Minor in Environmental Science (SBIE)

Department of Biological Sciences
College of Science

Overview

The Environmental Science Minor is designed to introduce students to the interdisciplinary nature of environmental issues and concepts and provide them with opportunities to further investigate many of these issues through advanced course work. Central to this minor are the development of field, analytical, and problem solving skills and an understanding of the multiple stakeholder perspectives often involved with environmental issues. Students interested in becoming "citizen scientists" or pursuing employment or an advanced degree with an environmental focus will find this minor beneficial.

Students eligible

Any student not majoring in Environmental Science is eligible for the minor.

Requirements

A student must successfully complete a minimum of **20 quarter credit hours** from the listings below with a 2.0 minimum GPA. A student must take all 12 credits of required courses listed below and at least 8 credits of courses from the elective listing. At least 12 credits of the minor must be in courses not required by the student's home program and must be completed in residency at RIT.

Before starting the minor, student should be aware that many of the advanced elective courses require prerequisites, such as the Introductory Biology sequence (1001-251, 252, and 253), General and Analytical Chemistry (1011-215, 216, 217) and/or Organic Chemistry (1013-231, 232, 233). Students interested in this minor should consult with the Director of the Environmental Science Program to discuss course schedules and background.

Course Matrix

COURSE	FALL	WINTER	SPRING
0508-460 – Environment and Society*			X
1006-202 – Concepts of Environmental Science*	X		
1006-203 – Environmental Science Field Skills*			X
1001-340 – General Ecology	X		
1001-375 – Galapagos: Evolution & Biogeography			X
1001-420 – Plant Ecology			X
1001-471 – Freshwater Ecology		X	
1001-475 – Conservation Biology		X	
1015-520 – Environmental Chemistry			X

*** Required Course for the Environmental Science Minor**

Required Courses (3 courses – 12 credits)

0508-460 Environment and Society

This course introduces the interdisciplinary foundations of environmental science via an analysis of sustainability. It will consist of one lecture and one lab per week. Labs will emphasize non-classroom based learning activities such as field trips. Initial course for the environmental science degree program. Part of the environmental studies concentration; the science, technology and environmental studies minor; and may also be taken as an elective. **Class 2, Lab 4, Credit 4 (S).**

1006-202 Concepts of Environmental Science
Concepts of Environmental Science is part of a three-quarter course group (including Environment and Society and Environmental Science Field Studies) that when combined presents an integrated approach to the interrelated, interdisciplinary principles of environmental science through case studies, site visits, and field work. In this course, the focus will be on sustainability as the foundation for problem solving while investigating a number of environmental issues. Topics may include biodiversity, ecosystems, pollution, energy, and global climate change. To demonstrate the interdisciplinary methodology of environmental science, elements of government/political science/policy, ethics, economics, sociology, history and engineering are embedded in the scientific matrix used to present this course. **Class 3, Lab 3, Credit 4 (F)**

1006-203 Environmental Science Field Studies

Environmental Science Field Studies is part of a three-quarter course group (including Environment and Society and Concepts of Environmental Science) that when combined presents an integrated approach to the interrelated, interdisciplinary principles of environmental science through case studies, site visits, and field work. In this course, the focus will be on water resources, water quality, water quantity, and land use/land cover change. Students will learn specific analysis techniques, following a stressed stream analysis approach, that will help them create a water quality protection plan for the watershed (part of the problem solving approach in environmental science). Additional topics may include geographic information systems, soils, environmental education, and sustainable food production. To demonstrate the interdisciplinary methodology of environmental science, elements of government/political science/policy, ethics, economics, sociology, history and engineering are embedded in the scientific matrix used to present this course. **Class 3, Lab 3, Credit 4 (S)**

Note that a maximum of 4 Advanced Placement credits may be applied to the minor.

Elective Courses to Total 8 Credits Minimum

1001-340 General Ecology

Introduction to ecosystem ecology stressing the dynamic interrelationships of plant and animal communities with their environments. A study to include such ecological concepts as energy flow and trophic levels in natural communities, plant responses and animal behavior, population dynamics, bio-geography and representative ecosystems. (One year of Introductory Biology 1001-231, 232, 233 or equivalent) **Class 3, Lab 3, Credit 4 (F)**

1001-375 Galapagos: Evolution & Biogeography

The course examines geological and biological factors that made the Galapagos Islands a crucible in which Darwin formed the theory of evolution and discusses the origins of the islands by the twin mechanisms of plate tectonics and volcanism. Students will observe recent lava flows and see initial biological colonists as well as ancient flows in advanced stages of colonization. The islands reveal the interaction between ocean currents, marine life, and mammalian and avian fauna that thrive on this rich sea life. Students will observe many endemic species and subspecies and gain an understanding of adaptive radiation. The 11-day trip includes a visit to the Darwin Scientific Research Station where students learn of the dangers of human infringement on the fragile ecology and efforts to conserve unique plant and animal species. Enrollment limited. Contact instructor fall quarter. Travel fee required. (1001-251, 252, 253 or 1001-201, 202, 203) **Class 3, Credit 4 (S)**

1001-420 Plant Ecology

A consideration of the nature and variation of plant communities with discussion of factors that limit, maintain and modify communities both locally and regionally. Laboratories involve field studies of various plant communities and the gathering and analysis of data. (1001-340) **Class 3, Lab 3, Credit 4 (S)**

1001-471 Freshwater Ecology

A study of the physics, chemistry and biology of inland waters. Emphasizes the physical and chemical properties of water and how these properties affect the associated biological communities. Planktonic, benthic and littoral communities are considered. Field trips to streams and lakes are conducted to gather physical, chemical and biological data. (1001-340 or permission of instructor) **Class 3, Lab 3, Credit 4 (W)**

1001-475 Conservation Biology

A course concentrating on the practical application of ecological principles. Man's impact on species diversity will be emphasized as it relates to agricultural, forest, coastal and wetland ecosystems. A discussion of management practices used to restore disturbed ecosystems will be included. Laboratory exercises will concentrate on methods of analyzing ecosystems for regulatory requirements and management purposes. (1001-340) **Class 3, Lab 3, Credit 4 (W)**

1015-520 Environmental Chemistry

Students will be introduced to sources, reactions, transport, effects and fate of chemical species in air, soil, water and living systems. (Organic chemistry) **Class 3, Credit 3 (S)**