

Environmental Science

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Administrative Committee: Professors Aljobeh (Civil and Environmental Engineering), Devaraj (Economics), Eberhardt (Biology), Ganesh Babu (Geography and Meteorology), Iceman (Chemistry), Longan (Geography and Meteorology), McCool (Geography and Meteorology), Peller (Chemistry), Raridon (Sociology).

Objectives

The Environmental Science Program, through collaboration with faculty in multiple disciplines who demonstrate excellence in teaching and scholarship of environmental merit, gives its students the requisite scientific background necessary for assessing environmental systems, along with philosophical, pedagogical, and social reflection on environmental issues. The core curriculum includes perspectives on scientific knowledge, field work, and communication skills. Elective courses expose students to a wide range of environmental topics from a variety of disciplines, providing both an engaging curriculum that promotes interest in and passion for environmental issues, and opportunities for cross-disciplinary interaction. An Environmental Science major positions the student to enter into graduate work in environmental science or policy, or into the professions of environmental management and protection.

Degree

Students who complete the Environmental Science program will fulfill the major field requirements for the Bachelor of Science degree. Students who complete the Environmental Science Complementary Major of 32 credits with a first major in a disciplinary science field (astronomy, biology, chemistry, computer science, engineering, geography, mathematics, meteorology, physics, psychology) will also have fulfilled the major field requirements for the Bachelor of Science degree. Students who complete the Environmental Science Complementary Major of 32 credits with a first major in a non-science field, including the B.A. option in geography, will have fulfilled the major field requirements for the Bachelor of Arts degree.

Bachelor of Science – Environmental Science Major (Minimum 52 Cr.)

Environmental Science Core		30 Cr.
GEO 260	Environmental Conservation	3 Cr.
BIO 171	Unity of Life	3+3, 4 Cr.
BIO 172	Diversity of Life	3+3, 4 Cr.
CHEM 121	General Chemistry I	3+3, 4 Cr.
CHEM 122	General Chemistry II	3+3, 4 Cr.
GEO 104	Introduction to Geomorphology in Earth System Science	3+3, 4 Cr.
GEO 215	Introduction to Geographic Information Systems	3+2, 4 Cr.
One of the following:		
IDS 205	Business Statistics	3 Cr.
GEO/MET 460	Data Analysis	3 Cr.
PSY 201	Statistical Methods	3 Cr.
STAT 140	General Statistics	3 Cr.
STAT 240	Statistical Analysis	3 Cr.
Environment and Society Elective		3 Cr.
One course from the following options:		
GEO 265	Sustainability: Environment, Economy, Society	3 Cr.
GEO 321	Urban and Regional Planning	3 Cr.
ECON 210	Environmental Economics and Policy	3 Cr.
SOC 240	Food Systems	3 Cr.
Any new or topic course approved by the coordinator of the Environmental Science Administrative Committee		
Environmental Meanings and Values Elective		3 Cr.
One course from the following options:		
GEO 475	Culture, Nature, Landscape	3 Cr.
PHIL 230	Environmental Philosophy and Ethics	3 Cr.
Any new or topic course approved by the coordinator of the Environmental Science Administrative Committee		

Environmental Science Electives		14 Cr.
Minimum of 14 credit hours from the following options, including at least one Writing in the Discipline (WID) course (marked with *):		
BIO 215	Fundamental Microbiology for Engineers	3+3, 4 Cr.
BIO 350	Field Biology: Spring	2+4, 3 Cr.
BIO 430	Plant Biology*	3+3, 4 Cr.
BIO 435	Insect Biology*	3+3, 4 Cr.
BIO 440	Ecology*	3+4, 4 Cr.
CHEM 221	Organic Chemistry I	3+3, 4 Cr.
CHEM 222	Organic Chemistry II	3+3, 4 Cr.
CHEM 230	Quantitative Analysis	3+3, 4 Cr.
CHEM 341	Environmental Chemistry	3+0, 3 Cr.
CE 364	Environmental Engineering I*	3+3, 4 Cr.
ENVS 290	Topics in Environmental Science	1-3 Cr.
ENVS 490	Advanced Topics in Environmental Science	1-3 Cr.
GEO 264	Soils and the Environment	2+2, 3 Cr.
GEO 266	River Systems and Landforms	2+2, 3 Cr.
GEO 304	Process Geomorphology and Terrain Analysis	3+3, 4 Cr.
GEO 365	Biogeography	3 Cr.
GEO 385	Field Study (when an environmental field study)	0+4, 1-3 Cr.
GEO 415	Advanced Geographic Information Systems	3 Cr.
GEO/MET 240	Introduction to Climate Change	3 Cr.
MET 440	Global Climate Change	3 Cr.
Or any new or topic course approved by the coordinator of the Environmental Science Administrative Committee		
These must include at least 11 hours at a level of 300 or higher.		
Capstone Experience		2-4 Cr.
ENVS 499	Colloquium on Environmental Science and Management	1 Cr.
One additional course from the following options (ENVS 495 and ENVS 499 can be repeated for credit):		
ENVS 381	Cooperative Education in Environmental Science	1-2 Cr.
ENVS 386	Internship in Environmental Science	0.5-3 Cr.
ENVS 495	Independent Research in Environmental Science	0.5-3 Cr.
ENVS 499	Colloquium on Environmental Science and Management	1 Cr.

Complementary Environmental Science Major (Minimum 32 Cr.)

A student with a first major that is not an interdisciplinary major is eligible to take the Environmental Science complementary major. A minimum of 32 credit hours must be taken according to the following requirements and in accordance with the Restrictions for Interdisciplinary Majors from the Interdisciplinary Programs section of this catalog (see page349).

Environmental Science Core		14 Cr.
GEO 260	Environmental Conservation	3 Cr.
Minimum of 11 credit hours from the following options:		
BIO 171	Unity of Life	3+3, 4 Cr.
BIO 172	Diversity of Life	3+3, 4 Cr.
CHEM 121	General Chemistry I	3+3, 4 Cr.
CHEM 122	General Chemistry II	3+3, 4 Cr.
GEO 104	Introduction to Geomorphology in Earth System Science	3+3, 4 Cr.
GEO 215	Introduction to Geographic Information Systems	3+2, 4 Cr.
One of the following:		
IDS 205	Business Statistics	3 Cr.
GEO/MET 460	Data Analysis	3 Cr.
PSY 201	Statistical Methods	3 Cr.
STAT 140	General Statistics	3 Cr.
STAT 240	Statistical Analysis	3 Cr.

Environment and Society Elective		3 Cr.
One course from the following options:		
GEO 265	Sustainability: Environment, Economy, and Society	3 Cr.
GEO 321	Urban and Regional Planning	3 Cr.
ECON 210	Environmental Economics and Policy	3 Cr.
SOC 240	Food Systems	3 Cr.
Any new or topic course approved by the coordinator of the Environmental Science Administrative Committee		
Environmental Meanings and Values Elective		3 Cr.
One course from the following options:		
GEO 475	Culture, Nature, Landscape	3 Cr.
PHIL 230	Environmental Philosophy and Ethics	3 Cr.
Any new or topic course approved by the coordinator of the Environmental Science Administrative Committee		
Environmental Science Electives		10 Cr.
Minimum of 10 credit hours from the following options, including at least one WID course (marked with *):		
BIO 215	Fundamental Microbiology for Engineers	3+3, 4 Cr.
BIO 350	Field Biology: Spring	2+4, 3 Cr.
BIO 430	Plant Biology*	3+3, 4 Cr.
BIO 435	Insect Biology*	3+3, 4 Cr.
BIO 440	Ecology*	3+4, 4 Cr.
CHEM 221	Organic Chemistry I	3+3, 4 Cr.
CHEM 222	Organic Chemistry II	3+3, 4 Cr.
CHEM 230	Quantitative Analysis	3+3, 4 Cr.
CHEM 341	Environmental Chemistry	3+0, 3 Cr.
CE 364	Environmental Engineering I*	3+3, 4 Cr.
ENVS 290	Topics in Environmental Science	1-3 Cr.
ENVS 490	Advanced Topics in Environmental Science	1-3 Cr.
GEO 264	Soils and the Environment	2+2, 3 Cr.
GEO 266	River Systems and Landforms	2+2, 3 Cr.
GEO 304	Process Geomorphology and Terrain Analysis	3+3, 4 Cr.
GEO 365	Biogeography	3 Cr.
GEO 385	Field Study (when an environmental field study)	0+4, 1-3 Cr.
GEO 415	Advanced Geographic Information Systems	3 Cr.
GEO/MET 240	Introduction to Climate Change	3 Cr.
MET 440	Global Climate Change	3 Cr.
Any new or topic course approved by the coordinator of the Environmental Science Administrative Committee		
These must include at least 7 credit hours at a level of 300 or higher.		
Capstone Experience		2-4 Cr.
ENVS 499	Colloquium on Environmental Science and Management	1 Cr.
One additional course from the following options (ENVS 495 and ENVS 499 can be repeated for credit):		
ENVS 381	Cooperative Education in Environmental Science	1-2 Cr.
ENVS 386	Internship in Environmental Science	0.5-3 Cr.
ENVS 495	Independent Research in Environmental Science	0.5-3 Cr.
ENVS 499	Colloquium on Environmental Science and Management	1 Cr.

Environmental Studies Minor

The Environmental Studies minor is described in the Interdisciplinary Programs section, page 352.

Environmental Science Courses

- ENVS 290 Topics in Environmental Science** 1-3 Cr.
Topical studies in Environmental Science. Topics might include water resources, air pollution, environmental restoration, sustainable energy, or other topics of interest. May be repeated for credit when the topic is different. Prerequisite: certain topics may have specific course requirements.
- ENVS 381 Cooperative Education in Environmental Science** 1-2 Cr.
Experience in environmental research or management with a cooperating employer. Midterm and final written reports required. Credit hours assigned per College of Arts and Sciences guidelines. S/U grade only. May be repeated for additional credit. Prerequisites: Environmental Science major or minor and consent of the coordinator of Environmental Science.
- ENVS 386 Internship in Environmental Science** 0.5-3 Cr.
Professional experience in cooperating public or private organizations such as state environmental agencies or environmental consulting firms. Final report required. May be repeated for up to 6 credits. S/U grade only. Prerequisites: Environmental Science major or minor and consent of the coordinator of Environmental Science.
- ENVS 490 Advanced Topics in Environmental Science** 1-3 Cr.
Advanced topical studies in Environmental Science. Topics might include water resources, air pollution, environmental restoration, sustainable energy, or other topics of interest. May be repeated for credit when the topic is different. Prerequisite: certain topics may have specific course requirements.
- ENVS 495 Independent Research in Environmental Science** 0.5-3 Cr.
Students work on a project of environmental and scientific merit under the guidance of a faculty sponsor. Final report required. S/U grade only. May be repeated for additional credit. Prerequisites: Environmental Science major or minor, consent of the coordinator of Environmental Science and consent of the faculty sponsor.
- ENVS 499 Colloquium on Environmental Science and Management** 0-1 Cr.
This course contains (1) presentations by students, faculty, and guest speakers on current topics in environmental research, issues, policy, and management; (2) reading and discussion of items of interest in the environmental literature; and (3) occasional workshops on topics such as public communication or technical and grant writing skills. Specific content will vary based on interests of students and faculty. S/U grade only. May be repeated for credit.