

# ENVIRONMENTAL SCIENCE (B.S.)

Environmental Science investigates the many interconnected systems and processes that formed our world, continuously change it, and, ultimately, sustain life on it. The Environmental Science Program at Wayne State offers an interdisciplinary approach combining a strong foundation from both geological and ecological perspectives, and a broad choice of electives in its course work. This interdisciplinary program addresses human impacts on the environment, earth surface processes, and ecosystem science with an emphasis on the urban environments. It will prepare students for graduate study, or for careers in various areas of environmental science including conservation, restoration, watershed management, environmental impact assessment, air and water quality monitoring, regulatory compliance, and environmental remediation.

## Admission Requirements

Admission requirements for this program are satisfied by the general requirements for undergraduate admission (<http://bulletins.wayne.edu/undergraduate/general-information/admission/>) to the University.

## Program Requirements

Candidates must complete 120 credits in course work including satisfaction of the University General Education Requirements (<http://bulletins.wayne.edu/undergraduate/general-information/general-education/>) and the College of Liberal Arts and Sciences Group Requirements (<http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/bachelors-degree-requirements/>), as well as the departmental major requirements cited below. All course work must be completed in accordance with the regulations of the University (<http://bulletins.wayne.edu/undergraduate/general-information/academic-regulations/>) and the College (<http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/academic-regulations/>) governing undergraduate scholarship and degrees. Students must receive a grade of 'C-minus' or better in all Major and Cognate required courses. An overall grade point average of 2.0 (C) in all coursework is required for graduation.

## Major Requirements

B.S. candidates in Environmental Science must complete the following:

Code	Title	Credits
ESG 1500	Introduction to Environmental Science	3
ESG 3000	Introduction to Environmental Analysis Using Geographic Information Systems (GIS)	3
ESG 3100	Air and Water in Environmental Systems	3
ESG 1010	Geology: The Science of the Earth	3
ESG 1011	Geology: The Science of the Earth Laboratory	1
ESG 5150	Soils and Soil Pollution	4
ESG 5510	Environmental Fate and Transport of Pollutants	4
BIO 1500 & BIO 1501	Basic Life Diversity and Basic Life Diversity Laboratory	4
BIO 3500	Ecology and the Environment	3
BIO 5100 or BIO 5440	Aquatic Ecology Terrestrial Ecology	4
PHI 1130	Environmental Ethics	3
PS 3450	Environmental Policy and Politics	4
<b>Environmental Humanities Course (Choose One):</b>		<b>3-4</b>
ANT 5140	Biology and Culture	

ECO 5230	Environmental Economics
HIS 5540	World Environmental History since 1900
PS 5560	Biopolitics
SOC 2205	Sociology of the Environment
UP 4460	Sustainable Cities
UP 5430	Cities and Food

## Elective Courses

Students must complete a minimum of 15 approved elective credits for the major; one course must be from the Department of Biology or the Department of Environmental Science and Geology.

Code	Title	Credits
<b>Biology Options</b>		
BIO 4130	General Ecology	4
BIO 4420	Biogeography	3
BIO 5040	Biometry	4
BIO 5100	Aquatic Ecology	4
BIO 5180	Field Investigations in Biological Sciences	12
BIO 5440	Terrestrial Ecology	4
BIO 5490	Population and Community Ecology	3
BIO 5540	Landscape Ecology	3
BIO 6190	Advanced Special Topics	6
BIO 6420	Ecotoxicology and Risk Assessment	3
<b>Environmental Science and Geology Options</b>		
ESG 2130	Mineralogy	4
ESG 3300	Structural Geology	4
ESG 3160	Petrology	4
ESG 3800	Team Research	2
ESG 3650	Field Geology	1-6
ESG 4200	Geomorphology	4
GEL 4400	40-Hour HAZWOPER Training	2
ESG 4900	Internship in Environmental Science	2
ESG 5000	Geological Site Assessment	4
ESG 5120	Environmental Geochemistry	4
ESG 5210	Environmental and Applied Geophysics	4
ESG 5360	Hydrology and Water Resources	4
ESG 5420	Mathematical Methods in Earth Science	4
ESG 5450	Hydrogeology	4
ESG 5600	Special Topics in Environmental Science and Geology	4
ESG 5610	Special Topics in Environmental Science and Geology	1
ESG 5650	Applied Geologic Mapping	4
ESG 6400	Isotopes: Applications in Geological and Environmental Sciences	4
GEL 6500	Earth Resources and the Environment	3
<b>Anthropology Options</b>		
ANT 5140	Biology and Culture (Anthropology Course Options)	3
<b>Civil Engineering Options</b>		
CE 3250	Applied Fluid Mechanics	4
CE 4210	Introduction to Environmental Engineering	3
CE 5230	Water Supply and Wastewater Engineering	3
CE 6190	Groundwater	3
CE 6160	Principles of Atmospheric Chemistry and Applications	3

CE 6270	Sustainability Assessment and Management	3
<b>Economics Options</b>		
ECO 5230	Environmental Economics	4
<b>Geography Options</b>		
GPH 3600	Introduction to Geographic Information Systems	4
GPH 4600	Advanced Geographic Information Systems	4
<b>Honors Options</b>		
HON 4220	Seminar in Life Science	3
<b>History Options</b>		
HIS 5540	World Environmental History since 1900	4
<b>Public Health Options</b>		
PH 3500	Environmental Health	3
<b>Sociology Options</b>		
SOC 2205	Sociology of the Environment	3
<b>Urban Studies and Planning Options</b>		
UP 4460	Sustainable Cities	3
UP 5430	Cities and Food	3

## Cognate Requirements

B.S. candidates in Environmental Science must take:

Code	Title	Credits
STA 1020	Elementary Statistics	3
or STA 2210	Probability and Statistics	
MAT 2010	Calculus I	4
CHM 1100	General Chemistry I	5
& CHM 1130	and General Chemistry I Laboratory (or CHM 1220/1230 if taken before Fall 2020)	
Select one of the following Physics options:		5
PHY 2130	Physics for the Life Sciences I	
& PHY 2131	and Physics for the Life Sciences Laboratory	
PHY 2170	University Physics I for Scientists and Engineers	
& PHY 2171	and University Physics I Experimental Laboratory	

Majors should take the Placement Examination of the Department of Mathematics as soon as possible upon entry into the freshman year, although freshmen students may be placed by ACT/SAT scores (valid for 2 years).

**Student's Responsibility:** It is each student's responsibility to learn the requirements, policies, and procedures governing the program they are following and to act accordingly. Students should consult the Environmental Science Program Advisor regularly in order to verify that Environmental Science requirements are being met in a timely fashion. Although the advisor will provide assistance, the responsibility for fulfilling degree requirements remains with the student.

## Environmental Science Honors

To be recommended for an honors degree from this program, a student must maintain a cumulative grade point average of at least 3.30 and complete a minimum of twelve honors course credits including two Geology or Biological Science Honors or Honors Option courses (6 credits) and:

Code	Title	Credits
ESG 4998	Honors Thesis	3
BIO 6999	Honors Undergraduate Research Thesis	2
One 4200-level Honors Seminar		3