ENVIRONMENTAL SCIENCE, B.S.

Environmental Science Major

The major leading to the B.S. degree emphasizes the technical and analytical aspects of environmental science with concentrations in earth science and biology. The program is designed for those students intending to work as scientists in laboratory, field, or research positions. Students with this degree may enter graduate programs in geology, biology, and environmental science. Total credits - 126

Environmental Science with a Concentration in Earth Science B.S. Degree-Required Courses and Recommended Course Sequence

First Semester Credits

[[BIO-121]] Principles of Modern Biology I	4
[[FYF-101]] First-Year Foundations	3
[[MTH-111]] Calculus I	4
[[CHM-113]] Elements & Compounds Lab	1
[[CHM-115]] Elements & Compounds	3
	15

Second Semester

[[CHM-114]] The Chemical Reaction Lab	1
[[CHM-116]] The Chemical Reaction	3
[[BIO-122]] Principles of Modern Biology II	4
[[GEO-101]] Introduction to Geology	3
[[GEO-103]] Introduction to Geology Lab	1
[[MTH-114]] Calculus II and Modelling	4
	16

Third Semester

[[EES-251]] Synoptic Meteorology	4
[[MTH-150]] Elementary Statistics	3
[[ENG-101]] Composition	4
[[PHY-171]] Principles of Classical and Modern Physics	4
Distribution Requirement	3
	18

Fourth Semester

[[EES-210]] Global Climate Change	3
[[EES-213]] Climate Modeling	1
[[EES-240]] Principles of Environmental Engineering & Science	3
[[EES-241]] Principles of Environmental Engineering & Science Lab	1
[[PHY-174]] Applications of Classical & Modern Physics	4
Distribution Requirement	3
	15

Fifth Semester

[[EES-230]] Ocean Science	4
[[ENV-321]] Hydrology	3
[[ENV-323]] Hydrology Lab	1
[[GIS-271]] Environmental Mapping I	3
[[EES-394]] Field Study	1
Distribution Requirements	6
	18

Sixth Semester

[[ENV-330]] Water Quality	4
[[GIS-272]] Environmental Mapping II	3
[[EES-302]] Science Research and Communication	1
[[EES-304]] Environmental Data Analysis	2
Program Elective	3
	16

Seventh Semester

[[EES-201]] Environmental Ethics and Sustainability	1
[[ENV-315]] Soils	3
[[EES-391]] Senior Projects I	1
Program Electives	6
Distribution Requirement	3
	14

Eighth Semester

[[GEO-370]] Geomorphology	3
[[EES-390]] Environmental Science Seminar	3
[[EES-392]] Senior Projects II	2
Distribution Requirements	3
Free Elective	3
	14

NOTE:

B.S. candidates are encouraged to complete a science minor (e.g., Physics, Chemistry, or Biology); consult the undergraduate bulletin for details. Candidates are also encouraged to have relevant cooperative educational experiences, 6 credits of which may be applied as EES electives.

Courses at the 200-level and above are intended for science and mathematics majors only. Exceptions may be made with permission of the instructor. Election of a 200-level course by a non-science major will preclude registration for the corresponding 100-level course.

Environmental Science with a Concentration in Biology B.S. Degree - Required Courses and Recommended Course Sequence

First Semester Credits

[[BIO-121]] Principles of Modern Biology I	4
[[FYF-101]] First-Year Foundations	3
[[MTH-111]] Calculus I	4
[[CHM-113]] Elements & Compounds Lab	1
[[CHM-115]] Elements & Compounds	3
	15

Second Semester Credits

[[CHM-114]] Chemical Reactions Lab	1
[[CHM-116]] Chemical Reactions	3
[[BIO-122]] Principles of Modern Biology II	4
[[GEO-101]] Introdcution to Geology	3
[[GEO-103]] Introdcution to Geology Lab	1
[[MTH-114]] Calculus II and Modelling	4
	16

Third Semester Credits

[[EES-251]] Synoptic Meteorology	4
[[MTH-150]] Elementary Statistics	3
[[ENG-101]] Composition	4
[[PHY-171]] Principles of Classical and Modern Physics	4
Distribution Requirement	3
	18

Fourth Semester Credits

[[EES-210]] Global Climate Change	3
[[EES-213]] Climate Modeling	1
[[EES-240]] Principles of Environmental Engineering & Science	4
[[PHY-174]] Applications of Classical & Modern Physics	4
Distribution Requirement	3
	15

Fifth Semester Credits

[[BIO-225]] Population and Evolutionary Biology	4
[[BIO-347]] Biostats and Experimental Design	4
[[GIS-271]] Environmental Mapping I	3
[[CHM-231]] Organic Chemistry I	3
[[CHM-233]] Organic Chemistry I Lab	1
Distribution Requirement	3
	18

Sixth Semester Credits

[[GIS-272]] Environmental Mapping II	3
[[EES-302]] Literature Methods	1
EES/BIO Electives	6
Distribution Requirement	3
Free Elective	3
	16

Seventh Semester Credits

[[EES-201]] Environmental Ethics and Sustainability	1
[[ENV-315]] Soils	3
[[ENV-341]] Freshwater Ecosystems	3
[[ENV-391]] Senior Projects I	1
EES/BIO Electives	6
	14

Eight Semester Credits

[[EES-390]] Environmental Science Seminar	3
[[EES-392]] Senior Projects II	2
Distribution Requirements	6
Free Elective	3
	14

EES. EARTH AND ENVIRONMENTAL SCIENCES

EES-198/298/398. TOPICS IN EES
Credits: Varies with topic

Departmental courses on topics of special interest, not extensively treated in regularly scheduled offerings, will be presented under this course number on an occasional basis. May be repeated for credit.
Click here for fee for courses with a lab.

Pre-Requisites
Varies with topic studied.

EES-105. PLANET EARTH
Credits: 3

The nature of our planet and how it works are examined in the context of Earth as a constantly changing dynamic system. An emphasis on global scale processes and the interaction of humans and their physical environment is coupled with in-depth coverage of how science is done and the scientific principles that influence our planet, its rocks, mountains, rivers, atmosphere, and oceans. Major sub-topical areas in the Planet Earth series may include geology (Forces of Geologic Change), oceanography (The Restless Ocean), astronomy (The Cosmic Perspective), geography (Global Regions and Geography), and the relationship between people and their physical surroundings (The Global Environment). Intended for students who are not majoring in science, engineering, pre-pharmacy, nursing, or B.S. programs in mathematics or computer science. Two hours of lecture and two hours of lab per week.
Click here for course fees.

Pre-Requisites
No previous background in science or college-level mathematics is required.

EES-201. ENVIRONMENTAL ETHICS AND SUSTAINABILITY
Credits: 1

This course entails an examination of the central topics of environmental ethics and sustainability as viewed from the perspectives of science. Ethical and sustainability paradigms that all environmental scientists should be aware of will be studied. Course is delivered online.

Pre-Requisites
[[EES-240]] or permission of the instructor.

EES-210. GLOBAL CLIMATE CHANGE
Credits: 3

The nature and function of earth's global climate are examined from a unified system perspective. Major questions focus on scientific versus public understanding of trends in global temperature, precipitation, and sea level. The course emphasizes negative and positive feedback processes that force key changes in the earth's climate system: past, present, and future. Topics include fundamentals of global and regional heat and water balance, the role of elemental cycles in controlling climate (e.g., the carbon cycle), descriptive climate classification, long-term, short-term, and catastrophic climatic change (e.g., ice ages and bolide impacts), and human effects on climate (e.g., enhanced greenhouse, rising sea level). This course integrates a scientific understanding of climatic change and explores contemporary social and economic policy responses to change scenarios. Three hours of lecture per week.

EES-213. CLIMATE MODELING
Credits: 1

Students will utilize software to construct basic models of Earth Systems. No prior knowledge of the software is assumed or required. Weekly assignments will consist of computer-based modeling exercises, each progressively building upon previous assignments. Specifically, students will utilize software to construct relatively simple models of world population growth, fossil fuel consumption, the global carbon cycle, and the Earth's energy balance. The final modeling exercise couples the population growth, carbon cycle, and Earth energy balance assignments in an effort to explore the effect of future population growth and carbon dioxide emissions on global mean temperature. Two hours of lab per week.

Co-Requisites
[[EES-210]]

EES-218. ENVIRONMENTAL ETHICS
Credits: 3

An examination of the central problems of environmental ethics as viewed from the perspectives of science and of philosophy. The value of nature and 'natural objects,' differing attitudes toward wildlife and the land itself, implications of anthropocentrism, individualism, ecocentrism, and ecofeminism, bases for land and water conservation, and other topics will be examined within a framework of moral and scientific argument. Cross-listed with [[PHL-218]].

Pre-Requisites
[[PHL-101]] or [[EES-240]] or permission of the instructor.

EES-230. OCEAN SCIENCE
Credits: 4

An interdisciplinary approach to the study of the fundamentals of oceanography emphasizing physical, chemical, and biological interrelationships. Three hours of lecture and three hours of lab. Requirements: For CS, Engineering, Math, and Science majors only
Click here for course fees.

EES-240. PRINCIPLES OF ENVIRONMENTAL ENGINEERING & SCIENCE
Credits: 3

A study of physical, chemical, and biological components of environmental systems and a discussion of processes involved in water quality management, air quality management, waste management, and sustainability. Three hours of lecture per week.

Pre-Requisites
[[MTH-111]] or permission of the instructor. Requirements: for CS, Engineering, Math, and Science majors only.

EES-242. ENVIRONMENTAL HEALTH
Credits: 3

To provide students with an understanding of man's impact on the environment and how those impacts can be controlled or mitigated. Students completing this course should be able to recognize environmental problems and understand control and preventative measures. Three hours of lecture.

Pre-Requisites
Introductory physics and chemistry. Students who have taken [[EES-240]] will be admitted only with the consent of the instructor.

EES-251. SYNOPTIC METEOROLOGY
Credits: 4

Topics include surface and upper air weather systems, weather phenomena, climate, and local weather influences. Synoptic map analysis and interpretation are emphasized. Three hours of lecture and three hours of lab per week. Requirements: For CS, Engineering, Math, and Science majors only
Click here for course fees.

EES-261. REGIONAL GEOGRAPHY
Credits: 3

Topics covered include maps and charts and basic elements of physical, cultural, historical, and economic geography as applied to specific geographic regions. Three hours of lecture per week.

EES-280. PRINCIPLES OF ASTRONOMY
Credits: 4

Topics include orbital mechanics, results of planetary probes, spectra and stellar evolution, and cosmology. Three hours of lecture and three hours of lab per week. Requirements: For Science majors only
Click here for course fees.

EES-302. SCIENCE RESEARCH AND COMMUNICATION
Credits: 1

The aim for this course is to provide students with the necessary foundation to think critically about scientific research and communication. The course introduces students to the (1) philosophy of science, (2) design, execution, and evolution of scientific projects, (3) exploration, evaluation, and management of scientific literature, (4) methods and ethics of scientific communication, and (5) proposal design for a project to be continued into Senior Project (EES/GEO 391/392) that includes a literature review, definition of research questions, objectives, or testable hypotheses, and the methods used to carry out the project. The broader social and political context in which scientific research is situated and must respond to and interact with is also explored. More than that, this course explores the important connections between research design and communication by having students focus on the application of learned theory and skills to projects with Senior Project advisor.

Pre-Requisites
Junior standing.

EES-304. ENVIRONMENTAL DATA ANALYSIS
Credits: 2

To acquaint students majoring in earth and environmental sciences with the techniques and methods of data acquisition and analysis, including environmental sampling methodology and data management. Emphasis will be placed on examination of real data sets from various areas of the earth and environmental sciences with particular emphasis placed on using and applying graphical and statistical procedures used in [[EES-391]]-392 (Senior Projects). Two hours of lecture per week.

Pre-Requisites
[[MTH-150]] and Junior standing or permission of the instructor.

EES-340. CONSERVATION BIOLOGY
Credits: 3

This course will cover the major topics of conservation biology including an introduction to biodiversity, threats to biodiversity, and solutions to diminish extinctions and population declines. Lecture: three hours per week. Cross-listed with [[BIO-340]].

Pre-Requisites
BIO 121-122, BIO 225-226 or permission of the instructor.

EES-341. FRESHWATER ECOSYSTEMS
Credits: 3

A study of the biological and ecological aspects of streams, lakes, and wetlands from a watershed perspective. An initial introduction to physical, chemical, and geological principles of limnology is followed by a focus on freshwater biology. Laboratories include field-based watershed investigations and lake management assessments using geographic information systems techniques. Cross-listed with [[BIO-341]]. Two hours of lecture and three hours of lab per week. Offered in alternate years.
Click here for course fees.

Pre-Requisites
[[GEO-211]] or [[EES-240]] or [[BIO-121]]-122 or permission of the instructor.

EES-343. MARINE ECOLOGY
Credits: 3

An examination of the biology of marine life within the context of modern ecological principles. The structure and physiology of marine organisms will be studied from the perspectives of adaptation to the ocean as habitat, biological productivity, and interspecific relationships. Emphasis will be placed on life in intertidal zones, estuaries, surface waters, and the deep sea. Two hours of lecture and three hours of lab per week. Cross-listed with [[BIO-343]]. Offered in alternate years.
Click here for course fees.

Pre-Requisites
[[EES-230]] and [[BIO-121]]-122 or permission of the instructor.

EES-344. ECOLOGY
Credits: 4

Ecology examines contemporary ecological thinking as it pertains to the interrelationships of organisms and their environments. Interactions at the populations and community level are emphasized. Two hours of lecture and three hours of lab per week. Cross-listed with [[BIO-344]]. Offered in alternate years.
Click here for course fees.

Pre-Requisites
[[BIO-121]]-122, 223-224, or permission of the instructor.

EES-366. FIELD BOTANY
Credits: 3

This is a specialized summertime field course, which emphasizes a taxonomic, phylogenetic, and ecological survey of higher plants indigenous to Northeastern Pennsylvania. Due to the extensive field work, enrollment is somewhat more restricted than in other courses; therefore, written permission from the instructor is the primary prerequisite for those upperclassmen who wish to register for the course. Cross-listed with [[BIO-366]]. Offered in alternate years.
Click here for course fees.

Pre-Requisites
[[BIO-121]]-122, 223-224, or permission of the instructor.

EES-390. ENVIRONMENTAL SCIENCE SEMINAR
Credits: 3

This course is presented seminar-style, focusing on Environmental Science topics relevant to current problems, trends, and news. The course serves as an open and constructive venue where students will have an opportunity to delve into themed topics and more holistically discuss environmental science issues. The theme of the course will change each term, but will remain within the Environmental Sciences: ecology, environmental chemistry, sustainability, climate change, hazardous waste, etc. Students are required to read and actively discuss scientific literature, assemble and analyze relevant data, formulate and criticize quantitative/qualitative theories, and explore case studies. Three hours of seminar per week. Requirement: students with senior standing only.

EES-391. SENIOR PROJECTS I
Credits: 1

Design and development of selected projects in earth and environmental sciences and other related fields under the direction of a staff member. Technical as well as economical factors will be considered in the design. A professional paper and detailed progress report are required. Requirements: Senior standing in Earth and Environmental Sciences and department permission. (See the department for more details about the department permission.)
Click here for course fees.

Pre-Requisites
Department permission

EES-392. SENIOR PROJECTS II
Credits: 2

Design and development of selected projects in earth and environmental sciences and other related fields under the direction of a staff member. Technical as well as economical factors will be considered in the design. A professional paper to be presented and discussed in an open forum is required.
Click here for course fees.

Pre-Requisites
[[EES-391]] or department permission. (See the department for more details about the department permission.)

EES-394. FIELD STUDY
Credits: 1-3

On-site study of an earth or environmental problem or situation incorporating field documentation and investigative techniques. May be repeated for credit when no duplication of experience results. One hour of lecture, plus field trips.
Click here for course fees.

Pre-Requisites
[[EES-211]] and [[EES-240]].

EES-395. AND 396. INDEPENDENT RESEARCH
Credits: Varies with topic1-3 credits.

Independent study or research of specific earth or environmental science topic at an advanced level under the direction of a departmental faculty member.
Click here for course fees.

Pre-Requisites
Upper class standing and approval of academic advisor, research advisor, and department chairperson.

EES-399. COOPERATIVE EDUCATION
Credits: 1-6

Professional cooperative education placement in a private or public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. See the Cooperative Education section of this bulletin for placement procedures.

Pre-Requisites
Sophomore standing; minimum 2.0 cumulative GPA; consent of the academic advisor; and approval of placement by the department chairperson.

EES-498. TOPICS
Credits: Varies with topic

Departmental courses on advanced topics of special interest, not extensively treated in regularly
scheduled offerings, will be presented under this course number on an occasional basis. Available for either undergraduate or graduate credit. May be repeated for credit.
Click here for fee for courses with a lab.

Pre-Requisites
Senior or graduate standing

ENV. ENVIRONMENTAL ENGINEERING

ENV-198/298/398. TOPICS IN ENV
Credits: Varies with topic

Selected topics in the field of engineering and related areas. The may include the following topics: mechanical engineering; civil engineering; engineering management; geotechnology; and radiation.
Click here for fee for courses with a lab.

Pre-Requisites
Permission of the instructor.

ENV-201. PROBABILITY AND STATISTICS FOR ENGINEERS
Credits: 2

This course provides an introduction to the central ideas of probability and statistics and their application in the analysis of engineering and environmental data including control charts and specification error. Sampling and data gathering techniques are also discussed. One hour of lecture and one hour of discussion per week.

Pre-Requisites
[[CHM-115]] or [[CHM-118]], [[MTH-111]], or instructor's permission

ENV-202. ENVIRONMENTAL ENGINEERING SYSTEMS: ANALYTICAL AND COMPUTATIONAL ANALYSIS
Credits: 2
Terms Offered: On Demand

This course focuses on basic methods for obtaining numerical solutions of algebraic and transcendental equations, simultaneous linear equations, and curve fitting techniques; examples provided are relevant to environmental engineering processes; will include an introduction to problem-solving using Excel and MATLAB. Two hours of lab per week.

Pre-Requisites
[[MTH-111]], [[MTH-112]] or instructor's permission.

ENV-205. ENVIRONMENTAL MICROBIOLOGY
Credits: 3

The foundation concepts in microbiology that are important in environmental systems will be explored in this course. This will include the function and formation of cellular components starting from basic molecules (carbohydrates, fatty acids, amino acids, nucleotides) to the cellular structures that are formed (membranes, proteins, and the nucleic acids RNA & DNA); carbon, energy, and nutrient sources required for cellular growth; and the metabolic pathways for substrates common in environmental systems will be shown. Biodegradation and growth kinetic models will be introduced. Global cycles of major elements (i.e. carbon, nitrogen, oxygen, phosphorus, etc.) will be explored.

ENV-305. SOLID WASTE MANAGEMENT
Credits: 3

Assessment of the scope of the solid waste problem and engineering and management strategies. Lecture topics include the following: solid waste sources; characterization and generation rates; collection and transportation technologies and management options; sanitary landfill design and operation; and recycling strategies and technologies. Three hours of lecture per week.

Pre-Requisites
[[EES-240]] and [[CHM-116]] or [[ENV-201]] or instructor's permission.

ENV-315. SOILS
Credits: 3

Study of the structure, properties, and classification of soils. Fundamental concepts of soils science are applied to the environmental management of terrestrial ecosystems. Topics include soil genesis, the classification, and physical properties of soils, soil chemistry, and soil moisture relationships. Two hours of lecture and three hours of lab per week.
Click here for course fees.

Pre-Requisites
[[GEO-211]] and [[CHM-116]] or [[ENV-201]].

ENV-321. HYDROLOGY
Credits: 3

A quantitative analysis of the physical elements and processes that constitute the hydrologic cycle. Topics include precipitation, infiltration, evaporation, runoff, streamflow, and ground water flow. Ground water modeling and advanced treatment of Darcy's Law is presented within the context of migration of ground water pollutants. Three hours of lecture per week.

Pre-Requisites
[[GEO-211]], [[MTH-111]] and [[ENV-201]] or [[MTH-150]].

ENV-322. WATER RESOURCES ENGINEERING
Credits: 3

Design and development of selected projects in the various fields of engineering under the direction of a staff member. Technical as well as economic factors will be considered in the design. A detailed progress report is required. Three hours of lecture per week.

Pre-Requisites
[[ENV-321]].

ENV-323. HYDROLOGY LAB
Credits: 1
Fees: $115

Components of the hydrologic cycle are studied experimentally. Three hours of lab per week.

Co-Requisites
[[ENV-321]] concurrent or before.

ENV-330. WATER QUALITY
Credits: 4

The physical, chemical, and biological processes that affect the quality of water in the natural environment. The measurement of water quality parameters in water and wastes. The behavior of contaminants in ground and surface water. Three hours of lecture and three hours of lab per week.
Click here for course fees.

Pre-Requisites
[[EES-240]], [[CHM-116]] or [[ENV-201]]

ENV-332. AIR QUALITY
Credits: 3

Study of atmospheric pollutants, their sources and effects; measurement and monitoring techniques for air pollutants; atmospheric chemical transformations; regulatory control of air pollution; meteorology of air pollution; transport and dispersion of air pollutants; and introduction to indoor air pollution. Lab work includes both problem-oriented and hands-on exercises. Exercises include basic gas concepts, volume measuring devices, flow, velocity, and pressure measuring devices, calibration of such devices, and various sampling techniques. Two hours of lecture and three hours of lab per week.
Click here for course fees.

Pre-Requisites
[[EES-240]], [[CHM-116]] or [[ENV-201]].

ENV-350. WATER AND WASTEWATER TREATMENT LAB
Credits: 1

Students will gain laboratory experience with physical, chemical and biological treatment processes typical of water and wastewater treatment. Students will design processes and experimentally evaluate their results and will visit treatment facilities.

Click here for course fees.

Pre-Requisites
[[ENV-330]].

ENV-352. HYDRAULIC ENGINEERING
Credits: 3

Water distribution, sewage collections, pipe network models, piping materials, pumps and pumping stations, valves and tanks. Design and operation. Three hours of lecture per week.

Pre-Requisites

[[ME-321]].

ENV-353. AIR POLLUTION CONTROL
Credits: 3

This course provides the philosophy and procedures for design of air pollution control systems. Methods used for controlling air-borne emissions of gases, aerosols, and organic vapors are covered. Designs are carried out based on data for typical systems. Evaluations of alternatives with cost comparisons are also presented. Three hours of lecture per week.

Pre-Requisites

[[ENV-332]] or [[ME-321]].

ENV-354. HAZARDOUS WASTE MANAGEMENT
Credits: 3

An overview and application of engineering principles to management of hazardous wastes and the remediation of contaminated sites. Introduction to regulatory compliance and environmental laws. Three hours of lecture per week.

Pre-Requisites

[[ENV-356]] and [[ENV-357]] or permission of the instructor.

ENV-356. PHYSICAL/CHEMICAL TREATMENT PROCESSES
Credits: 2

Design of physical/chemical processes in aqueous treatment systems. Focus will be on the drinking water treatment processes, but industrial treatment processes will be included as well. Estimation of demand and sludge disposal will also be addressed.

Pre-Requisites

[[ENV-330]]

ENV-357. BIOLOGICAL TREATMENT PROCESSES
Credits: 3

Design of biological processes in aqueous treatment systems. Topics will include typical municipal wastewater treatment as well as industrial treatment processes. Generation of biogas will be addressed as well as sludge handling and disposal.

Pre-Requisites

[[ENV-330]]

ENV-373. OCCUPATIONAL HEALTH
Credits: 3

Appraisal of environmental health hazards, sampling techniques, instrumentation and analytic methods. Principles of substitution, enclosure, and isolation for the control of hazardous operations in industry. Three hours of lecture and demonstration per week. Requirement: Junior or senior standing in engineering.

ENV-390. JUNIOR SEMINAR
Credits: 1

Course will focus on project management, design concepts and constraints, literature review and preliminary data collection for senior projects course.

ENV-391. SENIOR PROJECTS I
Credits: 1

Design and development of selected projects in the various fields of engineering under the direction of a staff member. Technical as well as economic factors will be considered in the design. A professional paper and detailed progress report are required. Requirement: Senior standing and department permission. (See the department for more details about the department permission.)
Click here for course fees.

ENV-392. SENIOR PROJECTS II
Credits: 2

Design and development of selected projects in the field of engineering under the direction of a staff member. Technical as well as economic factors will be considered in the design. This is a continuation of [[ENV-391]]. A professional paper to be presented and discussed in an open forum is required.
Click here for course fees.

Pre-Requisites

[[ENV-391]].

ENV-395. AND 396. INDEPENDENT RESEARCH
Credits: Varies with topic1-3 credits.

Independent study or research for advanced students in the field of their major under the direction of a departmental faculty member.
Click here for course fees.

Pre-Requisites

Approval of department chair and academic advisor.

ENV-397. SEMINAR
Credits: 1-3

Presentations and discussions of selected topics and projects. Requirement: Senior standing in environmental engineering.

ENV-398. TOPICS
Credits: Varies with topic

Selected topics in the field of engineering and related areas. The may include the following topics: mechanical engineering; civil engineering; engineering management; geotechnology; and radiation.
Click here course fee.

Pre-Requisites

Permission of the instructor.

ENV-399. COOPERATIVE EDUCATION
Credits: 1-6

Professional cooperative education placement in a private or public organization related to the student's academic objectives and career goals. In addition to their work experiences, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. See the Cooperative Education section of this bulletin for placement procedures.

Pre-Requisites

Sophomore standing; minimum 2.0 cumulative GPA; consent of the academic advisor; and approval of placement by the department chairperson.