

ENVIRONMENTAL SCIENCE, B.S.

Begin Campus: Any Penn State Campus

End Campus: Erie

Degree Requirements

For the Bachelor of Science degree in Environmental Science, a minimum of 121 credits is required, with at least 15 credits at the 400 level:

Requirement	Credits
General Education	45
Electives	0-1
Requirements for the Major	102-103

27 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 9 credits of GN courses; 6 credits of GQ courses; 6 credits of GS courses; 3 credits of GH courses; 3 credits of GWS courses.

Per Senate Policy 83.80.5, the college dean or campus chancellor and program faculty may require up to 24 credits of coursework in the major to be taken at the location or in the college or program where the degree is earned.

Requirements for the Major

Each student must earn at least a grade of C in each 300- and 400-level prescribed, additional, and supporting course.

To graduate, a student enrolled in the major must earn a grade of C or better in each course designated by the major as a C-required course, as specified by Senate Policy 82-44 (<https://senate.psu.edu/students/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/>).

Common Requirements for the Major (All Options)

Code	Title	Credits
Prescribed Courses		
BIOL 220W	Biology: Populations and Communities	4
CHEM 111	Experimental Chemistry I	1
CHEM 112	Chemical Principles II	3
CHEM 113	Experimental Chemistry II	1
CHEM 202	Fundamentals of Organic Chemistry I	3
ENGL 202C	Effective Writing: Technical Writing	3
GEOG 160	Mapping Our Changing World	3
GEOG 161	Applied Geographic Information Systems	1
MATH 141	Calculus with Analytic Geometry II	4
<i>Prescribed Courses: Require a grade of C or better</i>		
BIOL 110	Biology: Basic Concepts and Biodiversity	4
BIOL 402W	Biological Experimental Design	3
CHEM 110	Chemical Principles I	3
ENVSC 400W	Case Studies in Environmental Analysis and Problem-Solving	3
MATH 140	Calculus With Analytic Geometry I	4
Additional Courses		
Select one of the following:		3

CIVCM 211N	Foundations: Civic and Community Engagement	
PLSC 1	American Politics: Principles, Processes and Powers	
SUST 200	Foundations of Leadership in Sustainability	
Select one of the following:		3-4
SCM 200	Introduction to Statistics for Business	
STAT 200	Elementary Statistics	
STAT 250	Introduction to Biostatistics	
Select one of the following:		3
EARTH 2	The Earth System and Global Change	
GEOG 10	Physical Geography: An Introduction	
GEOSC 1	Physical Geology	
Select one of the following:		3
PHIL 103	Ethics	
PHIL 119	Ethical Leadership	
PHIL 132	Bioethics	
STS 245Z	Globalization, Technology, and Ethics	
Select one of the following:		3
ECON 102	Introductory Microeconomic Analysis and Policy	
ECON 104	Introductory Macroeconomic Analysis and Policy	
GEOG 30N	Environment and Society in a Changing World	
GEOG 126	Economic Geography	
<i>Additional Courses: Require a grade of C or better</i>		
Select one of the following sequences:		8
PHYS 211 & PHYS 212	General Physics: Mechanics and General Physics: Electricity and Magnetism ¹	
PHYS 250 & PHYS 251	Introductory Physics I and Introductory Physics II ¹	
Supporting Courses and Related Areas		
Select 3 credits from the Natural & Physical Sciences program list ²		3
<i>Supporting Courses and Related Areas: Require a grade of C or better</i>		
Select 3 credits from BIOL, ENVSC, GEOG, GEOSC 494 (Research), 495 (Internship), or 496 (Independent Studies) in consultation with adviser ²		3
Requirements for the Option		
Select an option		33
¹ PHYS 212 and PHYS 251 do not require a grade of C or better.		
² A maximum of 9 credits of Research (494), Internship (495), or Independent Study (496) may be applied toward credits for graduation in all options.		
Requirements for the Option		
Environmental Field Science Option (33 credits)		
Code	Title	Credits
Prescribed Courses		
<i>Prescribed Courses: Require a grade of C or better</i>		
BIOL 435	Ecology of Lakes and Streams	3
GEOG 363	Geographic Information Systems	3
GEOSC 303	Introduction to Environmental Geology	3
GEOSC 452	Hydrogeology	3
Additional Courses		
Select one of the following:		3
CHEM 301	Environmental Chemistry and Analysis ¹	

EGEE 101	Energy and the Environment	
EGEE 102	Energy Conservation for Environmental Protection	
STS 420	Energy and Modern Society ¹	

Additional Courses: Require a grade of C or better

GEOSC 451	Natural Resources: Origins, Economics and Environmental Impact	3
or GEOSC 454	Geology of Oil and Gas	

Select 3 credits of the following: 3

Any Biology 400-level field/lab course		
GEOSC 412	Water Resources Geochemistry	
GEOSC 418	Soil Environmental Chemistry	

Supporting Courses and Related Areas ²

Select 12 credits from the Natural & Physical Sciences and/or the Social Sciences, Arts & Humanities program lists with not more than 6 credits from the latter list ³ 12

² A maximum of 9 credits of Thesis Research (GEOSC 494M), GEOSC 495, or GEOSC 496 may be applied toward credits for graduation in all options.

³ Students may apply 6 credits of basic ROTC.

¹ CHEM 301 and STS 420 require a grade of C or better.

Environmental Lab Science Option (33 credits)

Code	Title	Credits
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Prescribed Courses

CHEM 203	Fundamentals of Organic Chemistry II	3
CHEM 227	Analytical Chemistry	4
MICRB 201	Introductory Microbiology	3
MICRB 202	Introductory Microbiology Laboratory	2

Prescribed Courses: Require a grade of C or better

CHEM 301	Environmental Chemistry and Analysis	3
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Additional Courses

Additional Courses: Require a grade of C or better

Select one of the following: 3

GEOSC 412	Water Resources Geochemistry	
GEOSC 418	Soil Environmental Chemistry	
GEOSC 419	The Organic Geochemistry of Natural Waters and Sediments	

Select one of the following: 3

GEOSC 451	Natural Resources: Origins, Economics and Environmental Impact	
GEOSC 452	Hydrogeology	
STS 420	Energy and Modern Society	

Supporting Courses and Related Areas ¹

Choose 9 credits from the Natural & Physical Sciences and/or the Social Sciences, Arts & Humanities program lists with not more than 6 credits from the latter list ² 9

Choose 3 credits at the 400-level from the Natural & Physical Sciences program list 3

¹ A maximum of 9 credits of GEOSC 494M, GEOSC 495, or GEOSC 496 may be applied toward credits for graduation in all options.

² Students may apply 6 credits of basic ROTC.

General Education

Connecting career and curiosity, the General Education curriculum provides the opportunity for students to acquire transferable skills necessary to be successful in the future and to thrive while living in interconnected contexts. General Education aids students in developing intellectual curiosity, a strengthened ability to think, and a deeper sense of aesthetic appreciation. These are requirements for all baccalaureate students and are often partially incorporated into the requirements of a program. For additional information, see the General Education Requirements (<https://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program/>) section of the Bulletin and consult your academic adviser.

The keystone symbol appears next to the title of any course that is designated as a General Education course. Program requirements may also satisfy General Education requirements and vary for each program.

Foundations (grade of C or better is required and Inter-Domain courses do not meet this requirement.)

- **Quantification (GQ):** 6 credits
- **Writing and Speaking (GWS):** 9 credits

Breadth in the Knowledge Domains (Inter-Domain courses do not meet this requirement.)

- **Arts (GA):** 3 credits
- **Health and Wellness (GHW):** 3 credits
- **Humanities (GH):** 3 credits
- **Social and Behavioral Sciences (GS):** 3 credits
- **Natural Sciences (GN):** 3 credits

Integrative Studies

- **Inter-Domain Courses (Inter-Domain):** 6 credits

Exploration

- **GN**, may be completed with Inter-Domain courses: 3 credits
- **GA, GH, GN, GS, Inter-Domain courses.** This may include 3 credits of World Language course work beyond the 12th credit level or the requirements for the student's degree program, whichever is higher: 6 credits

University Degree Requirements

First Year Engagement

All students enrolled in a college or the Division of Undergraduate Studies at University Park, and the World Campus are required to take 1 to 3 credits of the First-Year Seminar, as specified by their college First-Year Engagement Plan.

Other Penn State colleges and campuses may require the First-Year Seminar; colleges and campuses that do not require a First-Year Seminar provide students with a first-year engagement experience.

First-year baccalaureate students entering Penn State should consult their academic adviser for these requirements.

Cultures Requirement

6 credits are required and may satisfy other requirements

- **United States Cultures:** 3 credits
- **International Cultures:** 3 credits

Writing Across the Curriculum

3 credits required from the college of graduation and likely prescribed as part of major requirements.

Total Minimum Credits

A minimum of 120 degree credits must be earned for a baccalaureate degree. The requirements for some programs may exceed 120 credits. Students should consult with their college or department adviser for information on specific credit requirements.

Quality of Work

Candidates must complete the degree requirements for their major and earn at least a 2.00 grade-point average for all courses completed within their degree program.

Limitations on Source and Time for Credit Acquisition

The college dean or campus chancellor and program faculty may require up to 24 credits of course work in the major to be taken at the location or in the college or program where the degree is earned. Credit used toward degree programs may need to be earned from a particular source or within time constraints (see Senate Policy 83-80 (<https://senate.psu.edu/students/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/>)). For more information, check the Suggested Academic Plan for your intended program.