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:

1. Environmental Science Option
2. Soil Science Option
3. 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 remediate contaminated 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 third-semester classification (http://www.registrar.psu.edu/enrollment/semester-classification.cfm).

READ SENATE POLICY 37:30: ENTRANCE TO AND CHANGES IN MAJOR PROGRAMS OF STUDY (http://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:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
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<tbody>
<tr>
<td>General Education</td>
<td>45</td>
</tr>
<tr>
<td>Electives</td>
<td>0-8</td>
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<tr>
<td>Requirements for the Major</td>
<td>95-108</td>
</tr>
</tbody>
</table>

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.

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 (http://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.)
- Quantification (GQ): 6 credits
- Writing and Speaking (GWS): 9 credits

Knowledge Domains
- Arts (GA): 6 credits
- Health and Wellness (GHW): 3 credits
- Humanities (GH): 6 credits
- Social and Behavioral Sciences (GS): 6 credits
- Natural Sciences (GN): 9 credits

Integrative Studies (may also complete a Knowledge Domain requirement)
- Inter-Domain or Approved Linked Courses: 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 (http://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.

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 (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44).
Select one of the following:

AGBM 200  Introduction to Agricultural Business Mgmt  3
ERM 402  Foundations of Sustainable Business  3
MGMT 215  Entrepreneurial Mindset  3

Select 6 credits from any 400-level ERM courses  6

Supporting Courses and Related Areas
Select 3 credits in communications/entrepreneurship/leadership  3
Select 3 credits in ecology  3
Select 18 credits of specialization/minor courses in consultation with adviser  18

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
GEOC 1  Physical Geology  3
or GEOC 20  Planet Earth

Select 3-4 credits of 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 of the following:  3
ERM 433  Transformation of Pollutants in Soils
ERM 440  Chemistry of the Environment: Air, Water, and Soil
SOILS 402  Soil Nutrient Behavior and Management
SOILS 419  Soil Environmental Chemistry
SOILS 420  Remediation of Contaminated Soils

Select 3 credits of the following:  3
GEOSC 452  Hydrogeology
SOILS 401  Soil Composition and Physical Properties
SOILS 405  Hydropedology

Select 3 credits of the following:  3
ERM 444  Environmental Biophysics
FOR 475  Principles of Forest Soils Management
SOILS 404  Urban Soils

Supporting Courses and Related Areas
Select 18 credits of supporting 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 Conservation  3
FOR 470  Watershed Management  3
GEOG 160  Mapping Our Changing World  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 413  3

Additional Courses

MATH 111  Techniques of Calculus II  2-4
or MATH 141  Calculus with Analytic Geometry II

Select one of the following:  3
GEOC 452  Hydrogeology
SOILS 401  Soil Composition and Physical Properties
SOILS 405  Hydropedology

Select one of the following:  3
CE 370  Introduction to Environmental Engineering
ENT 425  Freshwater Entomology
ERM 440  Chemistry of the Environment: Air, Water, and Soil
FOR 303  Herbaceous Forest Plant Identification and Ecology
FOR 403  Invasive Forest Plants: Identification, Ecology, and Management
WFS 410  General Fishery Science
WFS 422  Ecology of Fishes

Supporting Courses and Related Areas
Select 3 credits in communications/entrepreneurship/leadership  3
Select 12 credits of supporting courses in consultation with adviser  12

Program Learning Objectives

1. Students will be able to identify, participate in, analyze and document a community- or university-based engaged scholarship experience.
2. Students will be able to design and manipulate environmental data sets, and calculate accurate solutions to solve environmental media (air, water, soil) problems.
3. Students will be able to integrate, evaluate, and explain information from case studies related to environmental issues.

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.
**Suggested Academic Plan**

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2019-20 academic year. To access previous years’ suggested academic plans, please visit the archive (http://bulletins.psu.edu/undergraduate/archive) to view the appropriate Undergraduate Bulletin edition (Note: the archive only contain suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin).

**Environmental Science Option, 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**

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<thead>
<tr>
<th>Fall</th>
<th>Credits Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 110†</td>
<td>3 CHEM 112</td>
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<tr>
<td>AGBM 101 or ECON 102†</td>
<td>3 ENGL 15, 30, or ESL 15†</td>
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<td>MATH 110 or 140†</td>
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<td>ERM 151†</td>
<td>1 BIOL 110†</td>
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**Second Year**

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<td>CHEM 111††</td>
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<td>SOILS 101††</td>
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<td>SOILS 102</td>
<td>1 GEOG 160†</td>
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<td>CAS 100, 100A, 100B, or 100C‡†</td>
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**Third Year**

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<tr>
<td>AGBM 200, MGMT 215, or ERM 402</td>
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<td>ERM 411</td>
<td>3 CED 201</td>
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<td>ASM 327†</td>
<td>3 ERM 300*</td>
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<td>GEOSC 303 or 1</td>
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**Fourth Year**

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<tr>
<th>Fall</th>
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<tr>
<td>ERM 412†</td>
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<td>Ecology Selection</td>
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Total Credits 118-123

* 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 University 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.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of ‘C’ or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL/CAS 137 in the fall semester and ENGL/CAS 138 in the spring semester. These courses carry the GWS designation and replace both ENGL 30 and CAS 100. 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/Entrepreneurship/Leadership Selection Courses: AEE 360, AEE 440, CAS 213, CAS 214W, CAS 250, CAS 352, ERM 499, MGMT 215

• Ecology Selection Courses: BIOL 415, BIOL 436, BIOL 444, BIOL 446, BIOL 448, BIOL 450W, BIOL 463, BIOL 482, ENT 420, ENT 425, ERM 403, ERM 431, ERM 435, ERM 450, HORT 445, SOILS 412W, WFS 422, WFS 430, WFS 466

**Soil Science Option, 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 | Total Credits
--- | --- | --- | --- | ---
CHEM 110*† | 3 | CHEM 112 | 3 | 6
AGBM 101 or ECON 102† | 3 | ENGL 15, 30, or ESL 15†† | 3 | 6
MATH 110 or 140†† | 4 | SOILS 101†† | 3 | 7
ERM 151† | 1 | SOILS 102 | 1 | 2
First Year Seminar | 1-3 | CAS 100, 100A, 100B, or 100C†† | 3 | 4
General Education Course | 3 | General Education Course | 3 | 6

**Second Year**

**Fall** | Credits | Spring | Credits | Total Credits
--- | --- | --- | --- | ---
BIOL 110 or 127 | 3 | 4 PHYS 211 or 250† | 4 | 7
CHEM 111†† | 1 | GEOSC 20 or 1 | 3 | 4
CHEM 202 | 3 | STAT 200, 240, or 250†† | 3-4 | 6
AGRO 28, HORT 101, TURF 235, BIOL 220W, or FOR 203 | 3-4 | General Education Course | 3 | 7
General Education Course | 3 | General Education Course | 3 | 6

### Third Year

**Fall** | Credits | Spring | Credits | Total Credits
--- | --- | --- | --- | ---
SOILS 412W | 3 | ENGL 202C†† | 3 | 6
ERM 411 | 3 | SOILS 401, 419, 420, ERM 433, or ERM 440 | 3 | 6
ASM 327* | 3 | SOILS 401, 405, or GEOSC 452 | 3 | 6
SOILS 403 | 2 | ERM 300* | 3 | 5
Specialization/Minor Course | 3 | Specialization/Minor Course | 3 | 6
General Education Course (GHW) | 1.5 | General Education Course (GHW) | 1.5 | 7.5

### Fourth Year

**Fall** | Credits | Spring | Credits | Total Credits
--- | --- | --- | --- | ---
SOILS 416* | 4 | SOILS 404, ERM 444, or FOR 475 | 3 | 7
SOILS 450 | 3 | Specialization/Minor Course | 3 | 6
Specialization/Minor Course | 3 | Elective | 3 | 6
Specialization/Minor Course | 3 | Elective | 4 | 7

**Specialization/Minor Course**

- 3 General Education Course
- **General Education Course** (GHW)

**Total Credits 121-126**

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† 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 University Requirements (United States and International Cultures).

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Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL/CAS 137 in the fall semester and ENGL/CAS 138 in the spring semester. These courses carry the GWS designation and replace both ENGL 30 and CAS 100. Each course is 3 credits.

**Advising Notes:**

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- 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.
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**Water Science Option, 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.
Environmental Resource Management, B.S.

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<tbody>
<tr>
<td>ERM/ASM 309</td>
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<td>ASM 327†</td>
<td>3 ERM 300*</td>
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### Fourth Year

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<td>ERM 447</td>
<td>3 ERM 413†</td>
<td>3</td>
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<td>GEOC 452, SOILS 405, or SOILS 401</td>
<td>3 FOR 470</td>
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<tr>
<td>ERM 435</td>
<td>3 WFS 410, CE 370, ERM 440, ENT 425, FOR 303, FOR 403, or WFS 422</td>
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</tr>
<tr>
<td>Communications/Entrepreneurship/Leadership Selection</td>
<td>3 Specialization/Minor Course</td>
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<tr>
<td><strong>Total Credits</strong></td>
<td>15</td>
<td><strong>Total Credits</strong></td>
<td>15</td>
</tr>
</tbody>
</table>

**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 University 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.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of ‘C’ or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL/CAS 137 in the fall semester and ENGL/CAS 138 in the spring semester. These courses carry the GWS designation and replace both ENGL 30 and CAS 100. 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/Entrepreneurship/Leadership Selection Courses:
  - AEE 360, AEE 440, CAS 213, CAS 214W, CAS 250, CAS 352, ERM 499, MGMT 215

### Environmental Science Option, 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**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 110†</td>
<td>3 CHEM 112</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CHEM 111††</td>
<td>1 ENGL 15, 30, or ESL 15††</td>
<td>3</td>
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<tr>
<td>AGBM 101 or ECON 102†</td>
<td>3 MATH 111 or 141</td>
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<tr>
<td>MATH 110 or 140††</td>
<td>4 CAS 100, 100A, 100B, or 100C††</td>
<td>3</td>
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<td>General Education Course</td>
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<tr>
<td><strong>Total Credits</strong></td>
<td>15-17</td>
<td><strong>Total Credits</strong></td>
<td>14-16</td>
</tr>
</tbody>
</table>
Environmental Resource Management, B.S.

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/Entrepreneurship/Leadership Selection Courses: AEE 360, AEE 440, CAS 213, CAS 214W, CAS 250, CAS 352, ERM 499, MGMT 215
- Ecology Selection Courses: BIOL 415, BIOL 436, BIOL 444, BIOL 446, BIOL 448, BIOL 450W, BIOL 463, BIOL 482, ENT 420, ENT 425, ERM 403, ERM 431, ERM 435, ERM 450, HORT 445, SOILS 412W, WFS 422, WFS 430, WFS 466

Soil Science Option, 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.

<table>
<thead>
<tr>
<th>First Year</th>
<th>Credits</th>
<th>Spring</th>
<th>Fall</th>
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<tr>
<td>CHEM 110**</td>
<td>3 CHEM 112</td>
<td>3</td>
<td>CHEM 110**</td>
</tr>
<tr>
<td>AGBM 101 or ECON 102†</td>
<td>3 ENGL 15, 30, or ESL 15‡†</td>
<td>3</td>
<td>ECON 102†</td>
</tr>
<tr>
<td>MATH 110 or 140††</td>
<td>4 CAS 100, 100A, 100B, or 100C††</td>
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<td>MATH 110 or 140††</td>
</tr>
<tr>
<td>First Year Seminar</td>
<td>1-3 GEOSC 20 or 1</td>
<td>3</td>
<td>CAS 100 or ECON 102</td>
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<tr>
<td>General Education Course</td>
<td>3 General Education Course</td>
<td>3</td>
<td>GEOSC 20 or 1</td>
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<td>** Total Credits: 14-16</td>
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<th>Credits</th>
<th>Spring</th>
<th>Fall</th>
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<tbody>
<tr>
<td>BIOL 110 or 127</td>
<td>3-4 PHYS 211 or 250†</td>
<td>4</td>
<td>BIOL 110 or 127</td>
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<tr>
<td>CHEM 111**</td>
<td>1 ENGL 202C‡†</td>
<td>3</td>
<td>CHEM 111**</td>
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<tr>
<td>CHEM 202</td>
<td>3 General Education Course</td>
<td>3</td>
<td>CHEM 202</td>
</tr>
<tr>
<td>STAT 200, 240, or 250††</td>
<td>3-4 General Education Course</td>
<td>3</td>
<td>STAT 200, 240, or 250††</td>
</tr>
<tr>
<td>General Education Course</td>
<td>3 General Education Course (GHW)</td>
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<th>Spring</th>
<th>Fall</th>
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<tbody>
<tr>
<td>SOILS 101**</td>
<td>3 AGRO 28, HORT 101, TURF 235, BIOL 220W, or FOR 203</td>
<td>3-4</td>
<td>SOILS 101**</td>
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<th>Second Year</th>
<th>Credits</th>
<th>Spring</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 110 or 127</td>
<td>3-4 PHYS 211 or 250†</td>
<td>4</td>
<td>BIOL 110 or 127</td>
</tr>
<tr>
<td>CHEM 111**</td>
<td>1 ENGL 202C‡†</td>
<td>3</td>
<td>CHEM 111**</td>
</tr>
<tr>
<td>CHEM 202</td>
<td>3 General Education Course</td>
<td>3</td>
<td>CHEM 202</td>
</tr>
<tr>
<td>STAT 200, 240, or 250††</td>
<td>3-4 General Education Course</td>
<td>3</td>
<td>STAT 200, 240, or 250††</td>
</tr>
<tr>
<td>General Education Course</td>
<td>3 General Education Course (GHW)</td>
<td>1.5</td>
<td>General Education Course (GHW)</td>
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<tr>
<td>** Total Credits: 14.5-16.5</td>
<td>15</td>
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<thead>
<tr>
<th>Third Year</th>
<th>Credits</th>
<th>Spring</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOILS 101**</td>
<td>3 AGRO 28, HORT 101, TURF 235, BIOL 220W, or FOR 203</td>
<td>3-4</td>
<td>SOILS 101**</td>
</tr>
</tbody>
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Environmental Resource Management, B.S.

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Water Science Option, Commonwealth Campuses

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First Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOILS 416*</td>
<td>4 SOILS 404, ERM 444, or FOR 475</td>
<td>3</td>
</tr>
<tr>
<td>SOILS 450</td>
<td>3 Specialization/Minor Course</td>
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<td>Specialization/Minor Course</td>
<td>3 Specialization/Minor Course</td>
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<td>Specialization/Minor Course</td>
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<tr>
<td>Specialization/Minor Course</td>
<td>3 Elective</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

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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 (http://agsci.psu.edu/erm/careers)

EXPLORE THE WHAT CAN I DO WITH THIS MAJOR TOOL AT PENN STATE CAREER SERVICES (http://studentaffairs.psu.edu/career/students/exploring.shtml)

MORE INFORMATION ABOUT OPPORTUNITIES FOR GRADUATE STUDIES (http://studentaffairs.psu.edu/career/students/further_education.shtml/#entrance)

Professional Resources

• Society of Wetland Scientists Professional Certification Program (http://www.wetlandcert.org)
• Certified Professional Soil Scientist (https://www.soils.org/certifications/become-certified)
• Professional Hydrologist (http://www.aihydrology.org/hydrology-certification)
• Certified Hazardous Materials Manager (https://www.ihmm.org/applicants/eligibility-requirements-chmm)
• Certified Professional in Erosion & Sediment Control™ (http://www.envirocertintl.org/cpescc)
• Agricultural Stewardship and Conservation Certification (http://bulletins.psu.edu/undergraduate/colleges/agricultural-sciences/agricultural-stewardship-conservation-certificate)
• LEED Certification (https://www.usgbc.org/help/what-leed)

Contact

University Park
DEPARTMENT OF ENVIRONMENTAL RESOURCE MANAGEMENT
114 Ferguson Building
University Park, PA 16802
814-865-6942
rds13@psu.edu
http://agsci.psu.edu/erm

Communications/Entrepreneurship/Leadership Selection Courses:
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Career Paths

Environmental Resource Management, B.S.