The environment is a common theme in the courses offered at UVM. The Rubenstein School of the Environment and Natural Resources partners with the College of Agriculture and Life Sciences and the College of Arts and Sciences to offer two interdisciplinary majors: Environmental Sciences and Environmental Studies.

The interdisciplinary Environmental Sciences major combines a natural science-based core curriculum with hands-on experience needed to identify, analyze, and solve environmental problems arising from human activity. Blending hands-on field and laboratory instruction with real-world environmental internship, research, and study abroad opportunities, students acquire the skill set needed to tackle complex environmental problems. With the School’s emphasis on such cutting-edge areas as ecological design, restoration of damaged ecosystems, and environmental assessment, Environmental Sciences graduates are equipped with the knowledge to protect the health and integrity of our terrestrial, aquatic, and urban ecosystems.

Students may pursue the major through the College of Agriculture and Life Sciences (CALS), the College of Arts and Sciences (CAS), or the Rubenstein School of Environment and Natural Resources (RSENR). The distinctions between the major offered through these three schools is subtle, and a student can usually shift between the three with little difficulty.

- The Rubenstein School provides a degree with an applied focus, so an environmental sciences major is balanced with a broad-based understanding of frameworks to integrate social and natural systems towards solving complex problems.
- The College of Arts and Sciences provides a degree with a traditional liberal arts orientation, so the major in environmental sciences is pursued within the context of a liberal arts education.
- The College of Agriculture and Life Sciences provides a degree in which the student pursuing the environmental sciences major is engaged in the application and understanding of the environment within the context of agricultural literacy.

The decision about which school is best to pursue the major is typically based on the student’s desired focus within the major and other academic interests. All environmental science majors take a common set of courses in biology, chemistry, mathematics, and geology or plant and soil science. A common set of environmental science core courses is followed by specialization in one of nine concentrations:

- Agriculture and the Environment
- Conservation Biology and Biodiversity
- Ecological Design
- Environmental Analysis and Assessment
- Environmental Biology
- Environmental Geology
- Global Environmental and Climate Change
- Water Resources

Goals of the major include providing students with a strong foundation in basic sciences as well as advanced knowledge in environmental sciences; emphasizing scientific analysis aimed at assessment and remediation of environmental problems; familiarizing students with sources and measurements of pollutants on ecosystems; and providing practical experience in environmental sciences through internships/service learning and research.

**MAJORS**

**ENVIRONMENTAL SCIENCES MAJOR**

Environmental Sciences B.S.

**Courses**

**ENSC 001. SU: Intro Environmental Sci. 3 Credits.** Emphasizes the impacts of human activity on the environment. Attention to resources at risk and pollutant fate and effects on ecosystems.

**ENSC 009. Orientation to Env Sciences. 1 Credit.** Introducing new majors to the environmental sciences through field trips, panel discussions and group projects. Prerequisites: First-Year Rubenstein School of Environment and Natural Resources and College of Agriculture and Life Sciences Environmental Sciences majors.

**ENSC 090. Internship. 1-3 Credits.** On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

**ENSC 092. Independent Study. 1-18 Credits.** A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

**ENSC 095. Special Topics. 1-18 Credits.** See Schedule of Courses for specific titles.

**ENSC 130. Global Environmental Assessment. 0 or 3 Credits.** Introduction to skills for assessing human impacts on the global environment. Theory and application of GPS, geographic information systems and satellite remote sensing to address key environmental issues. Prerequisites: Environmental Sciences major.
ENSC 160. Pollutant Mvmt/Air, Land & Water. 0 or 4 Credits.
Physical, chemical, and biological aspects of pollutant behavior from source to ultimate fate. Laboratory methodologies for measuring pollutants and predicting their transport, behavior, and fate. Prerequisites: ENSC 001, BCOR 011 or BIOL 001, BCOR 012 or BIOL 002, CHEM 031, CHEM 032, MATH 019 or MATH 021, and MATH 020 or MATH 022.

ENSC 185. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

ENSC 192. Independent Study. 1-18 Credits.
Tailored to the interests of a specific student, occurs outside the traditional classroom/laboratory setting under faculty supervision, for which credit is awarded. Offered at department discretion. Up to six hours. Three can be applied to elected concentration with Director permission.

ENSC 195. Internship. 1-18 Credits.
On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion. Maximum of six hours. Three can be applied to elected concentration with Director permission.

ENSC 196. Undergraduate Research. 1-18 Credits.
Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion. Up to six hours. Three can be applied to elected concentration with Director permission.

ENSC 197. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory-level course in the discipline, for which credit is awarded. Offered at department discretion.

ENSC 201. Recovery & Restoration Altered Ecosyst. 0 or 4 Credits.
Role of stress and disturbance and the natural process of recovery in aquatic and terrestrial ecosystems. Human efforts to modify, restore, and remediate altered ecosystems. Prerequisites: ENSC 160; NR 103 or BCOR 102.

ENSC 202. Applied Envir Assess Analysis. 0 or 4 Credits.
Approaches used to identify, evaluate, and manage environmental risks. Focus on interactions among ecological, economic, and social considerations; often utilizing a watershed perspective. Problem formulation, methods selection. Case studies. Project-oriented. Prerequisites: Senior standing; Environmental Sciences major.

ENSC 222. Pollution Ecology. 3 Credits.
Impacts of pollutants on the structure and function of ecosystems. Examination of how air, land, and water influence fate and effects of pollutants. Prerequisites: BIOL 001 or BCOR 011, and CHEM 023 or CHEM 031, and NR 103 or BCOR 102.

ENSC 274. SU: Climate Change: Sci & Percept. 3 Credits.
Students will develop a complete scientific understanding of climate change’s causes and consequences and learn how to effectively communicate climate change science and address commonly-used arguments against climate change. Prerequisites: BCOR 102 or NR 103.

ENSC 290. Internship. 1-18 Credits.
On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

ENSC 292. Independent Study. 1-18 Credits.
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

ENSC 295. Advanced Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles. Prerequisite: Senior standing.

ENSC 296. Undergraduate Research. 1-18 Credits.
Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

ENSC 297. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory-level course in the discipline, for which credit is awarded. Offered at department discretion.

ENSC 299. Environmental Sciences Honors. 1-6 Credits.
Honors project dealing with environmental sciences. Not approved for Graduate credit.