

Environmental Science with Concentration in Applied Ecology, B.S.

Learn more about the Bachelor of Science in Environmental Science.

Students will be equipped with the scholarly background and intellectual skills to understand a wide range of pressing environmental issues, and they will come to appreciate the physical, economic, political, demographic, and ethical factors that define those issues. Our graduates find employment with government environmental agencies, citizens' organizations, consulting firms, and corporate environmental affairs departments.

Environmental problems are among the most urgent issues facing our civilization. The Environmental Science with Concentration in Applied Ecology offers interdisciplinary coursework in biology, geology, chemistry, and mathematics and combines this with classes from geography and economics to explore the relationships between living things and their environment.

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Bachelor of Science

Summary of Requirements for the Degree

1. University Requirements (123 total s.h.)

- Students must complete all University requirements including those listed below.
- All Temple students must take a minimum of two writing-intensive courses at Temple as part of their major. The specific writing-intensive course options for this major are:

Code	Title	Credit Hours
EES 2096	Climate Change: Oceans To Atmosphere	4
EES 2097	Process Geomorphology	4
ENVS 4198	Environmental Science Senior Seminar	3
ECON 3596	Energy, Ecology, and Economy	3
ENST 3097		3

- Students must complete the General Education (GenEd) requirements.
 - See the General Education section of the *Undergraduate Bulletin* for the GenEd curriculum.
 - Students who complete CST majors receive a waiver for 2 Science & Technology (GS) and 1 Quantitative Literacy (GQ) GenEd courses.
- Students must satisfy general Temple University residency requirements.

2. College Requirements

- 45 Upper Level (2000+) credits within the College of Science & Technology (CST), the College of Liberal Arts (CLA), or the College of Engineering (ENG).
- 90 credits within the College of Science & Technology (CST), the College of Liberal Arts (CLA), or the College of Engineering (ENG).
- All students in the College of Science and Technology are required to take a one credit first year seminar. SCTC 1001 CST First Year Seminar is the appropriate course option for every entering first year CST major. Transfer students should use SCTC 2001 CST Transfer Seminar to fulfill this requirement. Other courses that fulfill this requirement may be found on the CST College Requirements page.

3. Major Requirements for Bachelor of Science (75-79 s.h.)

At least 10 courses required for the major must be completed at Temple.

Code	Title	Credit Hours
Biology		
BIOL 1111	Introduction to Organismal Biology	4

or BIOL 1911	Honors Introduction to Organismal Biology	
BIOL 2112	Introduction to Cellular and Molecular Biology	4
or BIOL 2912	Honors Introduction to Cellular and Molecular Biology	
BIOL 2227	Principles of Ecology	3
BIOL 3389	Field Research in Community Ecology	4
Chemistry		
Select one of the following:		4
CHEM 1031 & CHEM 1033	General Chemistry I and General Chemistry Laboratory I	
CHEM 1951 & CHEM 1953	Honors General Chemical Science I and Honors Chemical Science Laboratory I (F)	
Select one of the following: ¹		4
CHEM 1032 & CHEM 1034	General Chemistry II and General Chemistry Laboratory II	
CHEM 1952 & CHEM 1954	Honors General Chemical Science II and Honors Chemical Science Laboratory II (S)	
Select one of the following:		4
CHEM 2201 & CHEM 2203	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2921 & CHEM 2923	Organic Chemistry for Honors I and Organic Honors Laboratory I	
Earth & Environmental Science		
EES 2001	Physical Geology	4
EES 3011	Remote Sensing and GIS	4
Select one of the following: ¹		4
EES 3021	Groundwater Hydrology (S)	
EES 3025	Physical Hydrology (F)	
Economics		
ECON 1102	Microeconomic Principles	3
or ECON 1902	Honors Microeconomic Principles	
Environmental Science		
ENVS 4198	Environmental Science Senior Seminar (S)	3
Environmental Science Electives		
Select 5 Environmental Science Electives chosen from the categories below. At least one Elective must be a writing-intensive course: ²		
3-4 Science Electives, with at least two from Biology		9-16
1-2 Policy Electives		6-3
Mathematics and Quantitative Methods		
MATH 1041	Calculus I	4
or MATH 1941	Honors Calculus I	
SCTC 1013	Elements of Data Science for the Physical and Life Sciences	3
Select one of the following:		4
MATH 1042	Calculus II	
MATH 1942	Honors Calculus II	
MATH 1044	Introduction to Probability and Statistics for the Life Sciences	
Physics		
Select one of the following:		4
PHYS 1061	Elementary Classical Physics I	
or PHYS 1961	Honors Elementary Classical Physics I	
PHYS 2021	General Physics I	
or PHYS 2921	Honors General Physics I	
Total Credit Hours		75-79

Code	Title	Credit Hours
(F) - Fall only course		
(S) - Spring only course		

¹ The hydrology course not selected may be taken as an Environmental Science Elective (Water Elective).

² See the table below for a listing of specific courses within each Elective category. At least one Elective must be a writing-intensive (WI) course.

Code	Title	Credit Hours
Science Electives: Biology, Climate, Geochemistry, Land, and Water		
Biology Electives - Choose at least two		
BIOL 3114	Evolutionary Ecology (F)	3
BIOL 3244	Experimental Marine Biology	4
BIOL 3245	Marine Ecology (F)	4
BIOL 3254	Animal Behavior (S)	3
BIOL 3275	Ecology of Invasive Species (F)	3
BIOL 3307	Conservation Biology (F)	3
BIOL 3316	Tropical Marine Biology (F)	4
BIOL 3321	Plant Community Ecology (F)	3
BIOL 3323	Global Change Science: Analytics with R	3
BIOL 3336	Freshwater Ecology (F)	4
Climate Electives		
EES 2002	Energy and Environment	3
EES 2096	Climate Change: Oceans To Atmosphere	4
EES 4502	Ice and Global Climate	4
RMI 2101	Introduction to Risk Management	3
Geochemistry Electives		
EES 2061	Introduction to Geochemistry	4
EES 3065	Nanoscience & the Environment	4
ENVH 2102	Environmental Health ¹	3
CHEM 3103	Techniques of Chemical Measurement I	3
Land Electives		
EES 2002	Energy and Environment	3
EES 2021	Sedimentary Environments	4
EES 2097	Process Geomorphology	4
EES 3042	Coastal Processes and Geomorphology	4
Policy Electives		
CDEV 2255	Environmental Justice in Communities	3
CTRP 2251	Sustainable Food Systems Planning	3
ECON 1101	Macroeconomic Principles	3
ECON 3596	Energy, Ecology, and Economy	3
ENST 2025	Environmental Law and Regulation	3
ENST 2051	The Urban Environment	3
ENST 3015	The Geographic Basis of Land Use Planning	3
ENST 3051	Environmental Policy Issues	3
ENST 3097		3
ENST 3314	Food Studies: A Geographical Perspective	3
Water Electives ²		
EES 3021	Groundwater Hydrology (S)	4
EES 3025	Physical Hydrology (F)	4

Code	Title	Credit Hours
(F) - Fall only course		
(S) - Spring only course		
1	HRPR 1001 is a prerequisite for this course.	
2	One hydrology course is a required course. The course not selected may be taken as an Environmental Science Elective (Water Elective).	

Calculation of Major GPA

Courses listed under the major requirements for the degree will be included in the calculation of the major GPA. Courses that could not apply toward the major as an elective or required course would not be counted in the calculation of the major GPA. This would include CHEM 1027, for example.

Distinction in Major

To graduate with Distinction in Major, students are required to achieve a 3.5 GPA for courses required for the major. If the difficulty of courses chosen as electives is high, then a 3.3 GPA will earn Distinction in Major. This determination will be made by the appropriate faculty. In addition, a student graduating with distinction has no grade below C in the remaining courses required for the major.

Suggested Academic Plan

Please note that this is a suggested academic plan. Depending on your situation, your academic plan may look different.

Bachelor of Science in Environmental Science with Concentration in Applied Ecology Requirements for New Students starting in the 2021-2022 Academic Year

Year 1		Credit Hours
Fall		
Select one of the following:		4
CHEM 1031 & CHEM 1033	General Chemistry I	
CHEM 1951 & CHEM 1953	Honors General Chemical Science I (F)	
MATH 1041 or 1941	Calculus I	4
SCTC 1001	CST First Year Seminar	1
SCTC 1013	Elements of Data Science for the Physical and Life Sciences	3
GenEd Breadth Course		3
Term Credit Hours		15
Spring		
Select one of the following:		4
CHEM 1032 & CHEM 1034	General Chemistry II	
CHEM 1952 & CHEM 1954	Honors General Chemical Science II	
EES 2001	Physical Geology	4
Select one of the following:		4
MATH 1042 or 1942	Calculus II	
MATH 1044	Introduction to Probability and Statistics for the Life Sciences	
ENG 0802, 0812, or 0902	Analytical Reading and Writing [GW]	4
Term Credit Hours		16
Year 2		
Fall		
BIOL 1111 or 1911	Introduction to Organismal Biology	4
Select one of the following:		4
CHEM 2201 & CHEM 2203	Organic Chemistry I	

CHEM 2921 & CHEM 2923	Organic Chemistry for Honors I	
IH 0851 or 0951	Intellectual Heritage I: The Good Life [GY]	3
GenEd Breadth Course		3-4
Elective		1-0
Term Credit Hours		15
Spring		
BIOL 2227	Principles of Ecology	3
Select one of the following:		4
PHYS 1061	Elementary Classical Physics I	
PHYS 1961	Honors Elementary Classical Physics I	
PHYS 2021	General Physics I	
PHYS 2921	Honors General Physics I	
Environmental Science Elective 1 - Science ^{1,2}		3-4
IH 0852 or 0952	Intellectual Heritage II: The Common Good [GZ]	3
Elective		3-2
Term Credit Hours		16
Year 3		
Fall		
BIOL 2112 or 2912	Introduction to Cellular and Molecular Biology	4
Select one of the following: ³		4
EES 3021	Groundwater Hydrology (S)	
EES 3025	Physical Hydrology (F)	
Environmental Science Elective 2 - Science ^{1,2}		3-4
GenEd Breadth Course		3
Elective		2-1
Term Credit Hours		16
Spring		
BIOL 3389	Field Research in Community Ecology	4
EES 3011	Remote Sensing and GIS	4
ECON 1102 or 1902	Microeconomic Principles	3
GenEd Breadth Course		3
Elective		1
Term Credit Hours		15
Year 4		
Fall		
Environmental Science Elective 3 - Science ^{1,2}		3-4
Environmental Science Elective 4 - Policy ¹		3
GenEd Breadth Course		3
Elective		3
Elective		3-2
Term Credit Hours		15
Spring		
ENVS 4198	Environmental Science Senior Seminar [WI] (S)	3
Environmental Science Elective 5 - Science or Policy ^{1,2}		3-4
Elective		3
Elective		3
Elective		3-2
Term Credit Hours		15
Total Credit Hours:		123

Code	Title	Credit Hours
(F) - Fall only course		
(S) - Spring only course		
1	Select from the Environmental Science Electives lists under Requirements. At least one of the Electives must be a writing-intensive (WI) course.	
2	For the Science Electives, at least two from Biology must be selected.	
3	Either hydrology course EES 3021 or EES 3025 can be taken. One will be offered in the Fall and one in the Spring. The course not selected may be taken as an Environmental Science Elective (Water Elective).	