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

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

Description

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

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

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

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

Requirements

**Scope of the Major (Introduction - 3 Courses)**
- NR 400 Professional Perspectives in Natural Resources
- NR 403 Introduction to Environmental Science
- NR 435 Contemporary Conservation Issues and Environmental Awareness
- or NR 437 Principles of Sustainability

**The Scientific Basis (Foundation - 7 Courses)**
- BIOL 412 Introductory Biology: Evolution, Biodiversity and Ecology
- NR 439 Environmental Biology

**Biology I**
- CHEM 403 General Chemistry I
- or CHEM 405 Chemical Principles for Engineers
- or CHEM 413 Introductory Chemistry for Life Sciences

**Biology II**
- NR 561 Chemistry of the Environment
- or CHEM 404 General Chemistry II

**Physics**
- PHYS 401 Introduction to Physics I
- or PHYS 407 General Physics I

**Calculus**
- MATH 424B Calculus for Life Sciences
- or MATH 425 Calculus I

**Statistics**
- BIOL 528 Applied Biostatistics I
- or EREC 525 Statistical Methods and Applications

**Earth and Its Systems (Core - 6 Courses)**
- ESCI 401 Dynamic Earth
- or ESCI 402 Earth History
- or ESCI 409 Geology and the Environment

**Aquatic Science**
- NR 504 Freshwater Resources

**Soils**
- NR 561 Studio Soils

**Climate/Weather**
- ESCI 514 Introduction to Climate
- or GEOG 473 Elements of Weather
- or GEOG 670 Climate and Society

**Ecology**
- NR 527 Forest Ecology
- or BIOL 541 Ecology

**Human Dimensions**
- NR 662 Natural Resources and Environmental Policy
- or NR 663 Environmental Policy, Planning and Sustainability in New Zealand
- or NR 507 Introduction to our Energy System and Sustainable Energy
- or NR 784 Sustainable Living - Global Perspectives

**Environmental Toolkit (Methods - 2 Courses)**

Select two courses from the following:
- ESCI 534 Techniques in Environmental Sciences
- NR 688 Introduction to Geographic Information Systems
- or ESCI 777 GIS for Earth & Environmental Sciences
- NR 757 Remote Sensing of the Environment
- ESCI 778 Remote Sensing Earth & Environmental Sciences
- NR 713 Quantitative Ecology

**Ecosystem Integration (Advanced Topics - 4 Courses)**
- Population and Community Ecology
- or NR 765 Community Ecology
- or NR 734 Tropical Ecology
- or NR 706 Soil Ecology
- or NR 660 Ecology and Biogeography of New Zealand
- or NR 640 Wildlife Population Ecology
- or NR 642 Introduction to Biogeography
- or NR 603 Landscape Ecology
- or BIOL 720 Plant-Animal Interactions

**Ecosystems**
- NR 730 Terrestrial Ecosystems
- or NR 751 Aquatic Ecosystems
- or NR 661 Restoration Ecology and Ecosystem Management in New Zealand

**Biogeochemistry**
- NR 744 Biogeochemistry
- or NR 761 Environmental Soil Chemistry
- or NR 703 Watershed Water Quality Management
- or ESCI 642 Biogeochemistry in the Earth System

**Environmental Problem Solving**
- ESCI 684 Fate and Transport in the Environment
- or NR 707 Environmental Modeling
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or EREC 760     Ecological-Economic Modeling for Decision Making
or NR 749       Forest Inventory and Modeling

Integration and Research (The Capstone Experience)

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

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

Total Credits 84-85

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.