): MATH 931
Grade Mode: Letter Grading

PHYS 935 - Statistical Physics
Credits: 3
Review of thermodynamics and kinetic theory, followed by an introduction to classical and quantum statistical mechanics. Microcanonical, canonical, and grande canonical ensembles; ideal Fermi and Bose gases and applications of statistical mechanics to selected physical problems.
Prerequisite(s): PHYS 931 with a minimum grade of D- and PHYS 939 with a minimum grade of D- and PHYS 943 with a minimum grade of D-.
Grade Mode: Letter Grading

PHYS 939 - Classical Mechanics
Credits: 3
Newtonian, Lagrangian, and Hamiltonian formulation of the classical mechanics of particles and rigid bodies. Topics that serve as background for the study of modern physical theories are emphasized.
Grade Mode: Letter Grading

PHYS 941 - Electromagnetic Theory I
Credits: 3
The formulation and detailed application of electromagnetic theory to physical problems. The material covered is at the level of the text by J.D. Jackson, "Classical Electrodynamics".
Grade Mode: Letter Grading

PHYS 942 - Electromagnetic Theory II
Credits: 3
The formulation and detailed application of electromagnetic theory to physical problems. The material covered is at the level of the text by J.D. Jackson, "Classical Electrodynamics".
Grade Mode: Letter Grading

PHYS 943 - Quantum Mechanics I
Credits: 3
Introduces non-relativistic quantum theory, covering wave mechanics, Dirac notation, angular momentum, the use of perturbation theory to calculate atomic energy levels, the interaction of atoms with radiation, and various approaches to calculating the differential scattering cross-section.
Grade Mode: Letter Grading

PHYS 944 - Quantum Mechanics II
Credits: 3
See description for PHYS 943.
Grade Mode: Letter Grading

PHYS 951 - Plasma Physics
Credits: 3
Kinetic theory of plasmas; plasma waves, instabilities, turbulence, diffusion, adiabatic motion of charged particles, nonlinear plasma phenomena. (Normally offered every other year.)
Prerequisite(s): PHYS 935 with a minimum grade of D- and PHYS 941 with a minimum grade of D- and PHYS 942 with a minimum grade of D-.
Grade Mode: Letter Grading

PHYS 953 - Magnetohydrodyamics of the Heliosphere
Credits: 3
Introduction to solar physics, with emphasis on gas dynamics and magnetic fields. Interior structure, the theory of convection, wave motions in the presence of magnetism and gravity, coronal heating theories, steady and nonsteady flows, dynamo theory, and the theory of solar flares and other transient phenomena. Salient observational data are reviewed. (Normally offered every other year.)
Grade Mode: Letter Grading

PHYS 954 - Heliospheric Physics
Credits: 3
The solar wind and its effects on cosmic rays. The basic equations of the solar wind: mass, momentum, angular momentum, and energy balance. Transport processes. Waves, shocks, and instabilities in the solar wind. The basic equations of energetic particle transport. Solar modulation of solar and galactic cosmic rays. Interaction of energetic particles with shock waves. Salient data are reviewed. (Normally offered every other year.) Also offered as EOS 954.
Equivalent(s): EOS 954
Grade Mode: Letter Grading

PHYS 961 - Advanced Quantum Mechanics I
Credits: 3
Relativistic wave equations, propagator theory and Feynman diagrams, quantum theory of radiation, second quantization, introduction to quantum field theory and related topics. (Normally offered every other year.)
Prerequisite(s): PHYS 939 with a minimum grade of D- and PHYS 944 with a minimum grade of D-.
Grade Mode: Letter Grading

PHYS 962 - Advanced Quantum Mechanics II
Credits: 3
Relativistic wave equations, propagator theory and Fyenman diagrams, quantum theory of Radiation, second quantization, introduction to quantum field theory and related topics.
Grade Mode: Letter Grading

PHYS 965 - Advanced Solid-State Physics
Credits: 3
Theory of crystalline metals, semiconductors, and insulators. Selected topics from the following: surfaces, films, quantum dots, clusters, solid-state devices. (Normally offered every other year.)
Prerequisite(s): PHYS 935 with a minimum grade of D- and PHYS 941 with a minimum grade of D- and PHYS 943 with a minimum grade of D-.
Grade Mode: Letter Grading

PHYS 987 - Magnetospheres
Credits: 3
Introduces plasma of physics of the interaction of solar and stellar winds with planets having internal magnetic fields, most predominately, the Earth. Both MHD and kinetic descriptions of internal and boundary processes of magnetospheres as well as treatment of the interaction with collisional ionospheres. Flow of mass, momentum, and energy, through such systems. (Normally offered every other year.)
Prerequisite(s): PHYS 951 with a minimum grade of D- and PHYS 952 with a minimum grade of D-.
Equivalent(s): EOS 987
Grade Mode: Letter Grading

PHYS 988 - High Energy Astrophysics
Credits: 3
One-semester course on the physical principles underpinning the field of high energy astrophysics. The first part of the course covers the underlying physical concepts, including radiation processes, particle acceleration processes, and accretion physics. The second part of the course includes more detailed discussion of the various astrophysical sources that can generate high energy radiations, including pulsars, X-ray binaries, active galactic nuclei, and gamma-ray bursts. An overview of important aspects of experimental methods is also provided.
Prerequisite(s): PHYS 810 with a minimum grade of D-.
Grade Mode: Letter Grading

PHYS 995 - Special Topics
Credits: 1-3
Any special fields of study not covered by the above courses may be included. Topic choices in previous years: astrophysics; elementary particles; lasers/masers; many-body theory; general relativity and cosmology; group theory; atomic physics; quantum theory of light; nonlinear equations, and chaos. May be repeated barring duplication of subject. (Not offered every year.)
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

PHYS 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Plant Biology (PBIO)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

PBIO #899 - Master's Thesis
Credits: 1-10
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 10 credits.
Grade Mode: Graduate Credit/Fail grading

Political Science (POLT)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

POLT 800 - Political Science Pro-Seminar
Credits: 4
Familiarizes students with political science as a profession. Briefly surveys the scope of the discipline in terms of the substantive fields and methodological approaches. Examines the logic of research design and explores diverse methods of inquiry (e.g., archival, experimental, case study, comparative analysis, field study, survey, etc.), including the process of generating a presentable research paper.
Grade Mode: Letter Grading

POLT 801 - 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.
Grade Mode: Letter Grading

POLT 805 - 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 a campaign season.
Grade Mode: Letter Grading

POLT 809 - 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?.
Grade Mode: Letter Grading

POLT 821 - 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.
Grade Mode: Letter Grading

POLT 840 - 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.
Grade Mode: Letter Grading

POLT 842 - 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.
Grade Mode: Letter Grading

POLT 848 - Food and Wine Politics
Credits: 4
This course investigates the evolution of wine and foods politics over the past few decades. Food and wine politics provides a lens through which to analyze contrasting perspectives on production, markets, quality, consumer preferences, health, and safety. This course draws upon texts from economic history, political economy, economic sociology, and public policy to shed light on the differences and similarities in political and market organization across Europe, the United States, and emerging market economies. The first half of the course will focus on wine politics and the second half of the course will focus on food politics.
Grade Mode: Letter Grading

POLT 850 - 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.
Grade Mode: Letter Grading

POLT 851 - Comparative Environmental Politics and Policy
Credits: 4
Environmental politics and policy across national boundaries and at different levels of governance. Comparisons 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, students will evaluate the claims and explanatory power of various concepts and theories. Includes ethical issues emerging from the theory and practice of environmental politics.
Grade Mode: Letter Grading

POLT 860 - 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.
Grade Mode: Letter Grading

POLT 862 - 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.
Grade Mode: Letter Grading

POLT #865 - 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.
Grade Mode: Letter Grading

POLT 878 - 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.
Grade Mode: Letter Grading

POLT 897B - Seminar in American Politics
Credits: 4
Advanced analysis and individual research.
Grade Mode: Letter Grading

POLT 897C - 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.
Grade Mode: Letter Grading

POLT 897E - 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.
Grade Mode: Letter Grading

POLT #897I - Seminar in Political Thought
Credits: 4
Advanced treatment and individual research.
Grade Mode: Letter Grading

POLT 898B - Seminar in American Politics
Credits: 3
Advanced analysis and individual research.
Grade Mode: Letter Grading

POLT #898F - Seminar in Public Administration
Credits: 3
Advanced analysis and individual research, including opportunities for direct observation of governmental administration.
Grade Mode: Letter Grading

POLT 899 - Master's Thesis
Credits: 4
Each student carries out original research that culminates in a master's thesis.
Repeat Rule: May be repeated for a maximum of 8 credits.
Grade Mode: Graduate Credit/Fail grading

POLT 990 - Internship Capstone
Credits: 4
Field experience in a governmental or nongovernmental organization at the local, state, national, or international level. Students will consult with a faculty mentor to identify an internship experience, and work with the faculty mentor to complete a culminating project synthesizing the internship experience with their prior academic coursework.
Grade Mode: Letter Grading

POLT 995 - Capstone Research Project
Credits: 4
A) American Politics; B) Comparative Politics; C) International Politics; D) Political Thought; E) Public Administration; F) Public Policy. The graduate student engages in independent study under the direction of one of the faculty members of the department.
Equivalent(s): PA #995
Grade Mode: Letter Grading

POLT 996 - Independent Study
Credits: 1-4
A) American Politics; B) Comparative Politics; C) International Politics; D) Political Thought; E) Public Administration; F) Public Policy. The graduate student engages in independent study under the direction of one of the Faculty members of the department.
Repeat Rule: May be repeated for a maximum of 8 credits. May be repeated up to 1 time.
Grade Mode: Letter Grading

Project Management (PM) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

PM 800 - Project Management Seminar
Credits: 3
This is a survey course introducing project management as a profession and an academic field of study. It provides the foundation for more advanced project management courses. It is a prerequisite to other courses in the degree program unless permission is granted. The student is introduced to the Project Management Body of Knowledge, (PMBOK Guide), as well as other international standards. Students will examine key tools and methodologies in use to manage large, complex projects and explore how these tools and techniques can be used to assess the project's overall status, its variance from the project plan and evaluate alternative recovery scenarios. Students will be introduced to the roles of project and program managers in today's enterprise and the tradeoffs they make among triple constraints of scope, time and cost.
Equivalent(s): PM 800G
Grade Mode: Letter Grading

PM 811 - Project Chartering and Planning
Credits: 3
Studies have shown that nearly 75% of commercial projects are deemed to have not met the expectations of their funding sponsors. As professionals committed to effective project management, how do we change this paradigm? In this course, students start by learning how a project charter refines a project idea in a more concrete project narrative. Students develop a project's work breakdown structure and establish a realistic project schedule and budget. Students conduct project risk identification and assessment sessions to evaluate the overall risk posture of the project. Students will define the communications and change control plans.
Prerequisite(s): PM 800 with a minimum grade of B- or PM 800G with a minimum grade of B-.
Equivalent(s): PM 811G
Grade Mode: Letter Grading

PM 813 - Delivering Business Value
Credits: 3
This course provides students insight into the techniques and tools that can be applied to evaluate a project and the project's true status. Students will apply the earned value methodology to determine a project's true status for both schedule and cost in terms of the dollar value of work performed. Students will explore risk management and other techniques used to ensure project success. Within this course, students will have the opportunity to apply the various methods and tools used in a successful project to classroom assignments, in preparation for doing the same within their capstone projects. Students consider how projects can be accomplished within an agile or adaptive project management methodology.
Prerequisite(s): PM 811 with a minimum grade of B- or PM 811G with a minimum grade of B-.
Equivalent(s): PM 813G
Grade Mode: Letter Grading

PM 815 - Negotiation, Contracting, and Procurement
Credits: 3
Outsourcing is becoming more and more critical in todays economic environment making it essential that a project manager in the multi-national marketplace have a firm understanding of the negotiating, contracting and procurement environment and potential pitfalls. This course will address the interdependence of the make-or-buy decision-making process and the success of many projects in terms of risk management as well as achieving acceptable financial goals. Students will explore contracting pitfalls by addressing and proving an understanding of the key factors, regulations, and vocabulary which are critical for the project manager to be able to employ in their business dealings with contracting and legal departments.
Prerequisite(s): (PM 800 with a minimum grade of B- or PM 800G with a minimum grade of B-) and (PM 811 with a minimum grade of B- or PM 811G with a minimum grade of B-) and (PM 813 with a minimum grade of B- or PM 813G with a minimum grade of B-).
Equivalent(s): PM 815G
Grade Mode: Letter Grading

PM 817 - Managing Project Portfolios
Credits: 3
This course addresses the processes and techniques used in the strategic management of project portfolios. Students examine the decision-making tools, techniques, and rationale used to reach consensus for funding specific programs and projects and to bring them into the tactical layer for execution. Students will study various objective methodologies, benefit measurement techniques as well as market analytics, competitive analysis, and market driven approaches. Strategic planning and management, and its link to Project Portfolio Management, will also be discussed during this course. Students identify their capstone project and create the associated Proposal/Business Case and Project Charter.
Prerequisite(s): PM 813 with a minimum grade of B- or PM 813G with a minimum grade of B-.
Equivalent(s): PM 817G
Grade Mode: Letter Grading

PM 819 - Total Quality Management
Credits: 3
A sound quality management strategy and plan are critical in today's complex business organizations and projects. Students in this course will review the history of quality efforts from Deming, Juran and Crosby in the setting of the original quality efforts, international competition, and the concept of Six-Sigma as initiated by the Motorola Corporation in response to that competition. The use of the Baldrige Excellence Framework for designing, implementing, and improving project and organizational practices that influence quality will be explored. Students will examine multiple specific process improvement approaches they could apply within their organizational / project quality plans, approaches such as preventions over Inspection and continuous Improvement of processes.
Equivalent(s): PM 819G
Grade Mode: Letter Grading

PM 820 - Introduction to Lean Management
Credits: 1
A knowledge of lean management and how it enhances business operations is required for today's project managers and operational managers. In this introductory course, students will explore the concepts and principles associated with lean management approaches. Through the study of actual lean implementations, students will develop an understanding of the relationship between lean management and agile management.
Equivalent(s): PM 820G
Grade Mode: Letter Grading

PM 821 - Introduction to Theory of Constraints
Credits: 2
In this 2-credit introductory course, students will develop an understanding of the concepts and principles associated with the Theory of Constraints and Critical Chain thinking. We will explore the proposition that project managers should focus on those activities that are resource-constrained as opposed to the project's critical path when monitoring project progress. We will analyze case studies that test and extend these ideas in real-world scenarios. Through the review of these case studies, students will develop an understanding of the principles associated with the theory of constraints, critical chain approaches, and how they might be used within project management.
Equivalent(s): PM 821G
Grade Mode: Letter Grading

PM 850 - Project Management Integrative Capstone
Credits: 3
This integrative capstone is the final course in the Master of Science in Project Management program. All other required coursework must have been completed prior to receiving approval to register for this course. Students in this course will have the opportunity to apply the principles learned to the entire program of study and will demonstrate competence by integrating and applying those skills to a real-world scenario. Students will apply knowledge in a group case study setting while documenting the decision-making process, and will analyze methodologies and rationale for selecting those methodologies in a project log including templates designed and used, case study analytical results, and decision outcome analysis/results.
Equivalent(s): PM 850G
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 805 - Research Methodology and Statistics I
Credits: 4
A consideration of research techniques and problems of methodology in psychology. The first semester stresses the principles of statistical inference, correlational approaches, and their interrelatedness in design. Topics considered include probability theory, linear regression, function-free prediction, the theory underlying statistical inference, parametric and nonparametric tests of significance, and principles of analysis of variance. The second semester extends correlational approach to the techniques and methodology of multiple regression and considers the appropriate use and theoretical bases of complex designs.
Grade Mode: Letter Grading

PSYC 806 - Research Methodology and Statistics II
Credits: 4
A consideration of research techniques and problems of methodology in psychology. The first semester stresses the principles of statistical inference, correlational approaches, and their interrelatedness in design. Topics considered include probability theory, linear regression, function-free prediction, the theory underlying statistical inference, parametric and nonparametric tests of significance, and principles of analysis of variance. The second semester extends correlational approach to the techniques and methodology of multiple regression and considers the appropriate use and theoretical bases of complex designs.
Grade Mode: Letter Grading

PSYC 894 - Advanced Research
Credits: 4 or 8
Student designs and conducts original research that culminates in a paper of publishable quality. Completion of either this course or PSYC 899 satisfies the department's research requirement for the master's degree. May be taken for 4 credits per semester in each of two semesters or 8 credits in one semester.
Repeat Rule: May be repeated for a maximum of 8 credits.
Equivalent(s): PSYC 899
Grade Mode: Graduate Credit/Fail grading

PSYC 899 - Master's Thesis
Credits: 4 or 8
Master's Thesis. Four credits per semester in each of two semesters or 8 credits in one semester.
Repeat Rule: May be repeated for a maximum of 8 credits.
Equivalent(s): PSYC 894
Grade Mode: Graduate Credit/Fail grading

PSYC 901 - Graduate Pro-seminar
Credits: 0
Students and graduate faculty in psychology meet periodically for a mutual exchange on current issues in psychology.
Grade Mode: Graduate Credit/Fail grading

PSYC 902 - Graduate Pro-seminar
Credits: 0
Students and graduate faculty in psychology meet periodically for a mutual exchange on current issues in psychology.
Grade Mode: Graduate Credit/Fail grading

PSYC 904 - First-year Graduate Seminar
Credits: 4
Coverage of fields of psychology represented in the department's graduate program and taught in the department's introductory psychology course that psychology graduate students teach during their third year in the program. Course is focused on providing common background among students when they enroll in advanced graduate seminars and on assuring they have certain foundational knowledge when they begin to teach the introductory psychology course. Course is required of all first-year psychology graduate students in fall semester. Taught in seminar format. PSYC majors only.
Grade Mode: Letter Grading

PSYC 907 - Research Methods and Statistics III
Credits: 4
The application of multivariate methods of data analysis in psychological research: multiple regression, analysis of covariance, Hotelling's T2 multivariate analysis of variance, path analysis, discriminant functions, canonical correlation, factor analysis.
Grade Mode: Letter Grading

PSYC 914 - Advanced Seminar in Cognition
Credits: 4
An in-depth examination of one or more specific topics in cognition including issues in memory, attention, the use and development of language, and cognitive science. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

PSYC 933 - Advanced Seminar in Physiological Psychology
Credits: 4
In-depth examination of a specific topic in the neurosciences. Topics vary depending on interests of instructor and students. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

PSYC 945 - Advanced Seminar in Behavioral Analysis
Credits: 4
Current empirical and theoretical issues in the analysis of behavior.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

PSYC 954 - Advanced Seminar in Social Psychology
Credits: 4
Intensive coverage of the experimental and theoretical literature in a selected area of basic or applied social psychology. Students participate directly in the conduct of the seminar by means of individual topical discussions, development and/or execution of research designs, and critical assessment of the current state of the topic area under discussion. Illustrative topics: political behavior, para-linguistics and non-verbal communication, ethnic and racial prejudice, and environmental psychology. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

PSYC 982 - Advanced Seminar in Developmental Psychology
Credits: 4
In-depth analysis of one or several specific topics or issues in developmental psychology. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

PSYC 991 - Practicum and Seminar in the Teaching of Psychology
Credits: 6
Practicum offers the student an opportunity to teach introductory psychology under close supervision from the staff. The seminar is coordinated with this experience and focuses on both practical and theoretical issues of significance in the teaching/learning process at the college level.
Grade Mode: Letter Grading

PSYC 992 - Practicum and Seminar in the Teaching of Psychology
Credits: 6
Practicum offers the student an opportunity to teach introductory psychology under close supervision from the staff. The seminar is coordinated with this experience and focuses on both practical and theoretical issues of significance in the teaching/learning process at the college level.
Grade Mode: Letter Grading

PSYC 995 - Reading and Research
Credits: 1-4
A) Cognition/Psycholinguistics; B) Developmental Psychology; C) History and Theory of Psychology; D) Learning and Behavior Analysis; E) Personality/Psychopathology; F) Physiological Psychology; G) Sensation/Perception; H) Social Psychology; I) Statistics/Methodology. As part of the development as an independent scholar, the student is encouraged to plan (1) broad reading in an area; (2) intensive investigation of a special problem; or (3) experimental testing of a particular question. Requires approval of both adviser and faculty member directing project. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

PSYC 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Public Administration (PA)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

PA 800 - Foundations and Theories of Public Administration
Credits: 3
Introduction to essential aspects of public and non-profit administration. Critical concepts and theoretical bases; operational nature of public and non-profit administration; contributions of key scholars and practitioners to the study and understanding of public and non-profit administration.
Grade Mode: Letter Grading

PA #801 - Courts and Public Policy
Credits: 3
Impact of judicial decisions on public policy and influences on judicial decision making at the federal, state, and local levels. Also listed as POLT 801.
Equivalent(s): POLT 801
Grade Mode: Letter Grading

PA 802 - Grant-writing for Public and Non-profit Sectors
Credits: 3
This class provides students with a comprehensive overview of the process for writing proposals for grant funding. Students will learn to research funding opportunities and write the various sections of a funding proposal. Students will learn the differences in seeking grants from foundation, corporate, and government funders will be explored. In addition to individual projects, the class will work as a group to research, write, and submit a funding proposal for a nonprofit or municipal government program.
Equivalent(s): POLT 802
Grade Mode: Letter Grading

PA #803 - Performance Management in Public and Non-Profit Organizations
Credits: 3
This course will explore a major aspect of public management, an advanced management tool that can help managers gain efficiencies and increase accountability. Theoretical foundations and practical applications of performance measurement and management techniques will examine how managers, government and non-profit, might utilize performance measurement to make budgetary decisions and improve organizational performance.
Equivalent(s): POLT 803
Grade Mode: Letter Grading

PA 804 - Policy and Program Evaluation
Credits: 3
Policy and program evaluation of federal, state, and local governmental enterprise; focuses on the politics, practices, and methods of evaluative investigation. Evaluation as a technique for providing rational information for budgetary and policy-making decisions.
Equivalent(s): POLT 804
Grade Mode: Letter Grading

PA 805 - Introduction to Statistical Analysis
Credits: 3
Quantitative research, design and analysis methodology, and techniques for political science and public policy and administration.
Equivalent(s): PA 905
Grade Mode: Letter Grading

PA #806 - State and Local Government
Credits: 3
Advanced study of powers, politics, political cultures, and constitutional settings of American state and local government. Also listed as POLT 806.
Equivalent(s): POLT 806
Grade Mode: Letter Grading

PA #807 - Federalism and Intergovernmental Relations
Credits: 3
This course will familiarize students with federalism and intergovernmental relations including conceptual/historical foundations, theoretical approaches, policy networks, and contemporary issues and challenges. Historic and current issues in federalism, political and policy challenges facing the three levels of government, and government's efforts to be responsive to citizens' needs and demands will be examined. By the end of the course, students will have developed solid comprehension of how intergovernmental relations impact policy decision making and delivery in the public and non-profit sectors. Also listed as POLT 807.
Equivalent(s): POLT 807
Grade Mode: Letter Grading

PA 808 - Administrative Law
Credits: 3
Examines the legal rules governing regulatory agencies, in the US. Topics include regulatory adjudication and rulemaking, legislative and executive control over administrative agencies, judicial review and public participation. Course examines federal and state levels of government.
Equivalent(s): POLT 808
Grade Mode: Letter Grading

PA 809 - Organization and Management in Public and Non-profit Sectors
Credits: 3
Introduction to key actors, theories, and concepts in the fields of organizational theory and behavior.
Equivalent(s): PA 909
Grade Mode: Letter Grading

PA 812 - Leadership Theory and Practice
Credits: 3
Exploration of the major theoretical approaches to leadership, including students' and others' leadership skills, styles, roles, and practices. Students will refine their own conceptual and practical approaches to leadership in a variety of settings.
Equivalent(s): POLT 812
Grade Mode: Letter Grading

PA 813 - Human Resource Management in Public and Non-profit Sectors
Credits: 3
Examination of the administration, politics, and strategies of effective public human resource management.
Equivalent(s): PA 912
Grade Mode: Letter Grading

PA 814 - Financial Management and Budgeting in the Public Sector
Credits: 3
Analysis, goal setting, and strategic planning in a governmental setting, with particular emphasis on budgetary processes as a means for controlling policy effectiveness.
Equivalent(s): PA 914
Grade Mode: Letter Grading

PA #815 - Art of Negotiation
Credits: 3
Identification, analysis, evaluation and application of effective communication and negotiation skills. Course will include case studies and simulation/role-playing exercises.
Equivalent(s): POLT 815
Grade Mode: Letter Grading

PA 816 - Public Management Techniques
Credits: 3
Introduction to analytic decision-making and planning techniques applicable to public sector management.
Equivalent(s): PA 911
Grade Mode: Letter Grading

PA #817 - Legal and Policy-Making Environment on Public and Non-Profit Sectors
Credits: 3
Through the use of case studies, analysis and assessment of legal, institutional, social, political and economic settings within public and non-profit sectors.
Equivalent(s): PA 907
Grade Mode: Letter Grading

PA 818 - Non-Profit Management
Credits: 3
Introduction to governance and management in the non-profit sector: finance, development, personnel management, strategic planning, and risk management.
Grade Mode: Letter Grading

PA 819 - Managing Conflict and Change in Nonprofit and Public Organizations
Credits: 3
Change and conflict are inherent in any organization or community and affect personal and group dynamics and effectiveness. This course will explore the sources of conflict through the lenses of the individual, organizations/teams, and communities. We'll look at the influences of power and cultural shifts; changes in resources, organizational structure and leadership, and changes in demographics and group composition, and stakeholder expectations.
Grade Mode: Letter Grading

PA 820 - Strategic Communications for Public and Non-profit Sectors
Credits: 3
Effective communication reflects the organization's vision, mission, and values and advances organizational objectives. Effective communication reflects a clear understanding of internal and external stakeholders' needs, motivators and interests. The course will explore the elements of communication and effective strategies and tools used in the public and nonprofit sectors to engage, educate, and inform constituents and stakeholders. The result is improved constituent relations, strengthened collaborative relationships, and improved organizational and crisis management.
Grade Mode: Letter Grading

PA 821 - Effective Change Management in Nonprofit and Public Organizations
Credits: 3
This course explores the growing complexity within nonprofit and public sector organizations and the need for today's leaders to successfully lead their organization in meeting changing demands. Theory and practice related to change and change management are pursued from a scholar practitioner perspective. Leadership practice as well as the phenomenon of organizational culture provide a lens for pursing efficacy in change management. Students are provided with an opportunity to apply course material to their professional practice as well as explore skills that will assist them in their future endeavors.
Grade Mode: Letter Grading

PA 897F - Seminar in Public Administration
Credits: 3
Advanced analysis and individual research, including opportunities for direct observation of governmental administration.
Equivalent(s): PA 898F, POLT 897F
Grade Mode: Letter Grading

PA 898F - Seminar in Public Administration
Credits: 3
Advanced analysis and individual research, including opportunities for direct observation of governmental administration.
Equivalent(s): PA 897F, POLT #898F
Grade Mode: Letter Grading

PA 908A - Capstone in Public Administration
Credits: 3
Capstone in Public Administration; In-Service.
Equivalent(s): POLT 908A
Grade Mode: Letter Grading

PA #908B - Capstone in Public Administration
Credits: 6
Capstone in Public Administration; Pre-Service.
Equivalent(s): POLT 908B
Grade Mode: Letter Grading

PA #995 - Independent Study
Credits: 1-3
A) American Politics; B) Comparative Politics; C) International Politics; D) Political Thought; E) Public Administration; F) Public Policy. The graduate student engages in independent study under the direction of one of the faculty members of the department.
Equivalent(s): POLT 995
Grade Mode: Letter Grading

Public Health (PHP)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

PHP 900 - Public Health Care Systems
Credits: 3
The focus of this course is on the pattern of services in the United States and on the structure and function of their component parts. It examines the impact on the system of a wide range of external factors including social, political, economic, professional, legal, and technological forces.
Equivalent(s): HMP 960A
Grade Mode: Letter Grading

PHP 901 - Epidemiology
Credits: 3
Exploration of factors underlying the distribution and determinants of states of health in various human populations. Emphasis is placed on investigative techniques, epidemiologic methodology, and disease prevention.
Prerequisite(s): PHP 900 with a minimum grade of B-.
Equivalent(s): HMP 960B
Grade Mode: Letter Grading

PHP 902 - Environmental Health
Credits: 3
This course offers a general introduction to the ecological basis of health and disease. It applies the principles and framework of ecosystems to human health problems associated with environmental hazards, including toxic and infectious agents that contaminate our air, water, food, the work place and other special environments. Links between environmental and occupational health effects will be explored within the public health model. Policy required for regulation and alternative strategies for prevention will be discussed.
Equivalent(s): HMP 960C
Grade Mode: Letter Grading

PHP 903 - Biostatistics
Credits: 3
This course introduces students to the principles of biostatistics. Students learn through classroom instruction, lab instruction and exercises, a variety of statistical methods in public health. Students review measures of central tendency, rates, and standardization, probability, sampling, hypothesis testing, comparisons, and simple, multiple and logistic regression techniques. Unlike other core courses in the MPH Program which are 8 weeks in length, this course is 16 weeks in length.
Equivalent(s): HMP 960D
Grade Mode: Letter Grading

PHP 904 - Social and Behavioral Health
Credits: 3
A graduate level course which provides fundamental concepts of the behavioral sciences as they illuminate public health. Since public health practice is the application of physical, biological and behavioral knowledge to living societies, a firm understanding of human social organization and behavior is essential. 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 960F
Grade Mode: Letter Grading

PHP 905 - Public Health Administration
Credits: 3
This course focuses on public health managers, organizational culture, management process, management functions and roles, leadership, motivation, communication, and human resource management.
Equivalent(s): HMP 960E
Grade Mode: Letter Grading

PHP 906 - Public Health Finance and Budgeting
Credits: 3
This course introduces and develops the financial concepts, financial management and budgeting tools important for managing public health organizations, including utilizing financial statements, basic accounting conventions, the process of developing and managing a programmatic budget, grant submission and management, and resource allocation. Questions, problems, and case studies will be used to reinforce discussions, develop, and utilize problem-solving skills to apply to real world situations. Cannot earn credit if credit receive for PHP 985A Special Topic: Financial Resource Mgt.
Prerequisite(s): PHP 900 with a minimum grade of D-.
Grade Mode: Letter Grading

PHP 907 - Public Health Policy
Credits: 3
An analysis of the public policy process, the development of public health policy in the United States, and a discussion of specific public health policy issues with international comparisons. This course begins with an analytical framework for analyzing the American political system and process. It is followed by a general introduction to health policy in the United States with examples of specific policies and programs. Students will be asked to examine specific public health policy in-depth.
Equivalent(s): HMP 960H
Grade Mode: Letter Grading

PHP 908 - Public Health Ethics
Credits: 3
This course examines selected ethical issues arising in public health policy and practice and ethical dilemmas faced by public health professionals, practitioners, and researchers. Students analyze competing personal, organizational, professional, and societal interests, values, and responsibilities. Case studies apply different models of ethical decision making and provide MPH students with an added opportunity to explore and clarify their values and those of their colleagues.
Grade Mode: Letter Grading

PHP 912 - Public Health Law and Negotiation
Credits: 3
This course will provide an overview of legal systems as they relate to public health by addressing the legal basis needed to practice public health, enforce compliance with public health regulations, manage public health programs, and organizations. Core elements will be introduced such as, elements of law, legal practice, reasoning, negotiation, and their applications with public health, i.e., limitation and authority of state governments and agencies in matters affecting the publics' health will be discussed.
Prerequisite(s): PHP 900 with a minimum grade of D-.
Grade Mode: Letter Grading

PHP 922 - Public Health Economics
Credits: 3
This course gives each student a hands-on opportunity to become familiar with a broad range of health economics issues and analyses. The objective is to help its graduates successfully compete for advancement in careers requiring knowledge of health policy analysis.
Grade Mode: Letter Grading

PHP 924 - Policy and Practice of Community Health Assessment
Credits: 3
This course explores the process of community health assessment as a tool for bridging the gap between public health and the personal health care system. It provides an historical perspective of using population based measurements as a framework for health improvement initiatives. It examines several community health assessment methodologies and explores the complexity of developing a community-based health assessment.
Grade Mode: Letter Grading

PHP 926 - Evaluation in Public Health
Credits: 3
An introduction to program evaluation as it relates to public health practice and research, primarily in the United States. Public health-specific examples are presented throughout the course. Includes discussion of striking a balance between scientific rigor and the practicalities often faced by program evaluators.
Grade Mode: Letter Grading

PHP 934 - Work Environment Policy and the Health of Workers
Credits: 3
Overview of occupational safety and health policy in the U.S. Focus on the legal context, especially on OSHA, and provides an analytical framework for examining the role of social, economic, and political factors in the recognition and control of occupational hazards. Some attention to the more technical aspects of this field (e.g., industrial hygiene, ergonomics, general health and safety); emphasis on understanding current occupational health and safety policies and controversies.
Grade Mode: Letter Grading

PHP 985A - Special Topics in Policy and Management
Credits: 1-3
Study of a special topic in Public Health Policy and Management.
Repeat Rule: May be repeated for a maximum of 3 credits.
Grade Mode: Letter Grading

PHP 990 - Field Study
Credits: 3
This course provides a 16-week long opportunity for students to synthesize, integrate, and apply the skills and competencies they have acquired during enrollment in the MPH Program and apply them to a public health problem or project in a professional public health practice setting. Students are expected to spend a minimum of 40 hours in the organization (not including preparation time) exploring how that organization deals with a particular public health issue and working on a project for that organization. In addition, students present the findings of their work in a poster session following the conclusion of the course. This public health experience is conducted under the direction of a faculty member and a community public health mentor. This class meets one hour prior to the regularly scheduled core and elective courses in the MPH Program.
Grade Mode: Letter Grading

PHP 995 - Independent Study
Credits: 1-3
Directed readings and other activities to explore a specific topic related to public health.
Repeat Rule: May be repeated for a maximum of 3 credits.
Grade Mode: Letter Grading

PHP 998 - Integrating Seminar
Credits: 3
This final course in the MPH curriculum serves as the capstone to the MPH degree and provides the opportunity for students to work in teams, bringing both their individual and joint perspectives and expertise, to address a particular public health problem for a New Hampshire-based public health entity. This course incorporates substantive, analytical, administrative, and policy perspectives. Students make a formal presentation of recommendations at the conclusion of the course. This class meets one hour prior to the regularly scheduled core and elective courses in the MPH Program.
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 806 - Fundamentals of Policy Analysis
Credits: 3
An introduction to public policy analysis and the role of rigorous research in the policymaking process. Fundamentals of the policymaking process; evaluation and design of research to inform policy decisions; effective team work to analyze issues and make policy recommendations; writing and speaking effectively to policymakers; analysis of research briefs and articles to evaluate the validity of their designs, conclusions, and potential use to policymakers.
Equivalent(s): PPOL 906
Grade Mode: Letter Grading

PPOL 810 - Policy Across Borders
Credits: 3
Analysis of what we learn about policy, its outcomes and the research and analysis on which it is based, by comparing policies and outcomes across national borders and other jurisdictions. Students explore how institutional structures affect the influence of scientific and technical data and knowledge across different institutional contexts, and how and why political actors "venue shop" for organizations they deem more likely to afford them the influence and policy-making outcomes they seek.
Grade Mode: Letter Grading

PPOL 812 - Strategies for Policy Impact
Credits: 3
How to develop and implement strategies that drive policy change. Students will learn how to analyze approaches to changing policy and then evaluate the most viable option for specific circumstances. Students will review different influence models, discuss which ones work best in varying situations and identify how influence models connect to policy campaigns. Students will review current campaigns, learn central elements of a successful campaign to change public policy, and create their own campaign plans.
Equivalent(s): PPOL 912
Grade Mode: Letter Grading

PPOL 822 - Media Strategy and Skills
Credits: 3
Designed to equip students with the skills they will need as practitioners to advance public policy goals through the development and execution of responsive communications strategy. Students will gain an understanding of the media landscape and trends in journalism; how to identify media opportunities and target audiences; how to write to successfully communicate to various audiences; and basic skills to prepare for and give effective interviews to communicate policy messages.
Grade Mode: Letter Grading

PPOL 897 - Advanced Special Topics
Credits: 3
Occasional or experimental offerings.
Repeat Rule: May be repeated for a maximum of 6 credits.
Equivalent(s): PPOL 997
Grade Mode: Letter Grading

PPOL 902 - Strategy and Practice of Public Policy
Credits: 3
Introduces students to the real world of United States public policymaking while developing their skills as participants in the policymaking industry. It is structured around a set of case studies of current or recently resolved policy issues as well as a set of readings addressing how policy is made in general. Each student will pick a policy issue and will be required to produce a full set of written work on that issue.
Grade Mode: Letter Grading

PPOL 904 - Economics for Public Policy
Credits: 3
Provides an overview of how economics can be used to analyze and design public policy. Basic analytical skills used in economic modeling, and supplication to specify policy areas and problems. At the end of the course, students will be able to use basic economic models to analyze policy problems. They will also be able to understand how market mechanisms work, when free markets perform well and when government intervention may improve outcomes.
Grade Mode: Letter Grading

PPOL 908 - Quantitative Methods for Policy Research
Credits: 3
Provides an overview of basic quantitative analysis techniques that are common in public policy analysis. Students will be trained to design high quality research and conduct statistical analyses. By the end of the course, students will be able to carry out basic statistical analyses, evaluate the statistical analyses in research reports and journal articles, and communicate clearly the results of analyses to both professional and general audiences.
Grade Mode: Letter Grading

PPOL 950 - Washington DC Colloquium
Credits: 3
This intensive January-Term course focuses on practical skill building and experiential learning related to policy-making. The goals are: (i) familiarize students with public policy institutions and career paths across multiple sectors (e.g., government, non-profit organizations, think-tanks, research institutes, organizations that do international work); (ii) connect students to working professionals for networking and career-building opportunities; (iii) provide opportunities to interact with and question Washington, DC professionals, beginning to socialize students as public policy professionals.
Grade Mode: Letter Grading

PPOL 990 - Policy Capstone
Credits: 3
Designed for students to demonstrate the integration of their learning experiences in the program. The final product will be a written report/paper and an oral presentation. Capstone projects will be completed under the direction of faculty mentors and outside experts. The purpose of the capstone is a demonstration of student capabilities and an opportunity to work with expert mentors aimed at enhancing post-graduation employment choices. There will be a capstone forum in which students will present their work to Carsey MPP faculty and students.
Grade Mode: Letter Grading

PPOL 990A - Policy Capstone Planning
Credits: 1
One credit course to identify and plan for the Policy Capstone. To be taken in the second semester of the first year for full-time students. Topics to be covered in group meetings include description of a research or project prospectus, samples of capstone projects, and responsible conduct of research. Students will complete UNH training offered by the IRB and will learn about the IRB approval process. The final product is a prospectus for the capstone project, to be presented in writing and orally to MPP faculty and students.
Grade Mode: Letter Grading

PPOL #995 - Reading and Research
Credits: 3
Independent study under the direction of a Carsey faculty member. Requires approval of the advisor and curriculum committee. May be repeated for credit.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

PPOL 996 - Reading and Research
Credits: 3
Independent study under the direction of a Carsey faculty member. Requires approval of the advisor and curriculum committee. May be repeated for credit.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

PPOL 998 - Policy Internship
Credits: 3
Actual experience in a policy setting. In some cases this will be a credit-bearing internship, supervised by a faculty member who will provide the academic structure to parallel the applied experience. In other cases a policy internship may not be appropriate for academic credit; in such cases the internship experience fulfills the requirement but does not provide credits. Carsey faculty will provide guidance and oversight for these internships as well.
Grade Mode: Graduate Credit/Fail grading

PPOL 998A - Policy Internship
Credits: 0
Actual experience in a policy setting. 998A is the noncredit internship. The internship experience fulfills the requirement but does not provide credits. Carsey faculty will provide guidance and oversight for these internships as well.
Grade Mode: Graduate Credit/Fail grading

Recreation Management & Policy (RMP)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

RMP 800 - Concepts of Recreation and Leisure
Credits: 3
An overview of historical and philosophical perspectives of the play, recreation, therapeutic recreation, and park and natural resource conservation movements. Students examine recreation leisure and recreation resources in contemporary society, particularly in the context of the development of social capital. Includes leisure values and ideals, the emergence and evolution of "free time" diversity, and public policy implications.
Grade Mode: Letter Grading

RMP 805 - Management and Policy in Therapeutic Recreation
Credits: 3
Students acquire knowledge of current principles and procedures for assuming an administrative role in the therapeutic recreation profession. Includes issues and practices related to supervision, reimbursement, quality improvement programs, consultation, marketing, and more.
Grade Mode: Letter Grading

RMP 806 - Recreation Administration and Organizational Behavior
Credits: 3
The organization and administration of public, private, and not-for-profit recreation agencies. The primary unit of analysis in this class is the recreation organization and the environment in which it operates. Emphasis is placed on organization, management, marketing, and financing applications, theories, and research.
Prerequisite(s): RMP 800 with a minimum grade of D-.
Grade Mode: Letter Grading

RMP 811 - Recreation Resource Management
Credits: 3
An examination of the supply and demand of natural resources for outdoor recreation uses, with emphasis on relationships between public and private roles and responsibilities. Historical, social, and environmental impacts of outdoor recreation use are discussed. Current principles and techniques of recreation resource planning and management are outlined.
Grade Mode: Letter Grading

RMP 820 - Adaptive Sport Facilitation for Recreation Therapy and Related Professions
Credits: 3
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 824 - Research, Evaluation, and Data-Driven Decisions
Credits: 3
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.
Grade Mode: Letter Grading

RMP 840 - Therapeutic Recreation Service Delivery in Community Settings
Credits: 3
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 standards to reflect practice in community settings including schools, municipal recreation organizations, and community health program. 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.
Grade Mode: Letter Grading

RMP 872 - Law and Public Policy in Leisure Services
Credits: 3
Topics including an overview of the nature of law and U.S. legal systems; the law of torts, contracts, civil liberties and rights; risk management and legal research are addressed in the context of recreation services and resources. Public policy and professional advocacy implications are examined as related to legislative and decisional systems.
Prerequisite(s): RMP 800 with a minimum grade of D-.
Grade Mode: Letter Grading

RMP 875 - Entrepreneurial and Commercial Recreation
Credits: 3
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. This course is designed to examine commercial recreation from both a macro and micro perspective. This multi-level approach helps prepare students to write a viable business plan for their own commercial recreation enterprise.
Grade Mode: Letter Grading

RMP 876 - Human Dimensions of Natural Environments
Credits: 3
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.
Grade Mode: Letter Grading

RMP 899 - Master's Thesis
Credits: 3
A graduate level statistics and graduate level methods course.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

RMP 912 - Non-Profit Administration and Leadership
Credits: 3
An overview of the creation, management, and administration of non-profit organizations and businesses. Examines legal requirements for charter and incorporation by state law and Federal guidelines from the Internal Revenue Service. Current trends and issues in non-profit sector business are explored and a survey of the wide diversity of non-profit sector organizations is included. Since a high percentage of recreation agencies are incorporated as non-profit organizations, specific applications are made to the field of leisure and recreation.
Prerequisite(s): (RMP 800 with a minimum grade of D- and RMP 805 with a minimum grade of D-) or RMP 806 with a minimum grade of D-.
Grade Mode: Letter Grading

RMP 924 - Fund Development and Grantwriting
Credits: 3
Students develop an understanding of the meaning of philanthropy, its importance in society, and its integral relationship to the fund development process. The social context for philanthropy, development, and fund raising and the changing practices for non-profit leadership are addressed. Presents and evaluates strategies and communication tools used to support fund development goals. Students develop abilities in grant writing, requesting major donor support, structuring annual giving campaigns, and establishing special events.
Prerequisite(s): RMP 800 with a minimum grade of D-.
Equivalent(s): SW 957
Grade Mode: Letter Grading

RMP 963 - Graduate Field Practicum
Credits: 2
This course is designed to provide RMP graduate students with a supervised, professional field experience in an approved recreation, park, tourism, or health and human service agency. Students will conduct a 100-hour field practicum experience and complete academic assignments.
Grade Mode: Graduate Credit/Fail grading

RMP 964 - Graduate Internship
Credits: 3
Supervised, professional administrative work experience in an approved recreation, park, tourism, or health care agency. Students participate in a 14-week 560-hour internship experience after receiving approval from their academic adviser and the internship coordinator.
Prerequisite(s): (RMP 800 with a minimum grade of D- and RMP 805 with a minimum grade of D-) or RMP 806 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

RMP 970 - Teaching Practicum
Credits: 3
Students work with a faculty mentor to investigate, observe, and practice teaching methods and learning theory. Includes the various instructional technologies as tools to enhance the teaching/learning process. The Teaching Practicum is designed for students who wish to assume part-time or adjunct University teaching positions upon completion of the Master's degree or who see themselves pursuing a future doctoral degree with higher education as a career goal.
Prerequisite(s): RMP 800 with a minimum grade of D-.
Grade Mode: Letter Grading

RMP 980 - Independent Study
Credits: 1-3
Independent Study.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading

RMP 992 - Research Methods in Recreation Management and Policy
Credits: 3
This research methods course focuses on the research literature, tools, and methods used in the field of parks, recreation, & leisure studies. The course covers various research and evaluation techniques and methods, including quantitative, qualitative, & mixed methods. Students develop a research proposal, including the need for the study, research questions, review of the literature, research design, and data collection and analysis procedures. The proposal is used as the basis of the student's capstone master's thesis or applied research project in the M.S. in RMP program.
Prerequisite(s): RMP 800 with a minimum grade of D-.
Grade Mode: Letter Grading

RMP 995 - Capstone Seminar
Credits: 3
As a capstone course for the Masters of Science Degree in Recreation Management and Policy, this course invites students to bring content and ideas formed in previous coursework and experience to the investigation of opportunities and challenges in professional practice. Students will present and refine portfolio artifacts that contribute to their professional development and the improvement of the field. The course is conducted as a seminar with all participants contributing to the learning process.
Prerequisite(s): RMP 800 with a minimum grade of D- and (RMP 805 with a minimum grade of D- or RMP 806 with a minimum grade of D-).
Grade Mode: Letter Grading

RMP 998 - Special Topics
Credits: 2-4
Special Topics.
Grade Mode: Letter Grading

Resource Administration & Management (RAM)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

RAM 867 - Social Impact Assessment
Credits: 4
A cross-disciplinary perspective on the issues, problems, and methods of Social Impact Assessment (SIA). The analytic approach and theoretical framework provided applied to the assessment of very diverse events--changes in the natural environment, 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, to include tourism, park and recreation development, highways, reservoirs, timber production, hazardous waste disposal, as well as policy issues. SIA is also required for all projects funded by international donor agencies such as USIA, the World Bank, and private international development agencies.
Grade Mode: Letter Grading

RAM #896 - Investigations
Credits: 2-4
A) Resource Administration; B) Resource Management; C) Resource Policy; D) Public Laws and Resources. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

RAM 911 - Natural and Environmental Resource Management
Credits: 4
Fundamental economic, aesthetic, and ethical principles involved in the management of natural resources. Ways to apply these principles in the formulation and evaluation of resource management policies, including the management of specific renewable resources, soils, water, forests, and wildlife. (Offered every other year.)
Grade Mode: Letter Grading

Resource Economics (RECO)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

RECO 808 - 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.
Grade Mode: Letter Grading

RECO 856 - Rural and Regional Economic Development
Credits: 4
Concepts and methods of delineating regional economies, methods of measuring activity, regional development, and public policies. Emphasis on empirical research studies.
Grade Mode: Letter Grading

RECO #911 - Natural and Environmental Resource Management
Credits: 4
Fundamental economic, aesthetic, and ethical principles involved in the management of natural resources and ways to apply these principles in the formulation and evaluation of resource-management policies including the management of specific renewable resources, soils, water, forests, and wildlife. (Offered every other year.)
Equivalent(s): RAM 911
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 802 - Aging and Society
Credits: 3
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 803 - Social Work and Spirituality
Credits: 3
Spirituality has recently begun to emerge as a critical anchor of a holistic approach to social work which views individuals, couples, families, groups, and communities in a bio-psycho- social-spiritual context. This course provides a framework of knowledge, values, skills and experiences for spirituality sensitive social work. Students will develop skills and insight in responding competently and ethically to diverse spiritual and religious perspectives in social work settings. Utilizing psychodynamic and narrative frameworks, this course will address ways of assessing and working with an individual's spiritual belief systems and attending to the ways in which spiritual beliefs and practices provide a window into a client's inner world. Consideration regarding the impact of spiritual and religious systems in relation to diversity (e.g. by gender, social class, ethnicity and culture, and sexual orientation) will be included.
Grade Mode: Letter Grading

SW 804 - Adolescents with Emotional and Behavioral Challenges
Credits: 3
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 805 - Child and Adolescent Risks and Resiliency: Program, Policy and Practice
Credits: 3
Major social work policy and program questions in the field of child welfare introduced. The relationship between child welfare and the rest of the social work profession analyzed. Various types of child welfare services, some aspects of social and child welfare policy studied, as well as current research and practice issues in child welfare services.
Grade Mode: Letter Grading

SW #806 - Social Action in the Dominican Republic
Credits: 3
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 with take place during March spring break.
Co-requisite: INCO 589
Grade Mode: Letter Grading
Special Fee: Yes

SW 807 - Child Maltreatment
Credits: 3
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 808 - Mental Health Aspects of Intellectual & Developmental Disabilities
Credits: 3
Students will 1) develop an understanding of the mental health aspects of Intellectual & Developmental Disabilities (IDD), 2) understand the challenges in the diagnosis and treatment of mental health conditions in people with IDD, 3) understand specific clinical presentations as well as treatment and support adaptations for mental health problems in individuals with IDD, 4) gain insight into the application and adaptation of evidence based and evidence informed practices when working with individuals with IDD and co-occuring mental health conditions and their systems of support and 5) understand the role of social work in supporting individuals with IDD and mental health conditions in various practice contexts.
Grade Mode: Letter Grading

SW 809 - First Responders
Credits: 3
First responders hold a special status in our society. Society looks to first responders to protect our lives, provide for our safety and medical assistance. First responders are not always seen, but we expect them to be there to resolve any crisis. But what impact does this have on the mental health of first responders? This course will look at the role of first responders and the potential mental health impacts of this job. How do first responders navigate these issues and what can we do to help?.
Grade Mode: Letter Grading

SW 810 - SW and the Digital Age
Credits: 3
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 812 - Understanding Developmental Disabilities
Credits: 3
Analysis of the complex social contexts of people with developmental disabilities. Explores and questions traditional approaches and the current service system. Examines family and community services and resources.
Grade Mode: Letter Grading

SW 813 - School Social Work
Credits: 3
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 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 #814 - Introduction to Addiction: Assessment and Intervention
Credits: 3
Information and skills necessary to address issues of substance abuse with individuals, families and communities. Overview of the dynamics of addiction; the treatment and recovery process; and the role of social work professionals in the identification and treatment of addiction. Special populations (women, adolescents, elderly, gay/lesbian/ bisexual/ transgendered, ethnic/racial groups) discussed. Treatment approaches explored.
Grade Mode: Letter Grading

SW 815 - Affirming Practice with Lesbian, Gay, Bisexual, Transgender, Queer+ People
Credits: 3
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 816 - Addiction Assessment
Credits: 3
This course focuses on the screening, assessment, and diagnosis of addictions and co-occurring disorders. Topics covered include: substance use disorders and co-occurring disorders; including clinical evaluation, screening, assessment, barriers to assessment, and differential diagnosis of co-occurring disorders, motivational interviewing, engagement in the assessment process, assessing from a strengths perspective, DSM diagnosis, trauma informed practice, culturally competent counseling, documentation and treatment planning, policy effecting engagement from a town/city, state and national perspective, and service coordination and referral.
Grade Mode: Letter Grading

SW 817 - Understanding Suicide
Credits: 3
The focus of this course is to better understand the public health problem of suicide, with particular emphasis on prevention, intervention and postvention approaches. Students will gain an understanding of suicide epidemiology and underlying theory, as well as risk and protective factors for suicide. In addition, this course will outline public health approaches and evidence-based practices for suicide prevention. Students will develop skills in assessment and management of suicide risk, intervention and treatment techniques with suicidal individuals as well as postvention approaches to dealing with suicide loss.
Grade Mode: Letter Grading

SW 818 - SW & Creative Arts
Credits: 3
This course will focus on the uses and potential uses of many forms of art in social work practice. Students will learn how to apply art forms such as music, theater, literature, art, poetry, movement, and dance into practice through exploring A. self-awareness and personal growth of the professional social worker, B. a strengths approach to practice with individual clients, and C. social awareness and social change. This course will be an advanced generalist elective. Students will have the opportunity to develop an art portfolio, completing a new project each week, having the opportunity to reflect personally as well as professionally on the application of these methodologies to practice.
Grade Mode: Letter Grading

SW 819 - Addiction Treatment
Credits: 3
This course focuses on treatment for addictions and co-occurring disorders. Topics covered include: interventions, pharmacology, treatment outcomes, treatment with specific populations, trauma informed practice, group practice, working with mandated individuals, cognitive behavioral therapy, barriers to treatment, documentation with an emphasis on treatment planning, resource development, and policy effecting treatment outcomes from a town/city, state and national perspective.
Grade Mode: Letter Grading

SW 820 - Social Welfare Policy I
Credits: 3
The aim of this course is to prepare students to act as informed human service professionals through a better understanding of social problems, social welfare policy, and the American social welfare system. Students are provided with an overview of the origins and development of social welfare policy in the United States, the political processes in our federal and state systems, and the values and ethics which shape our present social welfare system. The course also helps students examine ways they can influence policy formulation while advocating for human rights and social/economic justice.
Grade Mode: Letter Grading

SW 821 - International Social Work
Credits: 3
This course introduces the growing field of international social work. It addresses the impact of globalization on social work practice, provides an overview of the social work profession around the world, and considers current challenges and suggested ways social workers can contribute to solutions. Human rights and globalization are dominant themes underlying international social work and serve as unifying concepts for examining various global issues. The focus of the course is on global social issues with particular attention to human rights, development, racism, status of women and children, climate change, immigrants and refugees, HIV/AIDS, and aging populations. Linkages between international and domestic social work practice are emphasized, making the course relevant to all students and their future practice.
Grade Mode: Letter Grading

SW 824 - Positive Youth Development Through Sport Social Work and Recreation
Credits: 3
Grounded in critical positive youth development and experiential learning theory, this course focuses on how to promote the healthy youth development through the use of sport, recreation, and adventure-based activities. Students will develop knowledge to enhance their skills related to designing, implementing, facilitating, and evaluating sport-based programming and practices to promote the development of normative life skills (e.g., emotional regulation, social skills, teamwork) and social justice life skills (e.g., antiracism, LGBTQ+ allyship, mental health help-seeking behaviors).
Grade Mode: Letter Grading

SW 830 - Social Work Practice I
Credits: 3
Basic concepts, theories, and skills of social work practice. Lectures and discussions, readings and written exercises, and laboratory and practice sessions. Students use the experiential parts of the course (laboratory and interview simulations) to apply the conceptual and theoretical knowledge.
Co-requisite: SW 880
Grade Mode: Letter Grading

SW 831 - Social Work Practice II: Practice in Small Groups and Community Organizations
Credits: 3
Continuation of Social Work Practice I with the further aim of introducing students to social work with groups and communities as models of social work practice.
Co-requisite: SW 881
Grade Mode: Letter Grading

SW 840 - Implications of Race, Culture, and Oppression for Social Work Practice
Credits: 3
This foundation course is designed to increase students awareness of historical, social, political, economic and cultural aspects of micro- and macro-level oppression directed at minorities. Course materials focus on insidious societal forces that shape and profoundly alter life experiences of large numbers of people, with special attention to social relationships that promote the welfare of some, while limiting opportunities and choices for others, including racial and ethnic minorities, children, women, the poor, persons with disabilities, GLBTQ individuals, and others. Students consider practice issues in multicultural SW.
Grade Mode: Letter Grading

SW 850 - Human Behavior and the Social Environment I
Credits: 3
In this course, students learn about behavior and development and its context across the lifecycle. The semester addresses growth and development from the prenatal period through the end of life using social systems theory/person-in-the-environment as a conceptual framework. The different systems that impact individual development including family, community, and larger systems are examined. Human worth and social justice themes permeate course materials, class discussions, and activities.
Grade Mode: Letter Grading

SW 851 - Human Behavior and the Social Environment II
Credits: 3
In this course, students learn about behavior and development and its context across the life cycle from a macro systems perspective. The macrosystems that impact individual development are examined. Societal forces that are often invisible shape and profoundly alter life experiences of larger numbers of people. HSBE II pays special attention to social relationships that promote welfare of some while limiting opportunities and choices for others. The semester explores the influence of class, gender, race, ethnicity, religion, age, sexual orientation, and other aspects of diversity on development and behavior of larger systems.
Grade Mode: Letter Grading

SW 860 - Research Methods in Social Work
Credits: 3
Designed to acquaint degree students with the concepts and skills necessary to carry out research in social work practice. Particular emphasis placed on methodological issues related to research in a variety of practice contexts. Although the skills necessary to review research critically are examined, the primary emphasis is on preparing the student to carry out research related to practice.
Grade Mode: Letter Grading

SW 865 - Adventure Therapy: Facilitation and Processing of the Experience
Credits: 3
This class will familiarize students with a variety of active assessment facilitation and processing skills which can be used with clients when engaging in adventure therapy. Students will be given multiple opportunities to practice these skills to gain a better understanding of their own facilitation and processing skills, and how to use adventure activities as a therapeutic tool in the clinical practice. Active participation required. Open to both social work and non-social work graduate students.
Grade Mode: Letter Grading
Special Fee: Yes

SW 870 - Intimate Partner Violence
Credits: 3
This course examines intimate partner violence or domestic violence from its historical roots to the present. In accordance with an historical and contextual approach, we examine theories that explain and describe the phenomenon, research that attempts to define it, as well as social policies , social movements, and intervention from a social work perspective. Intimate partner violence *IPV) also known as domestic violence, cuts across racial, ethnic, and class boundaries and impedes victim's well-being and social participation. IPV includes many physical assault, sexual assault, emotional, verbal, and economic abuse and coercive control.
Grade Mode: Letter Grading

SW 871 - Trauma-Informed Practice in School Settings
Credits: 3
This course introduced students to the core concepts that inform evidence-based assessment and intervention for traumatized children, adolescents, adults and their families in school settings. Strength-based practice is highlighted with a focus on the identification of protective and promotive factors that foster resiliency and post-traumatic growth. The course highlights the role of development.
Grade Mode: Letter Grading

SW 880 - Field Internship I
Credits: 3
This two-semester requirement provides supervised learning and practice within social work programs in a wide range of program settings. Students spend 16 hours per week in the field. Individual field placements arranged with each student by the field coordinator. In order to receive credit, students must satisfactorily complete both SW 880 and SW 881. A concurrent integrative seminar is required. In this weekly seminar attention is given to the development of basic social work skills and techniques, legal and ethical issues, and the development of appropriate professional relationships. A primary goal is to integrate classroom learning with the field experience.
Co-requisite: SW 830
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

SW 881 - Field Internship II
Credits: 3
This course is a continuation of SW 880, Field Internship I. Students must satisfactorily complete both field experience semesters to receive credit.
Co-requisite: SW 831
Grade Mode: Graduate Credit/Fail grading

SW 885 - Study Abroad
Credits: 3
Students in this course 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. The course includes agency site visits, lectures, themed readings and visits to important cultural sites. Only open to first and second year MSW students.
Co-requisite: INCO 889
Grade Mode: Letter Grading
Special Fee: Yes

SW 897 - Special Topics in Social Work and Social Welfare
Credits: 2 or 3
Seminar for graduate students. Topics may include: A) Drugs and Chemical Dependency; B) Intimate Partner Violence C) Social Action in Education Settings D) Social Action in the Dominican Republic. May be repeated for different topics.
Grade Mode: Letter Grading
Special Fee: Yes

SW 899 - Master's Thesis
Credits: 1-6
Each student carries out original research that culminates in a master's thesis. Students may enroll in 1 to 6 credits per semester.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

SW 900 - Advanced Standing Practice and Field Seminar
Credits: 3
Weekly seminar held concurrently with field placement designed to orient and adequately prepare advanced standing students for advanced practice and field courses. Bridges the undergraduate and graduate curriculum and reviews foundation year concepts, theories, and skills of social work practice and field. Exploration of social work identity and professional relationships with supervisors, colleagues, and agencies. Primary focus on social work values and ethics and the development of ethical decision-making skills including the importance of culturally competent practice. Only offered to advanced standing MSW students.
Grade Mode: Graduate Credit/Fail grading

SW 901 - Field Continuation
Credits: 0
This course represents the continuation of the online Master of Social Work fieldwork courses (SW 880, SW 881, SW 982, SW 983). SW students who are registered for one of the four required Fieldwork courses are also registered for SW 901 and are considered full-time. The grade for each course is awarded upon completion of the internship experience.
Grade Mode: Not graded

SW 926 - Social Welfare Policy II
Credits: 3
This course is an extension of Social Welfare Policy I. Both courses view social welfare policy as the framework in which social work services are developed and delivered. That is, policies provide the context for direct practice. Social Welfare Policy II examines policy analysis as a process with underlying theory and methodology. This process emphasizes political advocacy in the pursuit of human rights, and social and economic justice. The course integrates policy and practice, in part, through student research and analysis of specific social problems and client populations relevant to the student's volunteer, work, and/or field internship experience.
Prerequisite(s): SW 820 with a minimum grade of D-.
Grade Mode: Letter Grading

SW 930 - Advanced General Practice III: Clinical Assessment and Intervention
Credits: 3
Advanced generalist practice with individuals, families and groups is the first of the two required advanced practice classes. The major objective of the advanced generalist practice curriculum is to educate practitioners to work towards the restoration and enhancement of human functioning and prevention of maladaptive functioning. This course emphasizes a deepened understanding of the differential treatment process and an expanded knowledge of intervention approaches. The aim of the course is to further deepen knowledge and skills, particularly with a concentration on evidence based practices, interdisciplinary work and ethical practice.
Co-requisite: SW 982
Prerequisite(s): SW 831 with a minimum grade of D-.
Grade Mode: Letter Grading

SW 931 - Advanced Generalist Practice IV: Community and Administrative Practice
Credits: 3
This macro social work course utilizes foundation year curriculum content to provide an advanced examination of social work practice in larger systems. Students develop knowledge, values, and skills in areas of community analysis, community organization, community capital, empowerment and the use of power, sustainable communities, evaluation of community interventions. Strategies of cultivation, mobilization and sustaining resources that empower underserved constituent groups are studied. Course content is rooted in both historical and current contexts in providing administrative and technological tools to undertake change efforts across organizational and community systems.
Co-requisite: SW 983
Prerequisite(s): SW 930 with a minimum grade of D-.
Grade Mode: Letter Grading

SW 952 - Human Behavior and the Social Environment III
Credits: 3
Designed to acquaint master's degree students with the epidemiology, classification, and etiology of the major mental illnesses; with a primary objective to develop the student's diagnostic skills in the field of psychopathology. Students become familiar with historical and current mental health policy issues. At course conclusion students have an effective working knowledge of the bio-psycho-social basis of the major mental disorders, the behavioral symptomology that characterizes them, the use of psychotropic medication in treatment, and their classification according to the current DSM system.
Prerequisite(s): SW 850 with a minimum grade of D- and SW 851 with a minimum grade of D-.
Grade Mode: Letter Grading

SW 957 - Fund Development and Grantwriting
Credits: 3
This course is designed to introduce students to various fundraising strategies to support nonprofit health and human service organizations. Students are provided with an overview of philanthropy and nonprofit organizations in the United States, effective fundraising and individual donor strategies, and ethical and legal issues related to fundraising. Student use a case-study approach for planning, developing, and writing successful grant proposals to fund health and human services programming.
Grade Mode: Letter Grading

SW 962 - Data Analysis and Statistics
Credits: 3
Social science statistics is a set of methods used to organize and analyze data for the purpose of either answering research questions or testing social science theories with data. Course provides practical, data-oriented introduction to the methods of modern statistical analysis with a focus on understanding and interpretation rather than the details of calculation. Students learn more about the role of data analysis in research informed social work practice as well as practice informed research.
Prerequisite(s): SW 860 with a minimum grade of D-.
Grade Mode: Letter Grading

SW 965 - Program and Practice Evaluation
Credits: 3
A one semester course, basic introduction to evaluation methods in the context of social work practice and social welfare. Students develop and conduct evaluations of practice, programs, and policies. Course provides skills required for practice and program evaluation.
Prerequisite(s): SW 962 with a minimum grade of D-.
Grade Mode: Letter Grading

SW 974 - Social Work Supervision
Credits: 3
Prepares students for a supervisory role in human service agencies. Basic principles of administrative, supportive and educational supervision are reviewed and related to the student's own experiences in supervision or as a supervisor.
Grade Mode: Letter Grading

SW 975 - Theory and Practice of Family Therapy
Credits: 3
This course is designed to provide students with an introduction to the theory and practice of family therapy. Major approaches to be examined include structural, strategic, systemic, brief, narrative family therapy, and social constructionism. Students have an opportunity to present cases they are currently working with in their internships and are able to practice family therapy techniques with the use of a team coaching them from behind a one-way mirror.
Grade Mode: Letter Grading

SW 979 - Social Work and the Law
Credits: 3
Social work practitioners routinely encounter and interact with the legal system in their work. The course provides knowledge of, and learning about, the differences between the legal and social service networks, the realities of work involving the law, and legal issues, as well as an understanding of those aspects of the legal system most likely to impact clients and their families.
Grade Mode: Letter Grading

SW 982 - Field Internship III
Credits: 4
This two semester requirement provides advanced practice experience in a wide range of social work settings. Students spend 24 hours per week in the field. Individual field placements are arranged with each student by the field coordinator. In order to receive course credit, students must satisfactorily complete both semesters(SW 982 and SW 983). A concurrent integrative seminar is also required. The goal of the weekly seminar is to assist students in conceptualizing and integrating the multiple theoretical issues and practice concepts of course work and the practicum. Students are expected to take major responsibility for the semester, using the instructor as a resource.
Co-requisite: SW 930
Prerequisite(s): SW 881 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

SW 983 - Field Internship IV
Credits: 4
This two semester requirement provides advanced practice experience in a wide range of social work settings. Students spend 24 hours per week in the field. Individual field placements are arranged with each student by the field coordinator. In order to receive course credit, students must satisfactorily complete both semesters. A concurrent integrative seminar is also required. The goal of the workshop-style weekly seminar is to assist students in conceptualizing and integrating the multiple theoretical issues and practice concepts of course work and the practicum. Students are expected to take major responsibility for the semester, using the instructor as a resource.
Co-requisite: SW 931
Prerequisite(s): SW 982 with a minimum grade of D-.
Grade Mode: Graduate Credit/Fail grading

SW 992 - Special Projects and Independent Study
Credits: 1-3
Projects, research and reading programs in areas of concentration. Sixty days advance approval of the student's plan of study by adviser and proposed instructor required. 24 credits in social work coursework required.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Letter Grading
Special Fee: Yes

Sociology (SOC)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

SOC 815 - 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.
Grade Mode: Letter Grading

SOC 820 - 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.
Grade Mode: Letter Grading

SOC 825 - 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 United States as well as the developed and developing world.
Grade Mode: Letter Grading

SOC 830 - 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.
Grade Mode: Letter Grading

SOC 840 - 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 State 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.
Grade Mode: Letter Grading

SOC 845 - 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. Course emphasizes both theoretical and empirical assessments.
Grade Mode: Letter Grading

SOC 873 - Childhood and Social Policy
Credits: 4
This course will expose students to a variety of sociological perspectives on childhood in American society. Focus will be on the analysis of how social institutions, like the modern American family, school, economic system, justice system and communications media affect children. Assumes a prior understanding of important sociological concepts, critical thinking skills and social science writing ability.
Grade Mode: Letter Grading

SOC 888 - 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.
Grade Mode: Letter Grading

SOC 897 - Special Topics
Credits: 4
Occasional or experimental offerings. May be repeated barring duplication of subject.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

SOC 899 - Master's Thesis
Credits: 1-10
Master's Thesis. Students typically complete 6 credits, however, it can be taken up to 10 credits when permitted by the department by petition.
Repeat Rule: May be repeated for a maximum of 10 credits.
Grade Mode: Graduate Credit/Fail grading

SOC 900 - Pro-seminar
Credits: 2
An introduction to the discipline of sociology and to the graduate program. Topics include writing for professional audiences, publishing, applying for support, TA workshop, writing a thesis or dissertation. Meetings with faculty members throughout the semester.
Grade Mode: Graduate Credit/Fail grading

SOC 901 - Sociological Methods I: Intermediate Social Statistics
Credits: 4
Application of statistical methods to the analysis of social data, with particular emphasis on multiple regression and related topics.
Grade Mode: Letter Grading

SOC 902 - Sociological Methods II: Research Design
Credits: 4
Systematic investigation of each step in the design and implementation of sociological research. Selected techniques of data collection and analyses are pursued. Strongly recommend prior course in research methods and social statistics.
Grade Mode: Letter Grading

SOC 903 - Sociological Methods III: Advanced Social Statistics
Credits: 4
Multivariate statistical methods for the analysis of social data. Topics include problem-solving with multiple regression, categorical-variable models, dynamic models, and others.
Grade Mode: Letter Grading

SOC 904 - Sociological Methods IV: Qualitative and Historical Research Methods
Credits: 4
An introduction to qualitative and historical methods of data gathering and analysis in the social sciences. The seminar is intended as an intensive workshop training in such techniques as participant observation, in-depth interviewing, content analysis, and archival exploration. Students conduct qualitative and/or historical research and are responsible for designing an individual project, collecting and analyzing appropriate data, and writing a research paper.
Grade Mode: Letter Grading

SOC 905 - Research Practicum
Credits: 4
This course is designed to help students improve and finalize a research paper for publication. Students will also critique and edit one another's work to develop peer-review skills. Through successive revisions, students are expected to finalize and submit their manuscripts to a scholarly journal at the end of the course. Since students' projects will be at different stages of needed revision, the course schedule and content will remain flexible to accommodate different students' needs.
Prerequisite(s): SOC 901 with a minimum grade of D- and SOC 902 with a minimum grade of D-.
Grade Mode: Letter Grading

SOC 911 - Sociological Theory I
Credits: 4
The content, presuppositions, and implications of the body of classical sociological theory, exemplifying the full range of sociological inquiry.
Grade Mode: Letter Grading

SOC 921 - Crime and Conflict
Credits: 4
Serves as the core course for the Crime and Conflict concentration. Theories and patterns of crime; the social origins of violent and nonviolent conflict; the role of social factors in the justice system; alternative forms of crime control and conflict management.
Grade Mode: Letter Grading

SOC 975 - Sociology of the Family
Credits: 4
Major approaches in the sociological study of families. Individuals in families, family relationships, and families as groups and the interrelationships among these levels. Interactional and systemic properties of marriage, parent-child relations, and extended family relations.
Grade Mode: Letter Grading

SOC 980 - Social Stratification
Credits: 4
Introduces students to the core of theoretical, methodological, and substantive issues in social stratification. Readings include classical and contemporary theories of stratification and work exploring the sources and consequences of stratification. Inequalities based on class, race, and gender examined.
Grade Mode: Letter Grading

SOC #990 - Teaching Sociology Seminar
Credits: 4
Helps graduate students explore teaching techniques and improve their teaching skills. Topics include: setting course goals, designing lectures, evaluating student course work, leading discussion, and experimenting with innovative teaching techniques.
Equivalent(s): GRAD 974
Grade Mode: Letter Grading

SOC 995 - Reading and Research
Credits: 2-8
A student prepared by training and experience to do the independent work under the guidance of an instructor may register. Students are required to complete 16 graduate hours of sociology prior to taking this course. Hours and credit to be arranged. May be repeated for different topics.
Grade Mode: Letter Grading

SOC 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

Spanish (SPAN)

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

SPAN 890 - Topics in Second Language Acquisition/Pedagogy/ Methodology
Credits: 3
A) Introduction to Second Language Acquisition, B) Internet Technologies and Second Language Learning. May be taken more than once if no duplication of content.
Grade Mode: Letter Grading

SPAN 897 - Topics in Hispanic Literature and Cultural Studies
Credits: 3
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. May be taken more than once for credit if no duplication of content.
Grade Mode: Letter Grading

SPAN 898 - Topics in Hispanic Linguistics and Cultural Studies
Credits: 3
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, H) Regional and Social Variation in Spanish Phonetics, I) Other. May be taken more than once for credit if no duplication of content.
Repeat Rule: May be repeated up to unlimited times.
Grade Mode: Letter Grading

SPAN #899 - Master's Thesis
Credits: 1-6
Master's Thesis.
Repeat Rule: May be repeated for a maximum of 6 credits.
Grade Mode: Graduate Credit/Fail grading

SPAN 995 - Independent Study
Credits: 1-3
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.
Repeat Rule: May be repeated up to 1 time.
Grade Mode: Letter Grading

Supply Chain Management (SCM) CPSO

Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

SCM 805 - Supply Chain Management
Credits: 2
In this course, students explore the management and flow of materials in a typical enterprise supply chain, be it within a production facility or the health care industry. Students examine a complete overview of material flow, from internal and external sources, to and from the enterprise, and the impact a global supply chain can have on an organization's success in meeting demands. Topics covered include basic elements of a supply chain, enterprise resource planning (ERP), demand planning, capacity management, and inventory control.
Equivalent(s): SCM 805G
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 #820 - Emerging Technologies and Project-Based Learning (PBL) for Teachers: Focus on Nanotechnology
Credits: 3
The science and engineering of nanotechnology is the technology topic of this course. Seminars about nanotechnology and its connections to physical science, biology, earth science, math, and engineering will be delivered in the mornings and afternoons. These seminars will be at the first year graduate student level. Additionally, students will learn about the fundamentals of project-based learning, and design project elements directly connected to the nanotechnology topics for implementation in their classroom. These project elements will be implemented in the classroom and become part of the student's PBL portfolio.
Grade Mode: Letter Grading

TECH 850 - Intellectual Asset Management for Engineers and Scientists
Credits: 3
This course provides an introduction to the most important topic for business in the 21st century--intellectual assets. Students 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 880 - 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, and the underlying policy choices made by legislators and courts.
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 832 - Feminist Theory
Credits: 4
A multidisciplinary introduction to some of the major conversations and methodologies in feminist theory (e.g., materialist feminism, standpoint epistemologies, psychoanalysis, discourses of sexuality and the body, transnational feminism, postcolonialism and decolonization). Critical readings of landmark and more recent feminist texts, and discussion of gender in relation to other categories of analysis including sexuality, race, class, nation, disability and religion.
Grade Mode: Letter Grading

WS 895 - Directed Study
Credits: 1-4
Independent study of advanced or specialized topics requiring extensive reading and writing. To be elected only with permission of the Department Chair and of the supervising faculty member.
Repeat Rule: May be repeated for a maximum of 4 credits.
Equivalent(s): WS 899
Grade Mode: Letter Grading

WS 898 - Colloquium in Feminist Studies
Credits: 4
An advanced course on a topic to be chosen by the instructor. Please inquire at the Women's Studies office for a full course description each time the course is offered. Examples include Equality, Privacy and Consent; Queer Theory; Transnational Feminisms; Major Women Writers.
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 810 - Sharks and Bony Fishes
Credits: 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. Lab. (Offered in alternative years.)
Prerequisite(s): BIOL 411 with a minimum grade of D- and BIOL 412 with a minimum grade of D-.
Grade Mode: Letter Grading
Special Fee: Yes

ZOOL 833 - Behavioral Ecology
Credits: 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.
Grade Mode: Letter Grading

ZOOL 836 - 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.
Grade Mode: Letter Grading

ZOOL 877 - Neuroethology: The Neural Basis of Animal Behavior
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. Physiology, or another introductory neurobiology course, desirable.
Grade Mode: Letter Grading

ZOOL 895 - Advanced Studies
Credits: 1-4
Independent study in various areas, including but not limited to: animal behavior; departmental biology; ecology; electron microscopy; evolution; genetics; histology; history of biology; invertebrate biology; neurobiology and behavior; physiology; teaching practices; underwater research; vertebrate biology; biological techniques. Course sections for advanced work, individual or group seminar. May include reading, laboratory work, organized seminars, and conferences.
Grade Mode: Letter Grading

ZOOL 899 - Master's Thesis
Credits: 1-10
Research directly contributing to the Master's degree, normally under the supervision of the primary advisor or a member of the student's Masters Committee.
Repeat Rule: May be repeated for a maximum of 10 credits.
Grade Mode: Graduate Credit/Fail grading

ZOOL 999 - Doctoral Research
Credits: 0
Doctoral Research.
Grade Mode: Graduate Credit/Fail grading
Special Fee: Yes

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