

School of Arts and Sciences

ENVIRONMENTAL STUDIES

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Rapid growth in human population and development has led to complex environmental problems, both locally and globally. The way in which we address these issues will have a profound effect on our society and planet. Enlightened solutions require a strong component of scientific knowledge and an awareness of the relevant societal issues.

The Bachelor of Arts in Environmental Studies equips students with an understanding of earth systems and the environment, including the effect of geologic processes on human activity, and the impact of humans on the biosphere, atmosphere, hydrosphere, and global climate. Courses in the natural and social sciences supplement a traditional liberal arts curriculum to provide a comprehensive, interdisciplinary background in the scientific, economic, political, and social aspects of human interaction with the environment.

The Environmental Studies degree provides a strong, balanced background for students who seek careers in fields such as resource development and management, environmental policy and regulation, risk assessment, land use planning, public policy, and education. Potential employers include local, state or federal governments, non-profit organizations, consulting firms, or companies affected by environmental issues or regulations. Graduates of the Environmental Studies program can also pursue postgraduate study in fields such as business, law, medicine, public policy, education, international relations, urban and regional planning, environmental management, and public health.

The Environmental Studies Program combines four components: (1) core courses provide a fundamental understanding of environmental processes, issues and policy, including an interdisciplinary capstone course and an internship; (2) co-requirements provide the necessary prerequisites for later study; (3) electives in the natural and social sciences allow the student to explore environmental issues with greater depth; and (4) field study experience. Students are strongly encouraged to undertake an independent research project as well courses in public policy (GEOL 1904), management (GEOL 1902) and environmental issues (GEOL 3963).

Program Structure

A. Core Courses (35 credits minimum) [prerequisite(s) in brackets]

Department of Geology and Planetary Science (14 credits):

One of the following:

- GEOL 0040 Physical Geology (3) [none]
- GEOL 0800 Geology (3) [none]
- GEOL 0820 Natural Disasters (3) [none]
- GEOL 0860 Environmental Geology (3) [none]

And all of the following:

- GEOL 0030 Atmosphere, Oceans and Climate (3) [none]
- GEOL 0055 Geology Laboratory (2) [after or concurrent with GEOL 0040, GEOL 0800, GEOL 0840, or GEOL 0860]
- GEOL 1515 Environmental Geochemistry (3) [GEOL 0055 and CHEM 0110]
- GEOL 1313 W:Communication for Environmental Professionals (3) [none; C or better in general writing]

Note: Students are encouraged to take Directed Reading (GEOL 1904), management (GEOL 1902) and environmental issues (GEOL 3963)



Department of Biological Sciences (4 credits):

BIOSC 0050 Foundations of Biology Laboratory 1 (1) [pre- or co-requisite: BIOSC 0150]

BIOSC 0150 Foundations of Biology 1 (3) [none]

Note: Students are encouraged to take BIOSC 0160 because it is a prerequisite for other courses (including Pymatuning field courses). BIOSC 0160 also can be used toward elective credit.

Department of Economics (3 credits) Choose one of the following:

ECON 0110 Introduction to Macroeconomic Theory (3) [MATH 0031]

ECON 0800 Introduction to Economics (3) [none]

ECON 0100 Introductory Microeconomic Theory (3) [MATH 0031]

College of General Studies, Legal Studies (3 credits):

LEGLST 1320 Law and Environment (3) [none]

Environmental and Occupational Health (3 credits) / **History and Philosophy of Science** (3 credits)

Choose one of the following:

EOH 2180/2181 Introduction to Risk Sciences (2); Risk Assessment Practicum (1) SIGN UP FOR BOTH CLASSES [CHEM 0110, BIOSC 0150, pre- or co-req: MATH 0120 (can be taken concurrently), STAT 0200 or above]

HPS 0611 Principles of Scientific Reasoning (may be substituted for EOH 2180/2181)

Environmental Science Field Course (at least 2 credits):

At least two credits from one of the following:

BIOSC 0740 Yellowstone Field Course (4) [none]

Any BIOSC course offered at Pymatuning Ecology Laboratory [BIOSC 0160]

An approved environmental science field course run through an outside institution

Internship (3 credits):

GEOL 1900 Internship [none]

Interdisciplinary Capstone Course (3 credits):

GEOL 1055 Environmental Science, Ethics, and Public Policy (3) [GEOL 0055; LEGLST 1320; Geology 1904 or 3963] (Honors section, GEOL 1056, is taught jointly with the University Honors College) Usually taken spring term, senior year

B. Co-requirements (11–12 credits) [prerequisite(s) in brackets]

Department of Chemistry (4 credits):

CHEM 0110 General Chemistry 1 (4) [none, but recommended that students with limited background should take CHEM 0100 first]

Department of Mathematics (4 credits) Choose one of the following:

MATH 0220 Analytic Geometry and Calculus 1 (4) [MATH 0031 or 0032 (Algebra or Trigonometry)]

MATH 0120 Business Calculus (4) [MATH 0031 or MATH 0100]

MATH 0125 & 0126 Calculus for Business 1 & 2

Department of Statistics (3 or 4 credits) Choose one of the following:

STAT 0200 Basic Applied Statistics (4) [MATH 0031 or equivalent]

STAT 1000 Applied Statistical Methods (4) [MATH 0031 or equivalent]

STAT 1100 Statistics and Probability for Business Management (4) [MATH 0120 or similar]

STAT 1151 Introduction to Probability and Mathematical Statistics 1 (3) [MATH 0230]

C. Electives (24 credits—at least 12 credits in social sciences/humanities elective list and at least 12 credits in natural sciences elective list. Choose from courses on the following pages.) Elective credits may be earned through independent study projects or additional internships and applied to either category. Electives begin on the following page. See advisor for additional electives.

Social Sciences and Humanities Electives (at least 12 credits) [prerequisite(s) in brackets]

Department of Anthropology

ANTHRO 0582 Introduction to Archaeology (3) [none]

ANTHRO 0620 Biocultural Anthropology (3) [none]

ANTHRO 1524 Chinese Archaeology (3) [none]

ANTHRO 1525 Eastern North American Archaeology (3) [none]

ANTHRO 1528 South American Archaeology (3) [none]
ANTHRO 1751 People and Environment of Amazonia (3) [ANTHRO 0780 recommended]

Department of Economics

ECON 0230 Public Finance 1 (3) [ECON 0100]
ECON 0330 Urban Economics (3) [ECON 0010 or ECON 7010]
ECON 0360 Introduction to Environmental and Resource Economics (3) [ECON 0800, 0100, or equivalent]
ECON 0530 Economics of Underdeveloped Areas (3) [one introductory ECON course (ECON 0800, 0100, 0110)]
ECON 0630 East Asia's Dynamic Economies (3) [ECON 0800 or ECON 0100 and 0110]
ECON 1360 Environmental Economics (3) [ECON 1100]
ECON 1530 Development Economics (3) [ECON 1100]
ECON 1560 World Food Economy (3) [ECON 1100 or equivalent]
ECON 1630 Economic Development of China (3) [ECON 0800, 0100, and 1100 or equivalent]
ECON 1640 Japanese Economic Growth (3) [ECON 0100 and ECON 0110 or ECON 0120 or ECON 0800]

Department of History

HIST 1626 History of U.S. Landscape (3) [none]
HIST 1669 History of the American City (3) [none]
HIST 1695 Environmental Politics (3) [none]

Department of History and Philosophy of Science

HPS 0517 Thinking About the Environment (3) [none]
HPS 0621 Problem Solving: How Science Works (3) [none]
HPS 0633 Science, Philosophy, and Public Policy (3) [none]

Department of Political Science

PS 1261 American Public Policy (3) [none]
PS 1267 Environmental Politics and Policy (3) [General Writing and PS 0200]
PS 1301 Theories and Concepts in Comparative Government (3) [none]
PS 1374 Politics of Global Inequality (3) [none, but course in social science helpful]
PS 1541 Politics of Global and Economic Relations (3) [none]
PS 1542 Environmental Politics (3; Honors)
PS 1543 Globalization and International Politics (3) [PS 0500]

Department of Sociology

SOC 0312 Science in Society (3) [none]
SOC 1438 Demography (3) [none]
SOC 1445 Society and Environment (3) [none, but sociological theory and research methods are helpful]

Urban Studies Program

URBST 0080 Introduction to Urban Studies (3) [none]
URBST 1700 International Urbanism Seminar (3) [URBST 0080]

Graduate School of Public and International Affairs

PIA 2113 Environment, Land Use and Public Policy (3) [permission of instructor]
PIA 2114 Environmental and Economic Sustainability (3) [none]
PIA 2115 Environmental Management and Policy (3) [none]
PIA 2116 Environmental and Resource Economics (3) [none]

College of Business Administration

BUSENV 1766 Environmental Management (3) [none]

Natural Sciences and Engineering Electives (at least 12 credits) [prerequisite(s) in brackets]

Biological Sciences

BIOSC 0060 Foundations of Biology Laboratory 2 (1) [C or better in BIOSC 0050, pre- or co-requisite BIOSC 0160]
BIOSC 0160 Foundations of Biology 2 (3) [C or better in BIOSC 0150]
BIOSC 0350 Genetics (3) [Grade C or better in BIOSC 0150, BIOSC 0160, and CHEM 0120]
BIOSC 0370 Ecology (3) [none]
BIOSC 0390 Ecology Laboratory (1) [C or better in BIOSC 0060, co-requisite equivalent BIOSC 0370]

NOTE: Students are encouraged to take courses at the Pymatuning Laboratory of Ecology

Department of Chemistry

CHEM 0120 General Chemistry 2 (4) [CHEM 0110]
CHEM 0250 Introductory Analytical Chemistry (3) [CHEM 0120, 0720 UHC, or 0970]
CHEM 0310 Organic Chemistry 1 (3) [CHEM 0110 and 0120 (strong performance)]
CHEM 0350 Principles of Organic Chemistry (3) [CHEM 0110 and 0120 (strong performance)]
CHEM 0810 Contemporary Issues and Their Impact on Public Policy (3) [CHEM 0800]

Department of Computer Science

CS 0110 Introduction to Personal Computing and the Internet (3) [none]
CS 0131 Software for Personal Computing (3) [none]

Department of Geology and Planetary Science

GEOL 0060 Historical Geology (4) [GEOL 0055 and Intro GEOL course]
GEOL 1001 Mineralogy (4) [Chem 110, 120; Intro GEOL course; GEOL 0055]
GEOL 1015 Geology Colloquium (1)
GEOL 1020 Sedimentology/Stratigraphy (4) [Intro GEOL course and GEOL 0055]
GEOL 1052 Paleoclimates (4) [Intro GEOL course and GEOL 0055]
GEOL 1060 Geomorphology (4) [GEOL 0055; desirable to have intro Geology]
GEOL 1079 Field Methods (1) [none]
GEOL 1100 Structural Geology (4) [Intro GEOL course and GEOL 0055]
GEOL 1200 Paleontology: History of Life (4) [GEOL 0055]
GEOL 1201 Evolution and Extinction (3) [GEOL 0055]
GEOL 1309 Physicochemical Geologic Limnology (3)
GEOL 1410 Exploration Geophysics (3) [PHYS 0040 and GEOL 0055]
GEOL 1445 GIS, GPS, and Computer Methods (3) [none] usually offered fall term
GEOL 1460 Remote Sensing of the Earth (3) [none] usually offered fall term
GEOL 1640 Geologic and Environmental Hazards (3) [Intro GEOL course and GEOL 0055]
GEOL 1901 Independent Study [none] Consult with advisor or faculty sponsor
GEOL 1902 Management of Environmental and Non-Profit Organizations (3) [none]
GEOL 1903 Undergraduate Research Consult with advisor or faculty sponsor
GEOL 1904 Directed Reading – Health and Safety/HAZWOPER (3) [none]
GEOL 1904 Directed Reading – Environmental Policy (3) [none]
GEOL 2447 Introduction to Arc/View and Advanced Arc/View Programming (3) [none]
GEOL 3963 Issues in Environmental Policy (3) [none]

NOTE: Classes in boldface can be used for either social science electives or natural science electives in ES major.

Department of Physics

PHYS 0087 Nuclear Science and Society (3) [none]

Swanson School of Engineering: Civil and Environmental Engineering Department

CEE 1503 Introduction to Environmental Engineering (3) [CHEM 0970] Permission of instructor
CEE 1513 Environmental Engineering Processes (3) [CEE 1503] Permission of instructor
CEE 1514 Environmental Impact Assessment (3) Permission of instructor
CEE 1210 Engineering and Sustainable Development (3) Permission of instructor

For further information about Environmental Studies, contact:

University of Pittsburgh
School of Arts and Sciences
Department of Environmental Studies
200 Space Research Coordination Center
Pittsburgh, PA 15260
412-624-6615
www.pitt.edu/~esweb

For further information about other programs contact:

University of Pittsburgh
Office of Admissions and Financial Aid
Alumni Hall, 4227 Fifth Avenue
Pittsburgh, PA 15260
412-624-7488
E-mail: oafa@pitt.edu
www.oafa.pitt.edu