

# COLLEGE OF ENGINEERING AND PHYSICAL SCIENCES

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The College of Engineering and Physical Sciences (CEPS) provides an opportunity for students to achieve educational objectives appropriate to their interests in engineering, computer science, information technology, mathematics, the physical sciences, and the teaching of mathematics and physical sciences. The college offers an education in each of its primary disciplines leading to the bachelor of science, as well as bachelor of art degrees with majors in mathematics and each of the three physical sciences. All programs include an opportunity for study in the arts, humanities, and social sciences.

The key to an undergraduate program in the college is flexibility, with a strong emphasis on personal and individualized education. In addition to specific programs, a wide range of options within several majors are available. Special programs can be developed to meet the specific interests of individual students.

## Degree Requirements

MATH 425 Calculus I and MATH 426 Calculus II or the equivalent in transfer credits or advanced placement approved by the Department of Mathematics and Statistics are required by all departments of the college. The exceptions to this are the information technology major and the three computer science bachelor of arts majors, which only require MATH 425 Calculus I. The prerequisites for calculus are three years of college-preparatory mathematics, including a half-year of trigonometry. Before students can register for MATH 425 Calculus I, they are required to take the Mathematics Placement Test or to have taken MATH 418 Analysis and Applications of Functions (or its equivalent) and received a grade of C or better.

### Mathematics Placement

First-year students arrive with a wide range of mathematical skills based upon their high school preparation. The college wants students to have a solid mathematics foundation so that they will enjoy an enriched first-semester experience. A student's mathematics development will be assessed as part of the June orientation program. Based upon the Mathematics Placement Test, students are enrolled in the mathematics class that will allow them to continue that development. The initial mathematics entry course is MATH 418 Analysis and Applications of Functions. However, a student is placed into MATH 425 Calculus I if he or she demonstrated a certain level of proficiency in algebra and precalculus through the Mathematics Placement Test. Students with AP credit for Calculus I and/or Calculus II may elect to accept those credits and continue with a math course at the next level.

## Degrees OFFERED

The college offers two undergraduate degrees: the bachelor of arts and the bachelor of science. Some of the courses prescribed in these degree programs partially fulfill the University's Discovery requirements. There are entrance requirements in some programs, and it is not possible to guarantee all change-of-major requests. Students should see their advisers for specific information.

### Bachelor of Arts

Programs leading to a bachelor of arts degree are offered in the departments of chemistry, computer science, earth sciences, mathematics, and physics. These programs provide a broad liberal education along with a major in one of these fields.

### Bachelor of Science

The programs leading to the bachelor of science degree, offered in each of the departments of the college, emphasize students' preparation for a professional career and continuing or graduate education.

## INTERDISCIPLINARY PROGRAMS

### Bachelor of Science in Environmental Sciences

The Environmental Sciences program is offered jointly with the College of Life Sciences and Agriculture (COLSA).

### Architectural Studies Minor

The Architectural Studies Minor is managed jointly by the Civil Engineering Department, and Art & Art History Department in the College of Liberal Arts (COLA).

## OTHER Combined Programs of Study

In addition to pursuing a single major, students may combine programs of study as follows:

*Minors:* Students may pursue one or more minors, each typically comprised of 5 courses. Minors enable students to obtain experience in a specialized area and to retain identification with their major professional area. Minors are available in nearly every discipline within the College of Engineering & Physical Sciences.

*Cognates:* Students may pursue one or more cognates, each typically comprised of 3 courses and intended to develop career-oriented skills. Cognates in the College of Engineering & Physical Sciences are:

- [Computer Programming](#)
- [Information Technology](#)
- [Skills and Perspectives for the Digital World](#)

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

*Dual majors:* Students may choose to fulfill the requirements of a dual major, typically comprised of 8 courses. Dual majors are designated programs that must be paired with another major of any discipline.

*Student-designed majors:* Under special circumstances, students may design their own majors. Proposal guidelines are available in the Office of the Provost and Vice President for Academic Affairs and on the Academic Affairs website, <https://www.unh.edu/provost/student-designed-majors-sdm>.

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

*Accelerated Master's programs:* Students with senior standing and a minimum 3.20 cumulative grade-point average are eligible to take up to 12 credits of graduate level courses prior to completing their undergraduate degree, provided they have been admitted to the Graduate School.

### Special Provisions

The requirement of a given topic/course prescribed to meet the requirements of major curriculum may be waived by the faculty of a student's department. This rule offers students the opportunity to develop a somewhat individualized plan of study with intellectual incentives and opportunities in addition to those found in a regular curriculum. The student's petition must be approved by their major advisor and the dean of the college.

### Undeclared

Students who are uncertain about choosing a specific major may remain undeclared in the College of Engineering & Physical Sciences during their freshman and sophomore year. All first year undeclared students in the college will take two 1-credit seminar courses, TECH 400 Introduction to CEPS Programs (fall) and TECH 402 Introduction to CEPS Career Exploration (spring) in addition to their other required courses.

### Special Programs

#### Research Opportunities

The talents and expertise of the faculty in all departments are reflected in the number of ongoing research projects. Undergraduates are included in many of these research projects with the intent that they will discover and foster their creative talents. When involved with a funded research project, students may have an opportunity to receive pay while learning about the research area.

The college has world-class laboratories and computer facilities in many areas. A few of these are coastal and ocean mapping, space science, environmental engineering and science, fluid dynamics, wind turbulence, information systems, materials science, nanotechnology, sustainability, and medical imaging. These and other ongoing research areas within the college are described on the college's website: <https://ceps.unh.edu/research-facilities>.

Students have the opportunity to acquire applied experience by working with faculty members who undertake sponsored professional projects in technical and managerial areas for business, industry, and federal, state, and local governments.

#### Innovation Scholars Program

The [Innovation Scholars program](#) is a research driven introduction to the university for first-year students. Students will be part of a cohort of students under the direction of a faculty member that guides them through a year-long research experience culminating in a presentation of research results at the Undergraduate Research Conference or equivalent activity. Participants will develop skills that will open doors of opportunity at UNH and more broadly, and experience the interconnectedness of UNH scholarly activity with UNH Innovation and UNH Career and Professional Success.

There are currently four research topics, including advanced manufacturing; internet engineering; ocean and environmental sensing; and biomaterials. Most cohorts work within a specific laboratory setting, including the Olson Advanced Manufacturing Center, Chase Ocean Engineering Laboratory and the UNH InterOperability Laboratory, to conduct their research. Students participating in the Innovation Scholars program will be enrolled in a 2-credit seminar both semesters of their first year for weekly cohort meetings.

#### Independent Study and Projects

All departments within the college offer independent study opportunities and projects. The content of these courses varies and is based upon

current scientific and technological needs in addition to the interests of the student and faculty involved.

Permission of the faculty member and/or department chairperson is required. One should review the course descriptions for the independent study and project courses for specific requirements. Students interested in working with a faculty member on a project or independent study should discuss this with the faculty member and their academic adviser prior to registering for the course.

#### Preparing for Teaching

Degrees in mathematics education at the K-8 or secondary level are available through the department of [Mathematics and Statistics](#).

Students interested in teaching chemistry, physics, or earth sciences should refer to the appropriate department advisors for program requirements.

#### Study Abroad Programs

The College of Engineering and Physical Sciences and the [Global Education Center](#) work closely to support students and their [Education Abroad](#) experience. Students are able to take part in exchange programs including, but not limited to:

##### Scotland, Heriot-Watt University Exchange Program

College of Engineering and Physical Sciences students are eligible to participate in a spring semester exchange with Heriot-Watt University in Edinburgh, Scotland. The current program is designed for civil and environmental engineering majors. For more information, contact Ray Cook at (603) 862-1411 or the Global Education Center, Conant Hall. Details on the program can also be found at <https://www.unh.edu/global/exchange-program-heriot-watt-university>.

##### Global E3 Exchange Programs

All majors with in the College of Engineering and Physical Sciences are eligible to participate in international exchange programs through the Global E3 program. Programs are offered in the fall, spring, and summer, as well as for the full academic year. For more information on Global E3, please refer to [www.iie.org/programs/global-e3](http://www.iie.org/programs/global-e3). For more information on eligibility, contact Catherine D'Auteuil at [catherine.dauteuil@unh.edu](mailto:catherine.dauteuil@unh.edu).

To learn about additional study abroad programs available to students in the College of Engineering and Physical Sciences, contact Catherine D'Auteuil at [catherine.dauteuil@unh.edu](mailto:catherine.dauteuil@unh.edu). For a full list of international study abroad programs available to UNH students, see [Study Abroad Programs](#).

Students interested in participating in a domestic exchange program should go to [Domestic Study Programs](#).

#### Accreditation

The baccalaureate-level programs in: Bioengineering; Chemical Engineering; Civil Engineering; Computer Engineering; Electrical Engineering; Environmental Engineering; Mechanical Engineering; and Ocean Engineering are accredited by the Engineering Accreditation Commission of ABET, Inc. The bachelor of science programs in Computer Science and Information Technology are accredited by the Computing Accreditation Commission of ABET, Inc. <https://www.abet.org>

The Department of Chemistry's undergraduate bachelor of science program is approved by the American Chemical Society.

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

## Departments

- [Chemical Engineering & Bioengineering](#)
- [Chemistry](#)
- [Civil and Environmental Engineering](#)
- [Computer Science](#)
- [Earth Sciences](#)
- [Electrical and Computer Engineering](#)
- [Materials Science](#)
- [Mathematics & Statistics](#)
- [Mechanical Engineering](#)
- [Ocean Engineering](#)
- [Physics and Astronomy](#)