

Environmental Studies

This interdisciplinary program brings together students, faculty, and staff from fourteen academic departments to study, discuss, and research environmental issues at local, national, and international levels.

Expected Outcomes

Environmental Studies offers four major tracks -- Environmental Policy, Ecology and Biodiversity, Natural Resources & the Environment, and Environmental Chemistry -- each of which has somewhat unique goals. Students in all four tracks, however, will:

- Interpret and discuss the major environmental issues in our world today, and
- Command the skills to work effectively on these issues in an interdisciplinary context.

The four majors in this program cover a wide spectrum of environmental topics in the natural, social, and political sciences.

Environmental Policy

Students in this track will:

- Understand how people respond to economic incentives within a policy context set by the political system
- Learn how to structure policies and use the market system to address environmental issues
- Know the environmental history of the United States, including the major pieces of legislation that address the environment and the key historical figures in environmental politics.

Ecology and Biodiversity

Students focusing on ecology and biodiversity will understand (I) *scientific methodology and the process of scientific investigation and communication*. Specifically they will:

- Generate hypotheses
- Design experiments
- Use descriptive statistics and graphs
- Use inferential statistics
- Write scientific proposals, reports, and papers
- Communicate orally in an effective manner

Students are further expected (II) to use *core biological knowledge* of ecology, evolution and biodiversity. Students will:

- Comprehend and recall facts about organisms and natural systems
- Integrate the different areas of biological knowledge and understand how biological systems are integrated across spatial and temporal scales
- Synthesize and extend knowledge by exploring new areas of biological knowledge and critiquing previous information through intelligent hypothesis-generation.

Natural Resources and the Environment

Our primary objectives are to produce graduates who:

- Understand and articulate the basic principles of forestry and geology
- Command the techniques and tools used to study forests, soils, and the geologic formations that affect them
- Generate coherent management objectives and who can design and implement a clearly written management plan
- Understand the scientific method
 - formulate and test hypotheses
 - collect and synthesize data in a field setting
 - speak clearly in public on a topic or project of scientific interest

Environmental Chemistry

Students in Environmental Chemistry will:

- Understand the role of chemical processes in controlling the natural environment
- Anticipate how anthropogenic chemical processes can alter that environment
- Develop a well constructed scientific question
- Design experiments to test that question
- Analyze and interpret data
- Defend their conclusions both orally and in writing
- Learn the key economic and political issues and legislation related to the environment

Assessment

We continually assess the progress of our students according to their performance in lecture and the laboratory sections of our classes, and typically, students assess the value of each of their requirements through class/professor evaluations. During their senior year, we also ask our students to take a set of comprehensive examinations and to enroll in a senior project; both of these requirements help us assess the skills that our students have acquired during their four years at our institution.

Assessing our Seniors: (I) The Senior Project

The intent is for each senior to thoroughly examine a specific political, management, or ecological issue towards the end of their undergraduate experience while under the guidance of a small group of professors. This individual or group work gives them a chance to synthesize ideas and concepts acquired during their coursework into a final project that will help prepare them for graduate school or the professional world.

For the Policy majors, past senior seminars have included a look at the economic and biological effects of the pine beetle epidemic on the Cumberland Plateau. The Natural Resource seniors work to develop management plans or environmental assessments for private and public land parcels that can range in size up to 2500 - 10,000 acres. The Ecology and Biodiversity majors and the Environmental Chemistry majors typically undertake research projects that address research hypotheses developed by the students themselves. All of these projects are terminated in an oral presentation, a university sponsored scientific conference, and/ or final written document. The quality of these presentations, combined with each student's level of participation during the semester or year, is used to judge whether students have successfully achieved the goals of this senior year requirement.

Assessing our Seniors (II): Senior Comprehensive Examinations

In addition to the senior project or seminar, environmental studies majors are required to pass a comprehensive examination that is designed to assess each student's ability to respond to questions related to the skills that were previously listed. These exams are administered during the first week of their last semester at Sewanee. The format on these tests varies with each major, but all of the students are required to take an *eight hour written examination covering courses required in the major*. Three of the majors require an additional *oral examination that covers topics related to coursework or general environmental issues*. One of the majors (Natural Resources) also requires a *two-hour field examination* where students interpret maps and make observations outdoors.

Comprehensive examinations are usually assigned a letter grade, and students that successfully respond to questions related to their course work receive passing scores. Students receiving "A" scores in all aspects of the examination pass with distinction. Last year, approximately four students out of 25 received the distinction honor. Students that are unable to successfully pass these examinations are required to retake the weakest aspects of the test at a later date. Last year, approximately three students were asked to do this.

Program Assessment

Faculty and staff associated with the Environmental Studies Program hold an annual meeting each summer to discuss enrollment in the majors, research activities,

funding, revising the Introductory Environmental Studies seminar (EnSt 200), and the overall progress of the Program. In addition to this formal meeting, it is common for seniors and professors to meet and discuss their respective majors during informal meetings as graduation approaches. The results of these discussions are sometimes used to revise major requirements, address overlapping materials in classes, or to revise the senior comprehensive examinations after consultations with the steering committees for each major.