School of Arts and Sciences

ENVIRONMENTAL GEOLOGY

www.geology.pitt.edu

Students who major in environmental geology explore and understand how humans have impacted the Earth and Earth processes. Solutions to environmental problems facing humankind, such as pollution and resource depletion, will be grounded in a sound understanding of the geosciences. Courses in the environmental geology major provide students with the technical tools and knowledge to effectively seek solutions to these critical issues.

Requirements for the Major
The environmental geology major requires 69 credits of course work, including the following:

Core Courses (29 credits)
Choose one of the following three courses:

GEOL 0040 Physical Geology
This is an introductory course covering the materials that make up the Earth, and the processes that are at work both on the surface and within the interior of the Earth.

GEOL 0800 Geology
This course is a survey of the minerals and rocks, volcanoes, landslides, glaciers, and other geologic phenomena important to modern man.

GEOL 0860 Environmental Geology
This course will provide the student with an awareness of the environmental problems facing mankind today.

GEOL 0055 Geology Laboratory
The course consists of a laboratory structured to give students an overview as well as hands-on experience with the methodology used by Earth scientists to study geologic processes.

GEOL 1001 Mineralogy
This course examines physical, chemical, and crystallographic properties of minerals.

GEOL 1003 Igneous and Metamorphic Petrology
This course is a lecture and laboratory course concerned with a study of the origin, occurrence, identification, and classification of igneous and metamorphic rocks.

GEOL 1020 Sedimentology and Stratigraphy
The first part of this course involves the description of sedimentary particles and deposits using fundamental properties and derived properties. The second part reviews modern sedimentary environments and their rock products. Principles of stratigraphy are also introduced.

GEOL 1051 Groundwater Geology
The basic physical and chemical properties of groundwater will be tested in a geologic context with emphasis on geologic processes during this course. The importance of groundwater as a resource and as a geochemical agent will be explored in detail.

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GEOL 1100 Structural Geology
This course is devoted to the study of folded, faulted, flowed, sheared, and jointed rocks with the aim of preparing students to recognize and interpret deformed rocks.

GEOL 1960 Field Camp

Electives (12 credits)

At least nine credits of upper-division or graduate-level Geology courses, chosen from the following:

GEOL 1055 Environmental Science, Ethics, and Public Policy
This course examines the interrelationships among environmental science, ethics, and policy.

GEOL 1060 Geomorphology
This course is a survey of the major landform features found on the Earth's surface. Each landform type is first described qualitatively and then examined in the terms of the processes that created it.

GEOL 1080 Geoarchaeology
This course is an examination of geological methods applied to the study of archaeology. The first part of the course examines location of sites by familiarization with the physical environment, maps and photos. The second examines characteristics of site sediments and artifacts with emphasis on stratigraphic principles. Specific sites are discussed.

GEOL 1200 Paleontology
All invertebrate phyla with significant fossil records are surveyed during this course.

GEOL 1410 Exploration Geophysics
This course is an introduction to the theory, methods, and instrumentation used in exploration geophysics.

GEOL 1413 Well Logging
This course is an introduction to the interpretation of open-hole logs and their use in estimating rock parameters useful to both the geologist and the petroleum engineer.

GEOL 1445 GIS, GPS, and Computer Methods
The goal of this course is to gain expertise in Arc/Info GIS and UNIX-based workstations.

GEOL 1460 Remote Sensing of the Earth
This course is an introduction to the theory and techniques of remote sensing of the surfaces of the Earth and other planets using electromagnetic radiation and its application to the solution of geological problems.

GEOL 1500 Chemistry of Earth and Its Environment
An examination of the uses of chemistry in geology is done during this course.

GEOL 1515 Environmental Geochemistry
This course will explore the complex interactions of Earth's rock, water, air, and life systems that determine the chemical characteristics of the surface environment.

GEOL 1602 Mineral and Energy Resources
This course deals with the geology of the fossil fuels, the more important industrial rocks and minerals, and building stone. Emphasis is on the processes that form the commercial accumulations of these materials and the geological setting in which they occur.

GEOL 1640 Geologic and Environmental Hazards
Students will be introduced to different types of geological processes and environmental conditions that can produce hazardous conditions in the modern world.

GEOL 1701 Geology of the Planets
This course is an introduction to the geological processes and resulting landforms occurring on the surfaces of the planets of our solar system.

GEOL 1900 Internship

GEOL 1903 Undergraduate Research
This course provides the opportunity for undergraduates to obtain hands-on experience in geology by actively interacting with faculty members on research projects.

GEOL 2447 Introduction to Arc/View and Advanced Arc/View Programming
This course introduces the ERSI Arcview tool. Numerous computer workstation-based assignments introduce the student to GIS landbases and GIS.

GEOL 3963 Topics in Environmental Geology
This is a course designed to permit the teaching of new and significant developments in the field of economic geology and environment. It permits maximum flexibility, enabling presentation of subject matter not normally treated in formal geology courses.

One upper-division BIOSC, CHEM, CE, MATH, or CS course such as BIOSC 0370 Ecology and Evolutionary Biology, CHEM 0310 Organic Chemistry, or CE 1503 Introduction to Environmental Engineering.

Co-requirements (28 credits)
MATH 0220 and MATH 0230 Analytical Geometry and Calculus 1, 2
PHYS 0104/0105 Basic Physics for Science and Engineering 1, 2 (or PHYS 0475/0476 UHC)
CHEM 0110/0120 General Chemistry 1, 2 or equivalents
BIOSC 0150 Foundations of Biology 1
BIOSCI 0160 Foundations of Biology 2 or GEOL 1200 or BIOSC 0740

Departmental Honors
In order to graduate with departmental honors, a student must complete one of three options (course, research, or internship). Please see the department for details on these options for students majoring in environmental geology.

For more information about the environmental geology major, contact:
University of Pittsburgh
Department of Geology and Planetary Science
503 Space Research Coordination Center
Pittsburgh, PA 15260
412-624-6347
E-mail: cejones@pitt.edu

For more information about other majors, contact:
University of Pittsburgh
Office of Admissions and Financial Aid
Alumni Hall, 4227 Fifth Avenue
Pittsburgh, PA 15260-6601
412-624-PITT
E-mail: oafa@pitt.edu
www.pitt.edu/~oafa

Special Programs and Opportunities

Geological Society of the University of Pittsburgh (Geoclub)
This student group is aimed at anyone who has an interest in the Earth sciences or the environment, who calls himself or herself "rockhound" or "mineral hound," or who wants to share a love of all things outdoors. Some activities include a regular weekly seminar and mineral collecting trips to places like New York and Laurel Caverns.

Sigma Gamma Epsilon
This student organization is the geology honorary society. Activities include a geoprom and field trips like fossil collecting in Footedale, Pa.; mineral collecting in Bancroft, Ontario; and mineral and fossil collecting in the Pittsburgh region.

University Honors College (UHC)
The UHC offers many resources for talented, active students—unique courses, special degrees, opportunities to perform independent research or teach, supplemental advising, and a social and academic community of similarly motivated students. UHC courses offer a more in-depth treatment of the material covered in a nonhonors course. Students work more problems, write more, read more, and discuss topics in greater depth. Although the UHC does not have a formal membership and does invite all students to participate in honors courses, there are certain qualifications that must be met to be eligible to take UHC courses.

Internships
Having an internship can be one of the most enlightening and productive aspects of your undergraduate education. It not only gives you a closer look at working in a particular field but can help you gain a competitive edge, make contacts in the marketplace, and earn credits toward your degree. Pittsburgh is an exciting place for internship opportunities: internationally

known as a renowned center for health care and groundbreaking medical research; home to many corporate headquarters, including H.J. Heinz, Fisher Scientific, PPG Industries, Westinghouse Electric, and Mellon Financial Corp.; and a city with a wealth of cultural and entertainment activities, including three professional sports teams and the Carnegie system of museums. Internships are not limited to Pittsburgh, however. Every year, students complete internships in cities such as Philadelphia, Pa.; Washington, D.C.; New York, N.Y.; and their own hometowns. Some students even complete an internship as part of their study abroad experience.