

BS IN ENVIRONMENTAL SCIENCES

The Bachelor of Science in Environmental Sciences requires a minimum of 120 hours including a minor. Students in this degree program take a broad, interdisciplinary approach that combines science with social science and humanities courses. Students are required to minor in a science to develop a deeper understanding of a specialized scientific field. Students with this degree are prepared for graduate school and career opportunities federal and state regulatory agencies; wildlife ranges and zoological parks; environmental consulting firms; state, county and city parks; state natural resource agencies; university and secondary schools; and nonprofit and non-government organizations (NGOs)

NOTE: Students pursuing a BS in Environmental Sciences cannot double major in a BS in Biology with a Concentration in Ecology and Organismal Biology nor BS in Environmental Geology.

For the Bachelor of Science degree in Environmental Sciences (ENSC) The following courses must be included:

EEES 1020 Introductory Geology Laboratory
 EEES 2020 Introduction to the Environment: Energy and Climate
 EEES 2030 Introduction to the Environment: Land-use and Water
 EEES 2100 Fundamentals Of Geology
 EEES 2150 Biodiversity
 EEES 2160 Biodiversity Laboratory
 EEES 2500 Computer Applications In Environmental Sciences
 EEES 2510 Advanced Computer Applications

One of the following:

EEES 2760 Field Methods or EEES 2600 Analytical Methods

EEES 3050 General Ecology
 EEES 3060 General Ecology Lab

One of the following:

EEES 2400 Oceanography and Water Resources or EEES 3100 Surficial Processes or EEES 4240 Soil Science

EEES 3900 Literature And Communications In The Environmental Sciences

EEES 4940 Internship
 EEES 4970 Environmental Capstone
 EEES 4960 Senior Seminar

One advanced EEES laboratory course

The following RELATED courses are also required:

MATH 2640 Statistics for Applied Science
 Calculus I and II: (MATH 1750 and MATH 1760, or MATH 1850 and MATH 1860)
 CHEM 1230 General Chemistry I
 CHEM 1280 General Chemistry Lab I
 CHEM 1240 General Chemistry II
 CHEM 1290 General Chemistry Lab II

Four of following RELATED courses, including at least 1 in each of the social sciences and humanities groups:

Social Science group:

GEPL 3900 Environmental Planning
 PSC 4340 Environmental Policy
 ECON 3240 Environmental Economics
 ECON 3270 Natural Resource Economics

Humanities group

REL 2980 Religion and Environment
 PHIL 3180 Environmental Ethics
 PJS 2500 Peace Education

The completion of the Environmental Sciences Major requires a minor approved by your advisor. Common minors include Environmental Biology (<https://catalog.utoledo.edu/undergraduate/natural-sciences-mathematics/environmental-sciences/environmental-biology-minor/>), and Geology (<https://catalog.utoledo.edu/undergraduate/natural-sciences-mathematics/environmental-sciences/minor-geology/>). Other possible minors include the Minor in Renewable Energy (<https://catalog.utoledo.edu/undergraduate/natural-sciences-mathematics/physics-astronomy/minor-renewable-energy/>) or Minor Green Chemistry and Engineering (<https://catalog.utoledo.edu/undergraduate/natural-sciences-mathematics/chemistry-biochemistry/minor-green-chemistry-and-engineering/>).

Students also are required to complete a 100-hr environment-related internship (EEES 4940 for 1 credit hour) in an agency, corporation, university laboratory or other approved location.

With the exception of EEES 4940, students may not take any courses required in the major as P/NC.

Below is a sample plan of study (for the Environmental Biology Minor¹). Consult your advisor and the degree audit for your program requirements.

First Year

First Term		Hours
NSM 1000	Natural Sciences & Mathematics	2
EEES 2020	Introduction to the Environment: Energy and Climate	3
CHEM 1230	General Chemistry I	4
CHEM 1280	General Chemistry Lab I	1
ENGL 1110	College Composition I (Arts/Humanities Core)	3
Arts/Humanities Core		3
Hours		16

Second Term

EEES 2030	Introduction to the Environment Land-Use and Water	3
EEES 2100	Fundamentals Of Geology	4
EEES 1020	Introductory Geology Laboratory	1
CHEM 1240	General Chemistry II	4
CHEM 1290	General Chemistry Lab II	1
Social Science Core		3
Hours		16

Second Year

Third Term		
EEES 2150	Biodiversity	4
EEES 2160	Biodiversity Laboratory	1

ENGL 1130	College Composition II: Academic Disciplines And Discourse	3
MATH 1750 or MATH 1850	Calculus For The Life Sciences With Applications I or Single Variable Calculus I	4
EEES 2500	Computer Applications In Environmental Sciences	1
EEES 2760 or EEES 3100	Methods for Environmental Sciences or Surficial Processes	3
Hours		16

Fourth Term

EEES 2600 or EEES 2400	Techniques for Environmental Sciences or Oceanography And Water Resources	3
EEES 2510	Advanced Computer Applications	2
US Diversity Core		3
MATH 1760 or MATH 1860	Calculus For The Life Sciences With Applications II or Single Variable Calculus II	3
Elective		3
Hours		14

Third Year**Fifth Term**

EEES 3050	General Ecology	3
EEES 3060	General Ecology Laboratory	1
MATH 2640	Statistics for Applied Science	3
Social Science Core		3
PHIL 3180	Environmental Ethics	3
Non-US Diversity		3
Hours		16

Sixth Term

EEES 3900	Literature And Communications In The Environmental Sciences	3
GEPL 3900	Environmental Planning	3
Environmental Biology Minor		4
Elective		5
Hours		15

Fourth Year**Seventh Term**

EEES 4940	Internship	1
EEES 4970	Senior Environmental Capstone	3
PSC 4340	Environmental Policy	3
Environmental Biology Minor		3
Advanced Lab		1
Arts/Humanities Core		3
Hours		14

Eighth Term

ECON 3240	Environmental Economics	3
EEES 4960	Senior Seminar	1
Environmental Biology Minor		6

Elective	3
Hours	13
Total Hours	120

- PLO A1. Environmental Science requires a basic understanding of geology, including an understanding of earth materials and landforms. A1. Students will be able to identify and classify minerals, rocks (igneous, sedimentary, and metamorphic), and common fossils.
- PLO A2. Environmental Science requires a basic understanding of geology, including an understanding of earth materials and landforms. A2. Students will be able to identify landforms and interpret formative processes of landforms from maps and digital elevation models.
- PLO B. Environmental Science uses the principles of biology to understand how organisms are affected by the environment. B1. Students will be able to explain how both abiotic factors, such as climate and pollution, and biotic factors, such as competition and disease, affect organisms, communities, and ecosystems.
- PLO C. Environmental Scientists interact with Social Scientists to understand the human context in which environmental problems exist. C1. Students will be able to propose and discuss public policy and planning options for improving or managing factors that impact the environment.
- PLO D. Environmental Scientists provide the science to address the impacts and solutions of environmental problems. D1. Students will be able to analyze the major environmental problems that are affecting our earth and well-being, including climate change, pollution, and resource management.
- PLO E. Environmental Science is a field-oriented science conducted, in part, through field investigations, which requires expertise in collecting field-based data. 1. Students will be able to organize and conduct data collection for a field-based investigation.
- PLO F1. Environmental Scientists require technical skills, including computing, statistics, and communication. 1. Students will be able to analyze data both graphically and statistically.
- PLO F2. Environmental Scientists require technical skills, including computing, statistics, and communication. 2. Students will be able to interpret and report results of a research project, in both audio-visual and written forms, using appropriate technology.
- PLO G1. Environmental Science is multi-disciplinary, but our students must have an area of concentration, such as Biology, Geology, or Chemistry (within Environmental Science). Students should be able to describe and explain examples of the linkages among their area of concentration and the other areas of Environmental Science.