FOREST ECOSYSTEM MANAGEMENT, B.S.

Begin Campus: Any Penn State Campus
End Campus: University Park

Program Description
The mission of the B.S. program in Forest Ecosystem Management is to help students develop the knowledge, skills, and professional ethics for understanding and managing forest ecosystems and living as responsible members of society.

The Forest Ecosystem Management major provides for the education necessary for students to pursue professional careers in one of the following options:

1. Forest Biology
2. Forest Management
3. Community and Urban Forest Management
4. Watershed Management

These options also will prepare students for graduate studies in continuing professional education.

Forest Biology Option
This option provides a strong background in the biological and ecological aspects of contemporary forestry and establishes a sound foundation for professional employment and graduate-level study in forest and environmental sciences.

Forest Management Option
This option provides professional training in the management of forest lands consistent with the needs of ownership objectives. Employment opportunities include forest management positions with public agencies, industry, and private consulting.

Community and Urban Forest Management Option
This option helps prepare students to manage community trees and green spaces. It emphasizes technical expertise, communication abilities, and skills for working with diverse people. Employment opportunities include municipalities, arboricultural companies, utilities, and government agencies.

Watershed Management Option
This option focuses on water resources and the integrated management of natural resources with emphasis on water. Graduates qualify for federal employment as hydrologists and for water-related careers in municipal watershed management, state and local government, and environmental/engineering consulting.

What is Forest Ecosystem Management?
Professional foresters are challenged with the conservation, restoration, and sustainable provision of a wide range of forest ecosystem services, including timber and nontimber forest products, wildlife habitat, biodiversity, clean water, healthy soils, carbon sequestration, recreational opportunities, and the aesthetics of both rural and urban landscapes. Foresters need specialized knowledge to manage for this wide range of ecosystem services. The Forest Ecosystem Management program teaches students to identify, measure, and quantify a variety of forest ecosystem attributes; communicate effectively with diverse groups; analyze and interpret natural resources information in an ecological, economic, and social context; and integrate the relevant ecological, economic, and societal aspects of contemporary problems in natural resources management and use this understanding to develop, support, and implement effective solutions.

You Might Like this Program If...
- You enjoy working outdoors
- You have a concern for natural resources and an appreciation of nature
- You have an analytical mind to manage complex ecological systems and resolve environmental, economic, and social challenges
- You have an aptitude for innovation and strategic thinking

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/registration/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 Forest Ecosystem Management, a minimum of 120 credits is required for the Forest Biology, Forest Management, and Watershed Management options, and a minimum of 123 credits for the Community and Urban Forest Management option:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
<td>45</td>
</tr>
<tr>
<td>Electives</td>
<td>2-11</td>
</tr>
<tr>
<td>Requirements for the Major</td>
<td>88-100</td>
</tr>
</tbody>
</table>

21-24 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; 0-3 credits of GA courses; 3 credits of GWS courses.

Students should be aware that, in most cases, completion of the Forest Ecosystem Management degree in four years requires enrollment at the University Park Campus beginning the fall semester of the sophomore year.

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).

**Common Requirements for the Major (All Options)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescribed Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 110</td>
<td>Chemical Principles I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 111</td>
<td>Experimental Chemistry I</td>
<td>1</td>
</tr>
<tr>
<td>ECON 102</td>
<td>Introductory Microeconomic Analysis and Policy</td>
<td>3</td>
</tr>
<tr>
<td>SOILS 101</td>
<td>Introductory Soil Science</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Prescribed Courses: Require a grade of C or better</strong></td>
<td></td>
</tr>
<tr>
<td>FOR 200</td>
<td>The Profession of Forestry</td>
<td>1</td>
</tr>
<tr>
<td>FOR 203</td>
<td>Field Dendrology</td>
<td>3</td>
</tr>
<tr>
<td>FOR 255</td>
<td>GPS and GIS Applications for Natural Resources Professionals</td>
<td>3</td>
</tr>
<tr>
<td>FOR 266</td>
<td>Forest Resources Measurements</td>
<td>4</td>
</tr>
<tr>
<td>FOR 308</td>
<td>Forest Ecology</td>
<td>3</td>
</tr>
<tr>
<td>FOR 421</td>
<td>Silviculture</td>
<td>3</td>
</tr>
<tr>
<td>Additional Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGL 202C</td>
<td>Effective Writing: Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 202D</td>
<td>Effective Writing: Business Writing</td>
<td></td>
</tr>
<tr>
<td>Select one of the following:</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>STAT 200</td>
<td>Elementary Statistics</td>
<td></td>
</tr>
<tr>
<td>STAT 240</td>
<td>Introduction to Biometry</td>
<td></td>
</tr>
<tr>
<td>STAT 250</td>
<td>Introduction to Biostatistics</td>
<td></td>
</tr>
</tbody>
</table>

**Requirements for the Option**
Select an option 55-66

**Requirements for the Option**

**Forest Biology Option (57-58 credits)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescribed Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 110</td>
<td>Biology: Basic Concepts and Biodiversity</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 220W</td>
<td>Biology: Populations and Communities</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 202</td>
<td>Fundamentals of Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>HORT 445</td>
<td>Plant Ecology</td>
<td>3</td>
</tr>
<tr>
<td>SOILS 102</td>
<td>Introductory Soil Science Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>WFS 209</td>
<td>Wildlife and Fisheries Conservation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Prescribed Courses: Require a grade of C or better</strong></td>
<td></td>
</tr>
<tr>
<td>FOR 204</td>
<td>Dendrology</td>
<td>2</td>
</tr>
<tr>
<td>FOR 350</td>
<td>Forest Ecosystem Monitoring and Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>FOR 409</td>
<td>Tree Physiology</td>
<td>2</td>
</tr>
<tr>
<td>FOR 410</td>
<td>Elements of Forest Ecosystem Management</td>
<td>3</td>
</tr>
<tr>
<td>FOR 430</td>
<td>Conservation Biology</td>
<td>3</td>
</tr>
<tr>
<td>FOR 450</td>
<td>Human Dimensions of Natural Resources</td>
<td>3</td>
</tr>
<tr>
<td>MATH 110</td>
<td>Techniques of Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>or MATH 140</td>
<td>Calculus With Analytic Geometry I</td>
<td></td>
</tr>
</tbody>
</table>
## Community and Urban Forest Management Option (61-66 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENT 313</td>
<td>Introduction to Entomology</td>
<td>2</td>
</tr>
<tr>
<td>PPEM 318</td>
<td>Diseases of Forest and Shade Trees</td>
<td>2</td>
</tr>
<tr>
<td>WFS 209</td>
<td>Wildlife and Fisheries Conservation</td>
<td>3</td>
</tr>
</tbody>
</table>

**Prescribed Courses:** Require a grade of C or better

**Supporting Courses and Related Areas**

Select 15 credits from department list in consultation with adviser

### Forest Management Option (56-60 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENT 313</td>
<td>Introduction to Entomology</td>
<td>2</td>
</tr>
<tr>
<td>PPEM 318</td>
<td>Diseases of Forest and Shade Trees</td>
<td>2</td>
</tr>
<tr>
<td>WFS 209</td>
<td>Wildlife and Fisheries Conservation</td>
<td>3</td>
</tr>
</tbody>
</table>

**Prescribed Courses:** Require a grade of C or better

**Supporting Courses and Related Areas**

Select 15 credits from department list in consultation with adviser

## Watershed Management Option (55-59 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 140</td>
<td>Calculus With Analytic Geometry I</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 110</td>
<td>Biology: Basic Concepts and Biodiversity</td>
<td>3</td>
</tr>
<tr>
<td>or BIOL 127</td>
<td>Introduction to Plant Biology</td>
<td>4</td>
</tr>
</tbody>
</table>

**Prescribed Courses:** Require a grade of C or better

**Supporting Courses and Related Areas**

Select 8-9 credits from department list in consultation with adviser

## Resources

### Additional Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOR 401</td>
<td>Urban Forest Management</td>
<td>3</td>
</tr>
<tr>
<td>FOR 450</td>
<td>Human Dimensions of Natural Resources</td>
<td>3</td>
</tr>
<tr>
<td>FOR 470</td>
<td>Human Use of Environment</td>
<td>3</td>
</tr>
<tr>
<td>HORT 138</td>
<td>Ornamental Plant Materials</td>
<td>3</td>
</tr>
<tr>
<td>HORT 301</td>
<td>Principles of Arboriculture</td>
<td>3</td>
</tr>
<tr>
<td>HORT 408</td>
<td>Landscape Plant Establishment and Maintenance</td>
<td>4</td>
</tr>
<tr>
<td>PLANT 217</td>
<td>Landscape Soil and Water Management</td>
<td>3</td>
</tr>
<tr>
<td>PPEM 318</td>
<td>Diseases of Forest and Shade Trees</td>
<td>2</td>
</tr>
</tbody>
</table>

SOILS 102 does not require a grade of C or better

Six credits must be 300- to 400-level.

### Supporting Courses and Related Areas

Select 8-9 credits from department list in consultation with adviser

### Watershed Management Option (55-59 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 111</td>
<td>Techniques of Calculus II</td>
<td>2</td>
</tr>
<tr>
<td>MATH 22</td>
<td>College Algebra II and Analytic Geometry</td>
<td>3</td>
</tr>
<tr>
<td>&amp; MATH 26</td>
<td>and Plane Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 40</td>
<td>Algebra, Trigonometry, and Analytic Geometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 41</td>
<td>Trigonometry and Analytic Geometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 110</td>
<td>Techniques of Calculus I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 140</td>
<td>Calculus With Analytic Geometry I</td>
<td>3</td>
</tr>
</tbody>
</table>

### Resources

- **Community and Urban Forest Management Option (61-66 credits)**
  - ENT 313: Introduction to Entomology, 2 credits
  - ENT 314: Management of Insect Pests of Ornamentals, 1 credit
  - FOR 204: Dendrology, 2 credits

- **Watershed Management Option (55-59 credits)**
  - MATH 111: Techniques of Calculus II, 2-4 credits
  - MATH 22: College Algebra II and Analytic Geometry, 3 credits
  - MATH 40: Algebra, Trigonometry, and Analytic Geometry, 3 credits
  - MATH 41: Trigonometry and Analytic Geometry, 3 credits
  - MATH 110: Techniques of Calculus I, 3 credits
  - MATH 140: Calculus With Analytic Geometry I, 3 credits

**Note:**

1. SOILS 102 does not require a grade of C or better
2. Six credits must be 300- to 400-level.
Additional Courses: Require a grade of C or better

FOR 409  Tree Physiology
& SOILS 102  and Introductory Soil Science Laboratory
or FOR 475  Principles of Forest Soils Management
MATH 110  Techniques of Calculus I
or MATH 140  Calculus With Analytic Geometry I

Select 6 credits of GS social sciences from the following:

EBF 200  Introduction to Energy and Earth Sciences Economics
ECON 302  Intermediate Microeconomic Analysis
EGEE 211  Social Legacy of Pennsylvania Coal
ENVST 100  Visions of Nature
GEOG 20  Human Geography: An Introduction
GEOG 30N  Environment and Society in a Changing World
GEOG 130  Environment, Power, and Justice
GEOG 160  Mapping Our Changing World
PLSC 1  American Politics: Principles, Processes and Powers
PLSC 135  The Politics of the Ecological Crisis

Select 6 credits of physical sciences from the following:

EARTH 100  Environment Earth
EARTH 103  Earth in the Future: Predicting Climate Change and Its Impacts Over the Next Century
EARTH 111  Water: Science and Society
GEOG 10  Physical Geography: An Introduction
GEOG 110  Climates of the World
GEOSC 1  Physical Geology
GEOSC 10  Geology of the National Parks
GEOSC 40  The Sea Around Us
METEO 3  Introductory Meteorology
METEO 122  Atmospheric Environment: Growing in the Wind
MICRB 106  Elementary Microbiology
MICRB 201  Introductory Microbiology

Select 6-8 credits of GN from the following:

PHYS 1  The Science of Physics
PHYS 150  Technical Physics I
PHYS 151  Technical Physics II
PHYS 211  General Physics: Mechanics
PHYS 213  General Physics: Fluids and Thermal Physics
PHYS 250  Introductory Physics I
PHYS 251  Introductory Physics II

Select 3 and 2 more credits at the 300-to 400-level from the lists above

FOR 455  Remote Sensing and Spatial Data Handling
GEOG 362  Image Analysis
GEOG 363  Geographic Information Systems
GEOG 364  Spatial Analysis
SOILS 450  Environmental Geographic Information Systems

Select 6 credits of resources management from the following:

ASM 327  Soil and Water Resource Management
CED 201  Introductory Environmental and Resource Economics
CED 427  Society and Natural Resource
CED 429  Natural Resource Economics
CED 431  Economic Analysis of Environmental and Resource Policies
CED 450  International Development, Renewable Resources, and the Environment
ERM 411  Legal Aspects of Resource Management
ERM 412  Resource Systems Analysis
ERM 413  Case Studies in Ecosystem Management
FOR 410  Elements of Forest Ecosystem Management
FOR 440  Forest and Conservation Economics
GEOG 411  Forest Geography
GEOG 430  Human Use of Environment
GEOG 431  Geography of Water Resources
SOILS 422  Natural Resources Conservation and Community Sustainability

Select 9 credits of water sciences from the following:

ASM 309  Measurement & Monitoring of Hydrologic Systems
CE 360  Fluid Mechanics
CE 370  Introduction to Environmental Engineering
CE 371  Water and Wastewater Treatment
ENVE 411  Water Supply and Pollution Control
ENVE 415  Hydrology
ENVSE 408  Contaminant Hydrology
ERM 435  Limnology
ERM 447  Stream Restoration
ERM 450  Wetland Conservation
GEOG 310  Introduction to Global Climatic Systems
GEOG 311  Landscape Ecology
GEOG 412  Water Resources Geochemistry
GEOSC 412  Water Resources Geochemistry
GEOSC 413  Techniques in Environmental Geochemistry
GEOSC 440  Marine Geology
GEOSC 452  Hydrogeology
METEO 451  Introduction to Physical Oceanography
METEO 454  Introduction to Micrometeorology
SOILS 405  Hydropedology
WFS 422  Ecology of Fishes

Select 3 additional credits at the 300-to 400-level from the lists above

1. Demonstrate knowledge of the biology, taxonomy, and ecology of flora and fauna associated with forested ecosystems.
   • Identify the common tree species of North America (especially those of the northeastern US) and describe their silvics.
   • Identify key understory plants, invasive species, pathogens, non-timber forest products, and fauna and describe their ecological roles in forest ecosystems.
   • Recognize features that affect forest ecosystems such as soils, climate, disturbance, and land use history.
2. Accurately identify, measure and quantify a variety of forest ecosystem attributes.
   - Design, execute, analyze and report on a forest inventory to measure both timber and non-timber attributes.
   - Demonstrate proficiency with a specified set of field equipment.
   - Design and implement a plan to monitor key ecosystem resources and processes.
3. Communicate effectively with diverse groups through listening, speaking and writing.
   - Communicate clearly through e-mail, letters and other forms of professional correspondence.
   - Effectively present complex information in different formats to a variety of audiences.
   - Use geographical information systems (GIS) to create a map showing features such as buffer zones on streams or roads or the layout of a timber sale.
   - Conduct a clear dialog with a potential client to determine their needs.
   - Use appropriate methods of communicating with diverse groups.
   - Apply conflict resolution skills for consensus building, facilitation and negotiation.
4. Apply science-based knowledge to select, obtain, analyze and interpret natural resources information in an ecological, economic and social context.
   - Acquire data from primary and secondary sources to describe and analyze ecological, economic and social relationships on both spatial and temporal scales.
   - Use a geographical positioning system (GPS) to map features such as a hiking trail.
   - Find relevant natural resources information, such as publicly available data sets, research reports, and management plans.
   - Critically analyze the evidence on multiple sides of a contemporary natural resources issue.
   - Assess the economic, social, and ecological opportunities and constraints of a given parcel within a relevant spatial and temporal context and recognize appropriate and defensible land management objectives.
   - Identify and evaluate the full range – ecological, social, and economic – of impacts of different forest management alternatives.
   - Apply economic, financial and business management tools to assess alternative forest management activities.
5. Recognize, identify, and integrate the relevant ecological, economic, and societal aspects of contemporary problems in natural resources management and use this understanding to develop, support and implement effective solutions.
   - Based on an assessment of a property, develop, write and present a management plan, including silvicultural prescriptions, for the property that meet the stated land management objectives and implement the components of the plan.
   - Describe the role of institutions such as markets, communities, governments, and non-government organizations in the management of natural resources.
   - Describe and evaluate how a contemporary natural resources issue has been addressed by society.
   - Identify a natural resources problem, evaluate the science and the politics behind the problem, engage the stakeholders involved, and propose a solution to the problem.
6. Synthesize knowledge, diverse values, and ethics for making, communicating and supporting decisions with confidence, respect, professionalism, and compassion.
   - Demonstrate openness, tolerance, and appreciation for alternative points of view.
   - Demonstrate awareness of global issues and cultural diversity.
   - Be able to present and conduct oneself as a professional.

**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 (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy)

**University Park**

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814-863-0362
exr2@psu.edu

**Suggested Academic Plan**

**Forest Biology 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

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-Year Seminar</td>
<td>1-3 ECON 102†</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BIOL 110†</td>
<td>4 CHEM 110†</td>
<td>3</td>
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<tr>
<td>MATH 110 or 140‡+</td>
<td>4 CHEM 111†</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>ENGL 15, 30, or ESL 15‡+</td>
<td>3 STAT 200, 240, or 250‡+</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>General Education Course</td>
<td>3 CAS 100, 100A, 100B, or 100C‡+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Education Course</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>15-17</td>
<td>16-17</td>
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</table>

### Second Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOR 200†</td>
<td>1 FOR 204‡</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>FOR 203§</td>
<td>3 FOR 266§</td>
<td>4</td>
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</tbody>
</table>
### University Requirements and General Education Notes:

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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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### Forest Management Option, University Park Campus and Commonwealth Campuses

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#### First Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
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<tr>
<td>BIOL 110 or 127†</td>
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<td>4 CHEM 110†</td>
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<td>MATH 22 &amp; MATH 26 (or MATH 40 or MATH 41 or MATH 110 or MATH 140)†</td>
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<td>CHEM 111†</td>
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<tr>
<td>ENGL 15, 30, or ESL 15†</td>
<td>3 CAS 100, 100A, 100B, or 100C†</td>
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<tr>
<td>First-Year Seminar</td>
<td>1-3</td>
<td>ECON 102†</td>
<td>3</td>
</tr>
<tr>
<td>General Education Course</td>
<td>3 STAT 200, 240, or 250†</td>
<td>3-4</td>
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<td></td>
<td>General Education Course</td>
<td>3</td>
<td>13-19</td>
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#### Second Year

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<td>FOR 203*</td>
<td>3 FOR 266*</td>
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<tr>
<td>FOR 255*</td>
<td>3 PPEM 318</td>
<td>2</td>
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</tr>
<tr>
<td>SOILS 101†</td>
<td>3 ENT 313</td>
<td>2</td>
<td></td>
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<tr>
<td>General Education Course</td>
<td>3 ENGL 202C or 202D†</td>
<td>3</td>
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</tr>
<tr>
<td>General Education Course (GHW)</td>
<td>1.5 General Education Course (GHW)</td>
<td>1.5</td>
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#### Third Year

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<th>Fall</th>
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<tr>
<td>FOR 308*</td>
<td>3 FOR 320*</td>
<td>2</td>
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</table>
- Students should be aware that, in most cases, completion of the Forest Ecosystem Management (FOREM) degree in eight semesters requires enrollment at Penn State University Park beginning the fall semester of the sophomore year.

- All Supporting Course selections are listed in the FOREM Handbook, which is available on the department’s website (http://ecosystems.psu.edu), under Student Resources, Student Handbooks.

- Refer to both the FOREM FMGT Supporting Course list and the FOREM FMGT checksheet in the FOREM Handbook for clarification about how FOR 401, FOR 450W, FOR 475, FOR 409, and SOILS 102 satisfy degree requirements in the FMGT option.

- Many FOR classes are offered only once per year, in the fall or the spring; plan your schedule accordingly.

• FOR 409 is offered only in spring of odd years.

• Courses that are listed as both US or IL and GA, GH, or GS can count for both requirements (i.e., a course listed for both GA and IL will satisfy both Arts and International Cultures).

• Students should monitor their academic progress by checking their degree audits on LionPATH.

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Community and Urban Forestry Management Option, University Park Campus and Commonwealth Campuses

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First Year

Fall Credits Spring Credits

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>MATH 22 &amp; MATH 26 (or MATH 40 or MATH 41 or MATH 110 or MATH 140)†‡</td>
<td>3-6 CHEM 110†</td>
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<tr>
<td>Biol 110 or 127†</td>
<td>3-4 CHEM 111†</td>
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<tr>
<td>ENGL 15, 30, or ESL 15†‡</td>
<td>3 CAS 100, 100A, 100B, or 100C†‡</td>
<td>3</td>
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<tr>
<td>General Education Course</td>
<td>3 STAT 200, 240, or 250†‡</td>
<td>3-4</td>
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<tr>
<td>First-Year Seminar</td>
<td>1-3 ECON 102†</td>
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<td>General Education Course</td>
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Second Year

Fall Credits Spring Credits

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<th>Course</th>
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<td>1 FOR 204</td>
<td>2</td>
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<tr>
<td>FOR 203†</td>
<td>3 FOR 266†</td>
<td>4</td>
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<tr>
<td>FOR 255†</td>
<td>3 HORT 301</td>
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<td>SOILS 101†</td>
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<td>LARCH 60, 65, or ARCH 316†</td>
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<td>General Education Course</td>
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Third Year

Fall Credits Spring Credits

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<tbody>
<tr>
<td>FOR 308†</td>
<td>3 PPEM 318</td>
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<tr>
<td>HORT 138</td>
<td>3 PLANT 217</td>
<td>3</td>
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<table>
<thead>
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<th>Total</th>
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</thead>
<tbody>
<tr>
<td>3</td>
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</tbody>
</table>
FOR 475 (or Supporting Course)* 3 FOR 409 & SOILS 102 (or Supporting Course)* 3
RPTM 320, 325, 435, or 470 3 FOR 455, GEOG 363, or SOILS 450 3
Supporting Course 3 Elective 0-3
General Education Course 3
15 14-17

Fourth Year

Fall Credits Spring Credits
FOR 421* 3 GEOG 430 3
FOR 495 or 496† 3 FOR 480* 3
FOR 401† 3 HORT 408 4
Supporting Course 3 FOR 450† 3
Elective 0-3 Elective 2
General Education Course 3 General Education Course (GHW) 1.5
15 15-18 16.5

Total Credits 119-132

* 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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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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Watershed Management Option, University Park Campus and Commonwealth Campuses

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First Year

Fall Credits Spring Credits
ECON 102† 3 CHEM 110† 3
MATH 110 or 110† 4 CHEM 111† 1
ENGL 15, 30, or ESL 15† 3 CAS 100, 100A, 100B, or
100C† 3
First-Year Seminar 1-3 MATH 111 or 141 2-4
General Education Course 3 STAT 200, 240, or 250†† 3-4
14-16 12-15

Second Year

Fall Credits Spring Credits
FOR 200† 1 FOR 266† 4
FOR 203‡‡ 3 ENGL 202C or 202D†‡ 3
FOR 255‡ 3 Physics Selection†‡ 3-4
SOILS 101† 3 Social Science Selection from department list† 3
General Education Course 3 General Education Course 3
General Education Course (GHW) 1.5
14.5 16-17

Third Year

Fall Credits Spring Credits
FOR 308† 3 FOR 470† 3
FOR 475 (or Supporting Course)* 3 FOR 471* 1
Physics Selection† 3-4 FOR 409 & SOILS 102 (or Supporting Course)*
Resources Management Course 3 Physical Science Course 3
Water Sciences Course 3 Social Science Selection from department list 3
Advising Notes:

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First Year

<table>
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<tr>
<th>Fall</th>
<th>Credits Spring</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>FOR 421*</td>
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</tr>
<tr>
<td>Physical Sciences Course</td>
<td>3 Elective</td>
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</tr>
<tr>
<td>Water Sciences Course</td>
<td>3 Resources Management Course</td>
<td>3</td>
</tr>
<tr>
<td>General Education Course</td>
<td>3 Water Sciences Course</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>2-4 300 or 400 Level Course</td>
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<tr>
<td>Elective</td>
<td>2-5</td>
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</tbody>
</table>

Total Credits 116-128

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

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Career Paths

Graduates become forest managers responsible for the flora and fauna on publicly owned forests and watersheds, including national and state forests and parks, game lands, and recreation areas. Others work as ecologists studying environmental factors that affect forests, or as consultants surveying timberlands and recommending harvest and reforestation practices. Graduates also work as community foresters managing urban trees and green spaces, consulting foresters assisting private landowners, industrial foresters ensuring a company’s need for raw materials, land managers for conservation organizations, and watershed managers responsible for the protection of municipal watersheds. The curriculum also provides a firm base for graduate study.

Careers

Graduates of the Forest Management and Forest Biology options may be employed by public agencies such as the Pennsylvania Bureau of Forestry and the U.S. Forest Service, nonprofit organizations such as The Nature Conservancy, industries such as sawmills and bioenergy facilities, and environmental consulting firms. Graduates of the Community and Urban Forest Management option may be employed by municipalities, arboricultural companies, utilities, and government agencies to manage community trees and green spaces. Graduates of the Watershed Management option may find federal employment as hydrologists or pursue careers in municipal watershed management and in environmental/engineering consulting.

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES OF THE FOREST ECOSYSTEM MANAGEMENT PROGRAM (http://ecosystems.psu.edu/majors/forest-ecosystem-management/careers)

MORE INFORMATION ABOUT OPPORTUNITIES FOR GRADUATE STUDIES (http://ecosystems.psu.edu/graduateprograms/forest-resources)

Professional Resources

• Society of American Foresters (http://www.eforester.org)

Accreditation

Three options of the Forest Ecosystem Management baccalaureate degree program (Community and Urban Forest Management, Forest Biology, and Forest Management) are accredited by the Society of American Foresters. Degrees in forestry have been awarded at Penn State since 1907, and our program was among those first accredited by the Society of American Foresters in 1935.

MORE INFORMATION ABOUT THE SOCIETY OF AMERICAN FORESTERS (http://www.eforester.org)

Contact

University Park

DEPARTMENT OF ECOSYSTEM SCIENCE AND MANAGEMENT
117 Forest Resources Building
University Park, PA 16802
814-865-7521
http://ecosystems.psu.edu/