ENVIRONMENTAL SCIENCES MAJOR: ECOSYSTEMS OPTION (B.S.)

https://colsa.unh.edu/natural-resources-environment/program/bs/environmental-sciences-major-ecosystems-option

Description

The College of Life Sciences and Agriculture (COLSA) and the College of Engineering and Physical Sciences (CEPS) jointly offer a bachelor of science degree in environmental sciences. Environmental science is an interdisciplinary field concerned with the interaction of biological, chemical, and physical processes that shape the environment, and control the response of natural systems to human activities. Students graduating with a degree in environmental sciences will have an understanding of these interacting processes, experience working in interdisciplinary teams to apply this understanding, and the ability to communicate effectively with both scientific and lay audiences.

While in this program, students will acquire significant experience with field, laboratory and analytical methods appropriate for employment in professional environmental science positions as well as a basic understanding of environmental policy. The University of New Hampshire is a recognized leader in environmental sciences research, and the environmental sciences program capitalizes on faculty expertise in this area. Program faculty emphasize teaching and research in the areas of biogeochemical cycling, environmental chemistry, ecosystem science, global change, hydrology, plant ecology, soil science, and water resource management among many other fields.

Employment opportunities include environmental consulting firms; educational facilities (e.g., science centers), environmental monitoring laboratories (e.g., water treatment plants, the Environmental Protection Agency), government agencies (e.g., the U.S. Geological Survey, Bureau of Land Management, Natural Resource Conservation Service), university and government research laboratories, and nongovernmental environmental organizations. The environmental sciences program also constitutes an excellent preparation for graduate programs in several areas relating to the environment.

The Program has four options, and specific course requirements for the major vary by option. The ecosystems and soils and watersheds options are both managed by the Department of Natural Resources and the Environment in COLSA, and the geosystems and hydrology options are both managed by Earth Sciences in CEPS.

Requirements

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>BIOL 412</td>
<td>Introductory Biology: Evolution, Biodiversity and Ecology</td>
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<tr>
<td>BIOL 411</td>
<td>Introductory Biology: Molecular and Cellular</td>
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Environmental Sciences Major: Ecosystems Option (B.S.)

NR 744 Biogeochemistry
  or NR 761 Environmental Soil Chemistry
  or NR 703 Watershed Water Quality Management
  or ESCI 842 Biogeoosciences in the Earth System

Environmental Problem Solving:

ESCI 654 Fate and Transport in the Environment
  or NR 707 Environmental Modeling
  or EREC 760 Ecological-Economic Modeling for Decision Making
  or NR 749 Forest Inventory and Modeling
  or NR 743 Ecology and Society in a Changing Arctic

Integration and Research (The Capstone Experience) 1-2

Capstone:

NR 663 Applied Directed Research in New Zealand
  or NR 786 Leadership for Sustainability
  or NR 795 Investigations
  or NR 799 Honors Senior Thesis

Capstone: NR 663 (EcoQuest if Senior Year)(WI), or NR 786, or NR 795, or NR 799, or approved research experience, or approved internship. Every student must complete a capstone experience senior year, or during the summer before senior year, if at least 90 credit hours have been completed.

NR 791 – Preparation for Capstone (1 credit, pass/no credit) is offered every spring. While not required for graduation, it is recommended for second semester juniors who need guidance in terms of developing a capstone project and completing the Capstone Contract.

  a. A Contract form provided by the Program must be completed and signed by the student, the adviser, the program coordinator, and the capstone mentor (faculty or off-campus) before the capstone experience by the end of Junior Year.

  b. A signed Capstone Experience Evaluation form must be handed in to your advisor by the end of Senior year in order to graduate.

Individualizing Your Education (Electives)

One goal of this program is to allow students the opportunity to pursue minors, dual majors, research and study abroad opportunities, while still completing the degree in four years of full-time enrollment. To this end, the program requires a total of 85 credit hours. The University Discovery program includes 5 areas (20 credit hours) not covered by this major. These include English 401, Fine and Performing Arts, Humanities, Historical Perspectives, World Cultures (NOTE: The World Cultures category can be met by certain study abroad programs, including EcoQuest). Combined, Major and Discovery requirements total 105 credit hours. With a total of 128 credit hours required by the University for graduation, this leaves 23 credit hours that can be put towards minors, dual majors, study abroad, Directed Research, etc.

Total Credits 84-85

1 Many students enroll in the EcoQuest program (a study abroad opportunity in New Zealand), which satisfies the policy requirement, and capstone requirement if taken senior year.

2 NR 791 Preparation for Capstone - is offered every spring. While not required for graduation, it is recommended for second semester juniors who need guidance in terms of developing a capstone project and completing the Capstone Contract.

Student Learning Outcomes

Key Learning Objectives: The primary Learning Outcome for the Environmental Science Program will be that students will master the content offered in the courses specified in the curriculum as assessed by performance on exams, labs and written assignments. This will include an understanding of the physical, chemical and biological processes central to the function of environmental systems, the mathematical concepts required to understand, explain and predict those processes, and the ability to determine the significance of results, both in terms of statistical probability and impact on the larger world.

The learning process leading to this mastery will require that students will have:

• Knowledge of how physical, chemical, and biological factors interact with human activities to shape the environment;
• Proficiency with environmental techniques including field, lab, GIS, or modeling;
• The ability to solve environmental problems;
• The ability to communicate orally or in writing about environmental dynamics.