ENVIRONMENTAL RESOURCE MANAGEMENT, B.S.

Begin Campus: Any Penn State Campus

End Campus: University Park

Program Description

Environmental Resource Management (ERM) is an interdisciplinary, science-based major designed to prepare students to understand and critically analyze environmental problems ranging from local to global in scale, identify solutions, and communicate ideas related to environmental and natural resource issues. The ERM major also focuses on human interactions with the environment by emphasizing the management of environmental resources. The ERM curriculum begins with foundation course work in the biological, physical and social sciences. Later courses apply these principles to the management and sustainability of the environment, and include environmental problem-solving, ecosystem management and environmental law. The third tier, offered through three options, affords considerable flexibility and the opportunity to specialize.

The major prepares students for employment in a variety of environmental positions, including environmental consulting, public agencies, and nonprofit organizations. Students are also prepared for graduate school or law school upon graduation. Realizing the wide range of career possibilities requiring diverse types of academic preparation, three options of study are available: the Environmental Science Option, the Soil Science Option and the Water Science Option.

In the Environmental Science Option, students select a minor or choose a group of courses (totaling at least 18 credits) that focus on a particular aspect of the environment. Examples include watersheds and water resources, climate change impacts, geographic information systems, energy and air pollution, sustainability leadership, ecology, environmental engineering, wildlife and fisheries science, and others. Courses and minors from across the University can be selected to develop a student's area of specialization in the Environmental Sciences Option.

In the Soil Science Option, students take courses in soil composition and properties, conservation, nutrient management, soil ecology, GIS and mapping. This option also allows the student to choose courses that support their strengths and interests. The option prepares students for positions with private, public, and non-profit firms that evaluate soils for various uses, delineate wetlands, perform environmental assessments, and identify and remediate contaminated soils.

In the Water Science Option, students take courses in hydrologic measurements, wetland conservation, stream restoration, stream and lake ecology, watershed management, and land use practices to control runoff and erosion. The option also prepares students for positions with private, public, and non-profit firms that evaluate water quality and quantity issues, delineate wetlands, perform environmental and hydrological assessments, and identify and restore degraded aquatic resources.

What is Environmental Resource Management?

Environmental Resource Management is a multidisciplinary undergraduate experience in the environmental sciences and resource management that includes classroom, laboratory, field and experiential learning. ERM deals with natural resources, conservation and land management issues.

You Might Like this Program If...

- You are interested in spending time outdoors in the field gathering data and monitoring environmental conditions
- You have a passion for conservation and natural resource issues
- You are interested in making a difference by solving real world problems

Entrance to Major

In order to be eligible for entrance to this major, a student must:

1. attain at least a C (2.00) cumulative grade-point average for all courses taken at the University; and
2. have at least third-semester classification (https://www.registrar.psu.edu/enrollment/semester-classification.cfm).

READ SENATE POLICY 37-30: ENTRANCE TO AND CHANGES IN MAJOR PROGRAMS OF STUDY (https://senate.psu.edu/policies-and-rules-for-undergraduate-students/37-00-entrance-to-a-college-or-major/)

Degree Requirements

For the Bachelor of Science degree in Environmental Resource Management, a minimum of 121 credits is required:

Requirement	Credits
General Education	45
Electives	0-8
Requirements for the Major	95-108

27-30 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; 3-6 credits of GS courses; 9 credits of GWS courses.

Requirements for the Major

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/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44).

Common Requirements for the Major (All Options)

Code	Title	Credits
Prescribed Courses		
CHEM 112	Chemical Principles II	3
ERM 411	Legal Aspects of Resource Management	3
SOILS 102	Introductory Soil Science Laboratory	1
Prescribed Courses: Require a grade of C or better		
ASM 327	Soil and Water Resource Management	3
CHEM 110	Chemical Principles I	3
CHEM 111	Experimental Chemistry I	1
ENGL 202C	Effective Writing: Technical Writing	3
ERM 151	Careers and Issues in Environmental Resource Management	1
ERM 300	Basic Principles and Calculations in Environmental Analysis	3

SOILS 101	Introductory Soil Science	3
Additional Courses		
AGBM 101	Economic Principles of Agribusiness Decision Making	3
or ECON 102	Introductory Microeconomic Analysis and Policy	
CHEM 202	Fundamentals of Organic Chemistry I	3
or CHEM 210	Organic Chemistry I	
PHYS 211	General Physics: Mechanics	4
or PHYS 250	Introductory Physics I	
Additional Courses: Require a grade of C or better		
CAS 100A	Effective Speech	3
or CAS/ENGL 138T	Rhetoric and Civic Life II	
MATH 110	Techniques of Calculus I	4
or MATH 140	Calculus With Analytic Geometry I	
Select 3 credits from the following:		3
ENGL 15	Rhetoric and Composition	
ENGL 30H	Honors Rhetoric and Composition	
CAS/ENGL 137H	Rhetoric and Civic Life I	
Select 3-4 credits from the following:		3-4
STAT 200	Elementary Statistics	
STAT 240	Introduction to Biometry	
STAT 250	Introduction to Biostatistics	
Requirements for the Option		
Select an option		48-60

Requirements for the Option

Environmental Science Option (58-60 credits)

Code	Title	Credits
Prescribed Courses		
BIOL 220W	Biology: Populations and Communities	4
CED 201	Introductory Environmental and Resource Economics	3
SOILS 450	Environmental Geographic Information Systems	3
Prescribed Courses: Require a grade of C or better		
BIOL 110	Biology: Basic Concepts and Biodiversity	4
ERM 412	Resource Systems Analysis	3
ERM 413W	Case Studies in Ecosystem Management	3
Additional Courses		
GEOG 160	Mapping Our Changing World	3
or GEOG 260	Geographic Information in a Changing World: Introduction to GIScience	
GEOSC 1	Physical Geology	3
or GEOSC 303	Introduction to Environmental Geology	
Select 6 credits from any 400-level ERM courses		6
Additional Courses: Require a grade of C or better		
MATH 111	Techniques of Calculus II	2-4
or MATH 141	Calculus with Analytic Geometry II	
Supporting Courses and Related Areas		
Select 3 credits in ecology		3
Select 18 credits of specialization/minor courses in consultation with adviser		18
Select 3 credits in communications/sustainability/leadership		3

Soil Science Option (48-50 credits)

Code	Title	Credits
Prescribed Courses		
SOILS 403	Soil Morphology Practicum	2
SOILS 412W	Soil Ecology	3
SOILS 450	Environmental Geographic Information Systems	3
Prescribed Courses: Require a grade of C or better		
SOILS 416	Soil Genesis, Classification, and Mapping	4
Additional Courses		
BIOL 110	Biology: Basic Concepts and Biodiversity	3-4
or BIOL 127	Introduction to Plant Biology	
FOR 475	Principles of Forest Soils Management	3
or SOILS 404	Urban Soils	
GEOSC 1	Physical Geology	3
or GEOSC 20	Planet Earth	
Select 3-4 credits from the following:		3-4
AGRO 28	Principles of Crop Management	
BIOL 220W	Biology: Populations and Communities	
FOR 203	Field Dendrology	
HORT 101	Horticultural Science	
TURF 235	The Turfgrass	
Select 3 credits from the following:		3
ERM 440	Chemistry of the Environment: Air, Water, and Soil	
SOILS 402	Soil Nutrient Behavior and Management	
SOILS 420	Remediation of Contaminated Soils	
Select 3 credits from the following:		3
GEOSC 452	Hydrogeology	
SOILS 401	Soil Composition and Physical Properties	
SOILS 405	Hydropedology	
Supporting Courses and Related Areas		
Select 18 credits of specialization/minor courses in consultation with adviser		18

Water Science Option (58-60 credits)

Code	Title	Credits
Prescribed Courses		
BIOL 220W	Biology: Populations and Communities	4
CED 201	Introductory Environmental and Resource Economics	3
ERM/ASM 309	Measurement & Monitoring of Hydrologic Systems	3
ERM/WFS 435	Limnology	3
ERM 447	Stream Restoration	3
ERM 450	Wetland Science and Sustainability	3
FOR 470	Watershed Management	3
Prescribed Courses: Require a grade of C or better		
BIOL 110	Biology: Basic Concepts and Biodiversity	4
ERM 412	Resource Systems Analysis	3
ERM 413W	Case Studies in Ecosystem Management	3
Additional Courses		
GEOG 160	Mapping Our Changing World	3

or GEOG 260	Geographic Information in a Changing World: Introduction to GIScience	
Select 3 credits from the following:		3
GEOSC 452	Hydrogeology	
SOILS 401	Soil Composition and Physical Properties	
SOILS 405	Hydropedology	
Select 3 credits from the following:		3
CE 370	Introduction to Environmental Engineering	
ERM 448	Rural Road Ecology and Maintenance	
ERM 449	Sustainable Water Management: Economics and Policy	
FOR 303	Herbaceous Forest Plant Identification and Ecology	
FOR 403	Invasive Forest Plants: Identification, Ecology, and Management	
SOILS 450	Environmental Geographic Information Systems	
WFS 410	General Fishery Science	
WFS 422	Ecology of Fishes	
Additional Courses: Require a grade of C or better		
MATH 111	Techniques of Calculus II	2-4
or MATH 141	Calculus with Analytic Geometry II	
Supporting Courses and Related Areas		
Select 12 credits of specialization/minor courses in consultation with adviser		12
Select 3 credits in communications/sustainability/leadership		3

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/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#83-80)). For more information, check the Suggested Academic Plan for your intended program.

Program Learning Objectives

- Students will be able to identify, participate in, analyze, document, and evaluate a community- or university-based engaged scholarship experience.
- Students will be able to design and manipulate environmental data sets, and calculate accurate solutions to solve environmental media (air, water, soil) problems.

- Students will be able to integrate, evaluate, and explain information from case studies related to environmental issues.
- Students will be able to develop and understand spatially- and temporally-oriented data, and its organization, analysis and application to environmental and natural resource sciences.

Academic Advising

The objectives of the university's academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee's unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (https://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy/)

University Park

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Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2023-24 academic year. To access previous years' suggested academic plans, please visit the archive (https://bulletins.psu.edu/undergraduate/archive/) to view the appropriate Undergraduate Bulletin edition (*Note: the archive only contains suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin*).

Environmental Science Option: Environmental Resource Management, B.S. at University Park Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits	Spring	Credits
CHEM 110*†	3	CHEM 112	3
AGBM 101 or ECON 102†	3	ENGL 15, 30H, CAS 137H, or ENGL 137H‡†	3
MATH 110 or 140‡†	4	MATH 111 or 141	2-4
ERM 151*	1	BIOL 110*	4
First Year Seminar	1-3	General Education Course	3
General Education Course	3		
	15-17		**15-17**

Second Year

Fall	Credits	Spring	Credits
BIOL 220W	4	STAT 200, 240, or 250‡†	3-4
CHEM 111*†	1	CHEM 202 or 210	3
SOILS 101*†	3	PHYS 211 or 250†	4
SOILS 102	1	GEOG 260 or 160†	3
CAS 100A, 138T, or ENGL 138T‡†	3	General Education Course (GHW)	1.5
General Education Course	3		
	15		**14.5-15.5**

Third Year

Fall	Credits	Spring	Credits
ERM 411	3	ENGL 202C‡†	3
ASM 327*	3	CED 201	3
GEOSC 303 or 1	3	ERM 300*	3
Ecology Selection	3	Specialization/Minor Course	3
General Education Course	3	Specialization/Minor Course	3
		General Education Course (GHW)	1.5
	15		**16.5**

Fourth Year

Fall	Credits	Spring	Credits
ERM 412*	3	ERM 413W*	3
SOILS 450	3	400 Level ERM Course	3
400 Level ERM Course	3	Communications/ Sustainability/Leadership Selection	3
Specialization/Minor Course	3	Specialization/Minor Course	3
Specialization/Minor Course	3	Specialization/Minor Course	3
	15		**15**

Total Credits 121-126

* Course requires a grade of C or better for the major
‡ Course requires a grade of C or better for General Education
# Course is an Entrance to Major requirement
† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

All incoming Schreyer Honors College first-year students at University Park will take ENGL 137H/CAS 137H in the fall semester and ENGL 138T/CAS 138T in the spring semester. These courses carry the GWS designation and satisfy a portion of that General Education requirement. If the student's program prescribes GWS these courses will replace both ENGL 15/ENGL 30H and CAS 100A/CAS 100B/CAS 100C. Each course is 3 credits.

Advising Notes:

- Please consult with an academic adviser in the development of your plan as some courses are not taught every semester.
- Students with non-engineering interests (specialization areas like soils, water resources, wildlife, biology, ecology, environmental policy) should take MATH 110, MATH 111, and PHYS 250. For students interested in obtaining the Environmental Engineering minor, MATH 140, MATH 141, and PHYS 211 are required. Most ERM students complete MATH 110, MATH 111, and PHYS 250 and specialize in areas pertaining to natural resource conservation.
- US and IL requirements should be fulfilled by selecting GH and GA courses with the appropriate US/IL designation.
- Please consult with your academic adviser regarding the appropriate selection of Specialization/Minor courses.
- **Communications/Sustainability/Leadership Selection Courses:** AEE 360, AEE 440, CAS 213, CAS 214, CAS 250, CAS 352, CIVCM 211, ERM 499, MGMT 215, SUST 200, ERM 402
- **Ecology Selection Courses:** BIOL 415, BIOL 436, BIOL 444, BIOL 446, BIOL 448, BIOL 450W, BIOL 463, BIOL 482, BIOL 499A, ERM 430, ERM 431, ERM 435, ERM 450, HORT 445, SOILS 412W, WFS 422, WFS 430, WFS 466

Soil Science Option: Environmental Resource Management, B.S. at University Park Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits	Spring	Credits
CHEM 110*†	3	CHEM 112	3
AGBM 101 or ECON 102†	3	ENGL 15, 30H, CAS 137H, or ENGL 137H‡†	3
MATH 110 or 140‡†	4	SOILS 101*†	3
ERM 151*	1	SOILS 102	1
First Year Seminar	1-3	CAS 100A, 138T, or ENGL 138T‡†	3
General Education Course	3	General Education Course	3
	15-17		**16**

Second Year

Fall	Credits	Spring	Credits
BIOL 110 or 127	3-4	PHYS 211 or 250†	4
CHEM 111*†	1	GEOSC 20 or 1	3
CHEM 202 or 210	3	STAT 200, 240, or 250‡†	3-4
AGRO 28, HORT 101, TURF 235, BIOL 220W, or FOR 203	3-4	General Education Course	3
General Education Course	3		
	13-15		**13-14**

Third Year

Fall	Credits	Spring	Credits
SOILS 412W	3	ENGL 202C‡†	3
ERM 411	3	SOILS 402, 420, or ERM 440	3
ASM 327*	3	SOILS 401, 405, or GEOSC 452	3
SOILS 403	2	ERM 300*	3
Specialization/Minor Course	3	Specialization/Minor Course	3
General Education Course (GHW)	1.5		
	15.5		**15**

Fourth Year

Fall	Credits	Spring	Credits
SOILS 416*	4	SOILS 404 or FOR 475	3
SOILS 450	3	Specialization/Minor Course	3
Specialization/Minor Course	3	Electives	4-7
Specialization/Minor Course	3	General Education Course	3
Specialization/Minor Course	3	General Education Course (GHW)	1.5
	16		**14.5-17.5**

Total Credits 118-126

* Course requires a grade of C or better for the major

‡ Course requires a grade of C or better for General Education

Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

All incoming Schreyer Honors College first-year students at University Park will take ENGL 137H/CAS 137H in the fall semester and ENGL 138T/CAS 138T in the spring semester. These courses carry the GWS designation and satisfy a portion of that General Education requirement. If the student's program prescribes GWS these courses will replace both ENGL 15/ENGL 30H and CAS 100A/CAS 100B/CAS 100C. Each course is 3 credits.

Advising Notes:

- Please consult with an academic adviser in the development of your plan as some courses are not taught every semester.
- Students with non-engineering interests (specialization areas like soils, water resources, wildlife, biology, ecology, environmental policy) should take MATH 110, MATH 111, and PHYS 250. For students interested in obtaining the Environmental Engineering minor, MATH 140, MATH 141, and PHYS 211 are required. Most ERM students complete MATH 110, MATH 111, and PHYS 250 and specialize in areas pertaining to natural resource conservation.
- US and IL requirements should be fulfilled by selecting GH and GA courses with the appropriate US/IL designation.
- Please consult with your academic adviser regarding the appropriate selection of Specialization/Minor courses.

Water Science Option: Environmental Resource Management, B.S. at University Park Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits	Spring	Credits
CHEM 110*†	3	CHEM 112	3
AGBM 101 or ECON 102†	3	ENGL 15, 30H, CAS 137H, or ENGL 137H‡†	3
MATH 110 or 140‡†	4	MATH 111 or 141	2-4
ERM 151*	1	BIOL 110*	4
First Year Seminar	1-3	General Education Course	3
General Education Course	3		
	15-17		**15-17**

Second Year

Fall	Credits	Spring	Credits
BIOL 220W	4	STAT 200, 240, or 250‡†	3-4
CHEM 111*†	1	PHYS 211 or 250†	4
SOILS 101*†	3	CHEM 202 or 210	3
SOILS 102	1	GEOG 260 or 160†	3
CAS 100A, 138T, or ENGL 138T‡†	3	General Education Course (GHW)	1.5
General Education Course	3		
	15		**14.5-15.5**

Third Year

Fall	Credits	Spring	Credits
ERM/ASM 309	3	ENGL 202C‡†	3
ERM 411	3	CED 201	3
ASM 327*	3	ERM 300*	3
Specialization/Minor Course	3	Specialization/Minor Course	3
General Education Course	3	Specialization/Minor Course	3
		General Education Course (GHW)	1.5
	15		**16.5**

Fourth Year

Fall	Credits	Spring	Credits
ERM 450	3	ERM 412*	3
ERM 447	3	ERM 413W*	3
GEOSC 452, SOILS 405, or SOILS 401	3	FOR 470	3
ERM 435	3	ERM 440, 448, 449, CE 370, FOR 303, FOR 403, SOILS 450, WFS 410, or WFS 422	3
Communications/ Sustainability/Leadership Selection	3	Specialization/Minor Course	3
	15		**15**

Total Credits 121-126

* Course requires a grade of C or better for the major
‡ Course requires a grade of C or better for General Education
# Course is an Entrance to Major requirement
† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

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General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

All incoming Schreyer Honors College first-year students at University Park will take ENGL 137H/CAS 137H in the fall semester and ENGL 138T/CAS 138T in the spring semester. These courses carry the GWS designation and satisfy a portion of that General Education requirement. If the student's program prescribes GWS these courses will replace both ENGL 15/ENGL 30H and CAS 100A/CAS 100B/CAS 100C. Each course is 3 credits.

Advising Notes:

- Please consult with an academic adviser in the development of your plan as some courses are not taught every semester.
- Students with non-engineering interests (specialization areas like soils, water resources, wildlife, biology, ecology, environmental policy) should take MATH 110, MATH 111, and PHYS 250. For students interested in obtaining the Environmental Engineering minor, MATH 140, MATH 141, and PHYS 211 are required. Most ERM students complete MATH 110, MATH 111, and PHYS 250 and specialize in areas pertaining to natural resource conservation.
- US and IL requirements should be fulfilled by selecting GH and GA courses with the appropriate US/IL designation.
- Please consult with your academic adviser regarding the appropriate selection of Specialization/Minor courses.
- **Communications/Sustainability/Leadership Selection Courses:** AEE 360, AEE 440, CAS 213, CAS 214, CAS 250, CAS 352, CIVCM 211, ERM 499, MGMT 215, SUST 200, ERM 402

Environmental Science Option: Environmental Resource Management, B.S. at Commonwealth Campuses

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits	Spring	Credits
CHEM 110*†	3	CHEM 112	3
CHEM 111*†	1	ENGL 15, 30H, CAS 137H, or ENGL 137H‡†	3
AGBM 101 or ECON 102†	3	MATH 111 or 141	2-4
MATH 110 or 140‡†	4	CAS 100A, 138T, or ENGL 138T‡†	3
First Year Seminar	1-3	General Education Course	3
General Education Course	3		
	15-17		**14-16**

Second Year

Fall	Credits	Spring	Credits
BIOL 110*	4	BIOL 220W	4
CHEM 202 or 210	3	PHYS 211 or 250†	4
STAT 200, 240, or 250‡†	3-4	ENGL 202C‡†	3
General Education Course	3	General Education Course	3
General Education Course (GHW)	1.5	General Education Course (GHW)	1.5
	14.5-15.5		**15.5**

Third Year

Fall	Credits	Spring	Credits
ERM 151*	1	CED 201	3
SOILS 101*†	3	ERM 300*	3
SOILS 102	1	400 Level ERM Course	3
ERM 411	3	Specialization/Minor Course	3
ASM 327*	3	Specialization/Minor Course	3
GEOSC 303 or 1	3		
GEOG 260 or 160†	3		
	17		**15**

Fourth Year

Fall	Credits	Spring	Credits
ERM 412*	3	ERM 413W*	3
SOILS 450	3	400 Level ERM Course	3
Ecology Selection	3	Communications/ Sustainability/Leadership Selection	3
Specialization/Minor Course	3	Specialization/Minor Course	3
Specialization/Minor Course	3	Specialization/Minor Course	3
	15		**15**

Total Credits 121-126

* Course requires a grade of C or better for the major
‡ Course requires a grade of C or better for General Education
# Course is an Entrance to Major requirement
† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

Advising Notes:

- Please consult with an academic adviser in the development of your plan as some courses are not taught every semester.
- Students with non-engineering interests (specialization areas like soils, water resources, wildlife, biology, ecology, environmental policy) should take MATH 110, MATH 111, and PHYS 250. For students interested in obtaining the Environmental Engineering minor, MATH 140, MATH 141, and PHYS 211 are required. Most ERM students complete MATH 110, MATH 111, and PHYS 250 and specialize in areas pertaining to natural resource conservation.
- US and IL requirements should be fulfilled by selecting GH and GA courses with the appropriate US/IL designation.
- Please consult with your academic adviser regarding the appropriate selection of Specialization/Minor courses.
- **Communications/Sustainability/Leadership Selection Courses:** AEE 360, AEE 440, CAS 213, CAS 214, CAS 250, CAS 352, CIVCM 211, ERM 499, MGMT 215, SUST 200, ERM 402
- **Ecology Selection Courses:** BIOL 415, BIOL 436, BIOL 444, BIOL 446, BIOL 448, BIOL 450W, BIOL 463, BIOL 482, BIOL 499A, ERM 430, ERM 431, ERM 435, ERM 450, HORT 445, SOILS 412W, WFS 422, WFS 430, WFS 466

Soil Science Option: Environmental Resource Management, B.S. at Commonwealth Campuses

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits	Spring	Credits
CHEM 110*†	3	CHEM 112	3
AGBM 101 or ECON 102†	3	ENGL 15, 30H, CAS 137H, or ENGL 137H‡†	3
MATH 110 or 140‡†	4	CAS 100A, 138T, or ENGL 138T‡†	3
First Year Seminar	1-3	GEOSC 20 or 1	3
General Education Course	3	General Education Course	3
	14-16		**15**

Second Year

Fall	Credits	Spring	Credits
BIOL 110 or 127	3-4	PHYS 211 or 250†	4
CHEM 111*†	1	ENGL 202C‡†	3
CHEM 202 or 210	3	General Education Course	3
STAT 200, 240, or 250‡†	3-4	General Education Course	3
General Education Course	3	General Education Course (GHW)	1.5
General Education Course (GHW)	1.5		
	14.5-16.5		**14.5**

Third Year

Fall	Credits	Spring	Credits
SOILS 101*†	3	AGRO 28, HORT 101, TURF 235, BIOL 220W, or FOR 203	3-4
SOILS 102	1	SOILS 402, 420, or ERM 440	3
ERM 151*	1	SOILS 401, 405, or GEOSC 452	3
SOILS 412W	3	ERM 300*	3
ERM 411	3	Specialization/Minor Course	3
ASM 327*	3		
SOILS 403	2		
	16		**15-16**

Fourth Year

Fall	Credits	Spring	Credits
SOILS 416*	4	SOILS 404 or FOR 475	3
SOILS 450	3	Specialization/Minor Course	6
Specialization/Minor Course	3	Elective	3-7
Specialization/Minor Course	3		
Specialization/Minor Course	3		
	16		**12-16**

Total Credits 117-126

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# Course is an Entrance to Major requirement
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University Requirements and General Education Notes:

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Advising Notes:

- Please consult with an academic adviser in the development of your plan as some courses are not taught every semester.
- Students with non-engineering interests (specialization areas like soils, water resources, wildlife, biology, ecology, environmental policy) should take MATH 110, MATH 111, and PHYS 250. For students interested in obtaining the Environmental Engineering minor, MATH 140, MATH 141, and PHYS 211 are required. Most ERM students complete MATH 110, MATH 111, and PHYS 250 and specialize in areas pertaining to natural resource conservation.
- US and IL requirements should be fulfilled by selecting GH and GA courses with the appropriate US/IL designation.
- Please consult with your academic adviser regarding the appropriate selection of Specialization/Minor courses.

Water Science Option: Environmental Resource Management, B.S. at Commonwealth Campuses

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First Year

Fall	Credits	Spring	Credits
CHEM 110*†	3	CHEM 112	3
CHEM 111*†	1	ENGL 15, 30H, CAS 137H, or ENGL 137H‡†	3
AGBM 101 or ECON 102†	3	MATH 111 or 141	2-4
MATH 110 or 140‡†	4	CAS 100A, 138T, or ENGL 138T‡†	3
First Year Seminar	1-3	General Education Course	3
General Education Course	3		
	15-17		**14-16**

Second Year

Fall	Credits	Spring	Credits
BIOL 110*	4	BIOL 220W	4
CHEM 202 or 210	3	PHYS 211 or 250†	4
STAT 200, 240, or 250‡†	3-4	ENGL 202C‡†	3
General Education Course	3	GEOG 260 or 160†	3
General Education Course (GHW)	1.5	General Education Course (GHW)	1.5
	14.5-15.5		**15.5**

Third Year

Fall	Credits	Spring	Credits
ERM 151*	1	CED 201	3
ERM/ASM 309	3	General Education Course	3
ERM 411	3	ERM 300*	3
ASM 327*	3	Specialization/Minor Course	3
SOILS 101*†	3	Specialization/Minor Course	3
SOILS 102	1		
Specialization/Minor Course	3		
	17		**15**

Fourth Year

Fall	Credits	Spring	Credits
ERM 435	3	ERM 412*	3
ERM 450	3	ERM 413W*	3
ERM 447	3	FOR 470	3
GEOSC 452, SOILS 405, or SOILS 401	3	ERM 440, 448, 449, CE 370, FOR 303, FOR 403, SOILS 450, WFS 410, or WFS 422	3
Communications/ Sustainability/Leadership Selection	3	Specialization/Minor Course	3
	15		**15**

Total Credits 121-126

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# Course is an Entrance to Major requirement
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Advising Notes:

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- **Communications/Sustainability/Leadership Selection Courses:** AEE 360, AEE 440, CAS 213, CAS 214, CAS 250, CAS 352, CIVCM 211, ERM 499, MGMT 215, SUST 200, ERM 402

Career Paths

Environmental Resource Management graduates find exciting opportunities in government agencies at the local (e.g., municipal and county resource agencies), state (e.g., Pennsylvania Department of Environmental Protection and Department of Conservation and Natural Resources), and federal (e.g., EPA, USDA Natural Resource Conservation Service, U.S. Geological Survey, Army Corps of Engineers, National Park Service) levels. Private-sector jobs include environmental consulting firms responsible for stream restoration, wetland delineation, and environmental assessments, as well as utility and manufacturing companies. Nonprofit organizations, such as watershed associations and conservancies, also offer opportunities.

MORE INFORMATION ABOUT POTENTIAL CAREER PATHS FOR GRADUATES OF THE ENVIRONMENTAL RESOURCE MANAGEMENT PROGRAM (https://agsci.psu.edu/academics/undergraduate/majors/environmental-resource-management/)

EXPLORE THE WHAT CAN I DO WITH THIS MAJOR TOOL AT PENN STATE CAREER SERVICES (https://studentaffairs.psu.edu/career/resources/planning/)

MORE INFORMATION ABOUT OPPORTUNITIES FOR GRADUATE STUDIES (https://studentaffairs.psu.edu/career/resources/grad-school/#entrance)

Professional Resources

- Society of Wetland Scientists Professional Certification Program (https://www.wetlandcert.org)
- Certified Professional Soil Scientist (https://www.soils.org/certifications/become-certified/)
- Professional Hydrologist (https://www.aihydrology.org/examinations/membership-categories/)
- Certified Hazardous Materials Manager (https://ihmm.org/chmm/)
- Certified Professional in Erosion & Sediment Control™ (https://envirocert.org/cpesc/)
- Agricultural Stewardship and Conservation Certification (https://bulletins.psu.edu/undergraduate/colleges/agricultural-sciences/agricultural-stewardship-conservation-certificate/)
- LEED Certification (https://support.usgbc.org/hc/en-us/)

Contact

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https://agsci.psu.edu/academics/undergraduate/majors/environmental-resource-management (https://agsci.psu.edu/academics/undergraduate/majors/environmental-resource-management/)