



DEPARTMENT OF PLANT AND SOIL SCIENCES

WHAT IS ENVIRONMENTAL SOIL SCIENCE?

Environmental Soil Science studies one of our most valuable natural resources-soil-and its relationship with environmental quality and plant growth.

AREAS OF EMPHASIS AT DELAWARE

Environmental Soil Science (ESOS) offers the opportunity to study the environment with a focus on one of our most important natural resources--soil. Some questions that soil science seeks to answer include: How do chemical and physical reactions in the soil affect our water supply? What impact do acid rain and global warming have on the quality of the soil in which we grow our food? Is it possible to use soil microorganisms to remediate soil pollution? Issues like these are part of the diverse field of soil science and offer exciting challenges to students interested in solving environmental problems. Majors in ESOS take courses in plant science, chemistry, physics, geology, and soil science to develop sound, technical knowledge. In addition, all students choose general education courses from areas like computing, mathematics, social sciences, humanities, literature and the arts.

WHAT'S SPECIAL ABOUT THE PROGRAM?

At Delaware, Environmental Soil Science majors work closely with the department's faculty, which includes an internationally respected group of scholars in environmental soil microbiology, soil chemistry and soil physics. Not only do our students learn from their professors in class, but they get to know them outside of the lecture hall and lab. Through faculty-mentored research projects, club activities, independent studies, and internships, our students find interactions with faculty to be regular events. Students also benefit from the expertise of the faculty advisor when it comes to choosing classes, searching for internships, and planning their future.

FACILITIES AND RESOURCES

The College of Agriculture and Natural Resources houses the ESOS major, and its facilities are readily accessible to undergraduate students. From the impressive research and teaching laboratories, cuttingedge equipment, and the Fischer Greenhouse Laboratory, ESOS majors have an array of exciting resources to utilize. Townsend and Worriow Halls contain faculty offices, classrooms and top-rate laboratories, as well as a student commons, a

library and a modern computing site with geographic information systems, Web and email access. Our proximity to and affiliation with such groups as the Delaware Biotechnology Institute, Longwood Gardens and the DuPont Company offer opportunities for field trips, research and internships.

CAREER PATHS

Career opportunities for Environmental Soil Science majors lie with consulting firms, state and federal agencies, and industry. Specialists in soil science are needed in areas like water quality, soil ecology, wetland ecology, and recycling technology. As with most science disciplines, graduate degrees greatly increase the chance for career advancement. Qualified students from our program go on to pursue graduate degrees in areas such as soil chemistry, soil physics, environmental chemistry, geology and environmental engineering. We encourage all students to participate in job-search workshops and career days; to seek internships; to develop their communication skills; and to learn to network with prospective employers. This, in addition to doing well academically, greatly enhances post-graduate opportunities.

THE ENVIRONMENTAL SOIL SCIENCE CURRICULUM

Starting with the first semester, Environmental Soil Science majors usually have at least one course in the major each term. To earn a bachelor's degree, students must complete **124 credits** and meet the specific requirements for their concentration, as outlined in the *University of Delaware Undergraduate Catalog*. Each semester's courses will vary, depending on the student's interests and academic preparation. **The following plan is only one example; not every student will take every course in the same order, and only required courses are listed. Most students take 12 -17 credits per semester;** Winter and Summer sessions may be used to lighten the loads of regular semesters.

FRESHMAN YEAR

FALL SEMESTER

Botany I (4 cr.) *Introduction to botany, including cell structure and function, anatomy, genetics, reproduction, physiology, taxonomy and ecology of plants. Includes one 2-hr. lab/week.*

New Student Colloquium (1 cr.) *Focus on academics, careers and resources as they relate to success in the environmental soil science and plant science majors.*

Land and Water Management (3 cr.) *Focus on hazardous waste management, acid rain, wetlands, rainfall, and groundwater quality.*

General Chemistry (4 cr.) *Fundamental laws of chemical action and the properties and uses of elements and compounds. Includes one 3-hr. lab/week.*

SPRING SEMESTER

Introduction to Crop Science (3 cr.) *Plant structure and plant processes with practical application to the production and management of commercial crops.*

Critical Reading and Writing (3 cr.) *Expository & argumentative composition through analysis of select readings.*

General Chemistry II (4 cr.) *A continuation of first-semester chemistry. Includes one 3-hr. lab/week.*

Mathematics (3 cr.) *The first math course is determined by the student's background, SAT scores, and a math placement test. Eventual completion of Calculus is required.*

General Geology I (4 cr.) *Principles of physical and historical geology and their application in interpreting earth processes and the earth's history. Includes one 3-hr. lab/week.*

SOPHOMORE YEAR

Land Surveying (3 cr.)

Quantitative Analysis with Lab (4 cr.)

Soil Fertility and Plant Nutrition (4 cr.)

Breadth Requirement * (6 cr.)

Introduction to Soil Science (4 cr.)

Introductory Physics (4 cr.)

Organic Chemistry (4 cr.)

JUNIOR

Technical Writing (3 cr.)

Agricultural Waste Management (3 cr.)

Fate and Transport of Soil Contaminants (3 cr.)

Agronomic Crop Science (3 cr.)

Environmental Soil Microbiology (4 cr.)

Breadth Requirements/Electives * (12-18 cr.)

SENIOR YEAR

Economics of Agriculture and Natural Resources (3 cr.)

Suggested Geology Courses (3 - 8 cr.)

Breadth Requirements/Electives * (10 - 20 cr.)

Environmental Soil Chemistry (3 cr.)

Suggested Plant & Soil Sciences Courses (3 - 8 cr.)

* There's a total of 21 University and College Breadth credits required for this degree including a minimum of nine credits from any three different College of Agriculture and Natural Resources subject area codes, outside the subject area codes of the student's major. Twelve credits are required (3 from each) from the following categories: Creative Arts and Humanities; History and Cultural Change; Social and Behavioral Sciences; Mathematics, Natural Sciences and Technology. At least one course in multicultural studies must be taken to fulfill graduation requirements.

FOR MORE INFORMATION

You are welcome to come talk with us about our majors and the ways in which we can help you reach your goals. Please contact us:



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