

Environmental Science (ES)

Courses

ES 115 Geographic Info. Systems 3 Credits

Open to all majors; an introduction to Geographic Information Systems (GIS). GIS is a powerful computer mapping tool essential in: the natural, health, and social sciences; engineering; architecture; and the military. It is used for a wide-range of spatial analyses and data management. Students learn basic GIS and cartographic concepts, ArcGIS software, and application of GIS to their own discipline. During the final 4 weeks of the semester students design, implement, and present a GIS project. Offered Fall of odd numbered years.

ES 130 Introduction to Environmental Law 3 Credits

Major Federal pollution regulation schemes, environmental economics, risk analysis, relevant common law, and constitutional and procedural issues are introduced. Vermont Environmental Law is addressed, as is a survey of the extensive and often novel regulatory approaches of the state of Vermont. The course introduces the law pertaining to environmental issues such as population, economic growth, energy, and pollution. Environmental problems are defined and alternative approaches for dealing with them are examined. Existing statutory efforts such as the National Environmental Policy Act, the Clean Air Act, and the Resource Conservation and Recovery Act are analyzed. Does not fulfill a science requirement. Three lecture hours per week. Offered Spring of even numbered years.

ES 251 Sophomores Seminar Environmental Science 1 Credit

This course introduces the fundamentals of scientific investigation and communication. A research project introduces the Scientific Method, while reading and comprehension of scientific literature is coupled with instruction in and application of technical and scientific writing. Other forms of scientific communication, including poster and oral presentations, are addressed. Students learn the appropriate techniques for displaying and interpreting scientific data. Students may not earn credit for both ES 251 and GL 251. Offered Fall semester.

ES 270 Fundamentals of Environmental Science 4 Credits

This lab science course investigates the atmosphere, hydrosphere, lithosphere, and pedosphere and their interrelations as well as the affect they have on humans and the role that humans play in large-scale change within these spheres. Subjects include modern climate principles and global climate change, water as a natural resource, natural hazards such as landslides, earthquakes and volcanoes, soil nutrient loss and erosion, sustainable agriculture, and other topics related to natural-human interactions. Prerequisite, one introductory Geology lab science. Offered Fall semester of even numbered years.

ES 340 Project Development in Environmental Science 1 Credit

A course for students majoring in Environmental Science aimed to develop the skills for designing and executing an original scientific research project. Topics include research plan development, literature research to inform methodology, generation of site maps and protocols for collecting field and laboratory data, and generation of a properly formatted research proposal. Prerequisite: Junior-year status and permission of instructor. Offered spring semesters.

ES 399 Junior Topics 4 Credits

ES 440 Research Project in Environmental Science 3 Credits

A capstone original research project under the direction of a faculty member in coordination with others taking this course. Field and laboratory work will generate new data on an expanding base; after analysis and interpretation, data will be presented in a technical format. All aspects of the project will be interpreted in the context of the literature. Prerequisite: ES 340/GL 340 or permission of the instructor. Students cannot receive credit for both ES 440 and GL 440. Offered fall semester.

ES 451 Environmental Seminar 3 Credits

A capstone course offered in a seminar format with required reading, writing, and group participation. Designed to provide an integrating experience with sufficient flexibility to pursue individual interests. This course also includes oral and poster presentations of senior research projects and examination of codes of ethics in the environmental sciences. Classroom 3 hours. Prerequisite: junior or senior standing and permission of the instructor. Credit cannot be received both for this course and GL 451. Offered spring semesters.

ES 460 Project Completion in Environmental Science/Geology 1 Credit

Designed to follow senior research work in ES 440, this course provides the support for students to turn their technical product into a professional technical paper in which the research is integrated into the peer-reviewed knowledge base for the subject. The course is writing intensive and self-driven directed, with a student working collaboratively with their research advisor. Prerequisite: ES 440 and permission of the instructor. Offered spring semesters.

ES 499 Env Sci 4 Credits