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 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 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:

Requirement	Credits
General Education	45
Electives	2-11
Requirements for the Major	88-100

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.

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 110	Chemical Principles I	3

CHEM 111	Experimental Chemistry I	1
FOR 421	Silviculture: Applied Forest Ecology	3
SOILS 101	Introductory Soil Science	3
Prescribed Courses: Require a grade of C or better		
FOR 200	The Profession of Forestry	1
FOR 203	Field Dendrology	3
FOR 255	GPS and GIS Applications for Natural Resources Professionals	3
FOR 266	Forest Resources Measurements	4
FOR 308	Forest Ecology	3
Additional Courses		
Select one of the following:		3
AGBM 101	Economic Principles of Agribusiness Decision Making	
ECON 102	Introductory Microeconomic Analysis and Policy	
ECON 104	Introductory Macroeconomic Analysis and Policy	
Additional Courses: Require a grade of C or better		
ENGL 202C	Effective Writing: Technical Writing	3
or ENGL 202D	Effective Writing: Business Writing	
Select one of 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		55-66

Requirements for the Option

Forest Biology Option (57-58 credits)

Code	Title	Credits
Prescribed Courses		
BIOL 110	Biology: Basic Concepts and Biodiversity	4
BIOL 220W	Biology: Populations and Communities	4
CHEM 202	Fundamentals of Organic Chemistry I	3
FOR 204	Silvics and Forest Dynamics	2
FOR 409	Tree Physiology	2
FOR 410	Elements of Forest Ecosystem Management	3
FOR 430	Conservation Biology	3
FOR 450W	Human Dimensions of Natural Resources	3
HORT 445	Plant Ecology	3
SOILS 102	Introductory Soil Science Laboratory	1
WFS 209N	Wildlife and Fisheries Conservation	3
Prescribed Courses: Require a grade of C or better		
FOR 350	Forest Ecosystem Monitoring and Data Analysis	3
Additional Courses		
Select 4-5 credits from the following:		4-5
ENT 313	Introduction to Entomology	
FOR 403	Invasive Forest Plants: Identification, Ecology, and Management	
PPEM 318	Diseases of Forest and Shade Trees	
Additional Courses: Require a grade of C or better		
MATH 110	Techniques of Calculus I	4
or MATH 140	Calculus With Analytic Geometry I	
Supporting Courses and Related Areas		
Select 15 credits from department list in consultation with adviser		15

Forest Management Option (57-60 credits)

Code	Title	Credits
Prescribed Courses		
ENT 313	Introduction to Entomology	2
FOR 204	Silvics and Forest Dynamics	2
FOR 440	Forest and Conservation Economics	3
FOR 470	Watershed Management	3
FOR 480	Policy and Administration	3
PPEM 318	Diseases of Forest and Shade Trees	2
WFS 209N	Wildlife and Fisheries Conservation	3
Prescribed Courses: Require a grade of C or better		
FOR 320	Forest Fire Management	2
FOR 350	Forest Ecosystem Monitoring and Data Analysis	3
FOR 455	Remote Sensing and Spatial Data Handling	3
FOR 466W	Forest Management and Planning	3
Additional Courses		
BIOL 110	Biology: Basic Concepts and Biodiversity	3-4
or BIOL 127	Introduction to Plant Biology	
FOR 401	Urban Forest Management	3
or FOR 450W	Human Dimensions of Natural Resources	
FOR 410	Elements of Forest Ecosystem Management	3
or FOR/WFS 430	Conservation Biology	
Select one of the following:		3
FOR 409 & SOILS 102	Tree Physiology and Introductory Soil Science Laboratory	
ERM 448	Rural Road Ecology and Maintenance	
FOR 439	Timber Sale Administration	
FOR 475	Principles of Forest Soils Management	
Additional Courses: Require a grade of C or better		
Select one of the following:		4-6
MATH 22 & MATH 33	College Algebra With Analytic Geometry and Applications II and Mathematics for Sustainability	
MATH 22 & MATH 34	College Algebra With Analytic Geometry and Applications II and The Mathematics of Money	
MATH 22 & AGBM 106	College Algebra With Analytic Geometry and Applications II and Agribusiness Problem Solving	
MATH 110	Techniques of Calculus I	
MATH 140	Calculus With Analytic Geometry I	
Supporting Courses and Related Areas		
In consultation with adviser, select 12 credits from department list approved for the option. Six credits must be 300-to 400-level.		12

Community and Urban Forest Management Option (62-66 credits)

Code	Title	Credits
Prescribed Courses		
ENT 313	Introduction to Entomology	2
ENT 314	Management of Insect Pests of Ornamentals	1
FOR 480	Policy and Administration	3

GEOG 430	Human Use of Environment	3
HORT 138	Ornamental Plant Materials	3
HORT 301	Principles of Arboriculture	3
HORT 408	Landscape Plant Establishment and Maintenance	4
PLANT 217	Landscape Soil and Water Management	3
PPEM 318	Diseases of Forest and Shade Trees	2
Prescribed Courses: Require a grade of C or better		
FOR 204	Silvics and Forest Dynamics	2
FOR 401	Urban Forest Management	3
FOR 450W	Human Dimensions of Natural Resources	3
Additional Courses		
BIOL 110	Biology: Basic Concepts and Biodiversity	3-4
or BIOL 127	Introduction to Plant Biology	
Select one of the following:		3
ARCH 316	Analysis of Human Settlements: Cities	
LARCH 60	Cultural History of Designed Places	
LARCH 65	Built Environment and Culture: Examining the Modern City	
Select one of the following:		3
RPTM 320	Recreation Resource Planning and Management	
RPTM 325	Principles of Environmental Interpretation	
RPTM 435	Recreation Facilities Planning and Management	
RPTM 470	Recreation and Park Management	
Select one of the following:		3
FOR 455	Remote Sensing and Spatial Data Handling	
GEOG 363	Geographic Information Systems	
SOILS 450	Environmental Geographic Information Systems	
Select one of the following:		3
FOR 409 & SOILS 102	Tree Physiology and Introductory Soil Science Laboratory	
ERM 448	Rural Road Ecology and Maintenance	
FOR 439	Timber Sale Administration	
FOR 475	Principles of Forest Soils Management	
Additional Courses: Require a grade of C or better		
FOR 495	Forestry Internship	3
or FOR 496	Independent Studies	
Select one of the following:		4-6
MATH 22 & MATH 33	College Algebra With Analytic Geometry and Applications II and Mathematics for Sustainability	
MATH 22 & MATH 34	College Algebra With Analytic Geometry and Applications II and The Mathematics of Money	
MATH 22 & AGBM 106	College Algebra With Analytic Geometry and Applications II and Agribusiness Problem Solving	
MATH 110	Techniques of Calculus I	
MATH 140	Calculus With Analytic Geometry I	
Supporting Courses and Related Areas		
Select 8-9 credits from department list In consultation with adviser		8-9

Watershed Management Option (55-59 credits)

Code	Title	Credits
Prescribed Courses		
FOR 450W	Human Dimensions of Natural Resources	3
Prescribed Courses: Require a grade of C or better		
FOR 470	Watershed Management	3
FOR 471	Watershed Management Laboratory	1
Additional Courses		
MATH 111	Techniques of Calculus II	2-4
or MATH 141	Calculus with Analytic Geometry II	
Select one of the following:		3
FOR 409 & SOILS 102	Tree Physiology and Introductory Soil Science Laboratory	
ERM 448	Rural Road Ecology and Maintenance	
FOR 439	Timber Sale Administration	
FOR 475	Principles of Forest Soils Management	
Additional Courses: Require a grade of C or better		
MATH 110	Techniques of Calculus I	4
or MATH 140	Calculus With Analytic Geometry I	
Supporting Courses and Related Areas		
Select 6 credits of GS social sciences from the following:		6
EBF 200	Introduction to Energy and Earth Sciences Economics	
ECON 302	Intermediate Microeconomic Analysis	
EGEE 211		
ENVST 100		
GEOG 20	Human Geography: An Introduction	
GEOG 30N	Environment and Society in a Changing World	
GEOG 160	Mapping Our Changing World	
PLSC 1	American Politics: Principles, Processes and Powers	
PLSC 135		
Select 6 credits of physical sciences from the following:		6
EARTH 100	Environment Earth	
EARTH 103		
EARTH 111		
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	Weather Revealed: 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:		6-8
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 credits in geospatial analysis from the following:		3
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:		6
ASM 327	Soil and Water Resource Management	
CED 201	Introductory Environmental and Resource Economics	
CED 327	Environment and Society	
CED 429	Natural Resource Economics	
CED 431W	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 413W	Case Studies in Ecosystem Management	
FOR 410	Elements of Forest Ecosystem Management	
FOR 440	Forest and Conservation Economics	
GEOG 411W	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 (3 credits must be at the 400-level) from the following:		9
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 Science and Sustainability	
GEOG 310	Introduction to Global Climatic Systems	
GEOG 311		
GEOG 412W	Climatic Change and Variability	
GEOSC 412	Water Resources Geochemistry	
GEOSC 413W	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		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

- **Basic Knowledge of Forest Flora and Fauna:** 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
- F**orest Data Collection:** 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
- **Communication:** Communicate effectively with diverse groups through listening, speaking and writing
  - Communicate clearly through email, 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
- **Data Analysis and Critical Thinking:** 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 land 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
- **Data Synthesis and Critical Thinking:** 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
- **Professionalism and Social Awareness:** 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 (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*).

Forest Biology Option: Forest Ecosystem 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
First-Year Seminar	1-3	AGBM 101, ECON 102, or ECON 104†	3
BIOL 110†	4	CHEM 110†	3
MATH 110 or 140‡†	4	CHEM 111†	1
ENGL 15 or 30H‡†	3	STAT 200, 240, or 250*‡†	3-4
General Education Course [1]	3	CAS 100‡†	3
		WFS 209N	3
	15-17		**16-17**

Second Year

Fall	Credits	Spring	Credits
FOR 200*	1	FOR 204	2
FOR 203*	3	FOR 266*	4
FOR 255*	3	CHEM 202	3
BIOL 220W	4	SOILS 101†	3
General Education Course [1]	3	SOILS 102	1
		General Education Course [1]	3
	14		**16**

Third Year

Fall	Credits	Spring	Credits
FOR 308*	3	ENT 313, FOR 403, or PPEM 318 (need 2)	2-3
ENGL 202C or 202D‡†	3	FOR 350*	3
FOR/WFS 430	3	FOR 409	2
Supporting Course Selection from List	3	FOR 410	3
General Education Course [1]	3	Supporting Course Selection from List	3
General Education Course (GHW)	1.5	General Education Course (GHW) [1]	1.5
	16.5		**14.5-15.5**

Fourth Year

Fall	Credits	Spring	Credits
FOR 421	3	ENT 313, FOR 403, or PPEM 318 (need 2)	2-3
HORT 445	3	FOR 450W	3
General Education Course [1]	3	Supporting Course Selection from List	3
Supporting Course Selection from List	3	Supporting Course Selection from List	3
Elective	3	Elective	1-3
	15		**12-15**

Total Credits 119-126

* 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

[1] Refer to your degree audit to determine which General Education requirements need yet to be fulfilled.

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:

- 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 (https://ecosystems.psu.edu) under Undergraduate > Student Resources > Student Handbooks.

- 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.
- Questions about FOREM academic plans or degree audits should be directed to academic advisers or to FOREM Program Coordinator Ellen Rom, exr2@psu.edu or 814-863-0362.

Forest Biology Option: Forest Ecosystem 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
First-Year Seminar	1-3	BIOL 220W	4
BIOL 110†	4	CHEM 110†	3
MATH 110 or 140‡†	4	CHEM 111†	1
ENGL 15 or 30H‡†	3	STAT 200, 240, or 250*‡†	3-4
General Education Course [1]	3	CAS 100‡†	3
	15-17		**14-15**

Second Year

Fall	Credits	Spring	Credits
FOR 200*	1	FOR 204	2
FOR 203*	3	FOR 266*	4
FOR 255*	3	CHEM 202	3
SOILS 101†	3	ENGL 202C or 202D‡†	3
SOILS 102	1	AGBM 101, ECON 102, or ECON 104†	3
WFS 209N	3	General Education Course[1]	3
	14		**18**

Third Year

Fall	Credits	Spring	Credits
FOR 308*	3	ENT 313, FOR 403, or PPEM 318 (need 2)	2-3
FOR/WFS 430*	3	FOR 350*	3
Supporting Course Selection from List	3	FOR 409	2
General Education Course[1]	3	FOR 410	3
General Education Course[1]	3	Supporting Course Selection from List	3
General Education Course (GHW)	1.5	General Education Course (GHW)[1]	1.5
	16.5		**14.5-15.5**

Fourth Year

Fall	Credits	Spring	Credits
FOR 421	3	ENT 313, FOR 403, or PPEM 318 (need 2)	2-3
HORT 445	3	FOR 450W	3
General Education Course[1]	3	Supporting Course Selection from List	3
Supporting Course Selection from List	3	Supporting Course Selection from List	3
Elective	3	Elective	1-3
	15		**12-15**

Total Credits 119-126

* 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

[1] Refer to your degree audit to determine which General Education requirements need yet to be fulfilled.

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:

- 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 (https://ecosystems.psu.edu) under Undergraduate > Student Resources > Student Handbooks.
- 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.
- Questions about FOREM academic plans or degree audits should be directed to academic advisers or to FOREM Program Coordinator Ellen Rom, exr2@psu.edu or 814-863-0362.

Forest Management Option: Forest Ecosystem Management, B.S. at University Park Campus and 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
First-Year Seminar	1-3	CHEM 110†	3
MATH 22 and MATH 33, or MATH 22 and MATH 34, or MATH 22 and AGBM 106, or MATH 110, or MATH 140*‡†	4-6	CHEM 111†	1
BIOL 110 or 127†	3-4	CAS 100‡†	3
ENGL 15 or 30H‡†	3	AGBM 101, ECON 102, or ECON 104†	3
General Education Course[1]	3	STAT 200, 240, or 250*‡†	3-4
		General Education Course[1]	3
	14-19		**16-17**

Second Year

Fall	Credits	Spring	Credits
FOR 200*	1	FOR 204	2
FOR 203*	3	FOR 266*	4
FOR 255*	3	PPEM 318	2
SOILS 101†	3	ENT 313	2
General Education Course[1]	3	ENGL 202C or 202D‡†	3
General Education Course (GHW)	1.5	General Education Course[1]	3
	14.5		**16**

Third Year

Fall	Credits	Spring	Credits
FOR 308*	3	FOR 320*	2
FOR 440	3	FOR 350*	3
FOR 401 (or Supporting Course)[2]	3	WFS 209N	3
General Education Course[1]	3	FOR 450W[2]	3
Elective	2	FOR 455*	3
		General Education Course (GHW)	1.5
	14		**15.5**

Fourth Year

Fall	Credits	Spring	Credits
ERM 448, FOR 439, or FOR 475[2]	3	FOR 409 & SOILS 102 (or Supporting Course)[2]	3
FOR 421	3	FOR 466W*	3
FOR/WFS 430[2]	3	FOR 410[2]	3
Supporting Course	3	FOR 470	3
Elective	0-4	FOR 480	3
	12-16		**15**

Total Credits 117-127

* 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

1 Refer to your degree audit to determine which General Education requirements need yet to be fulfilled.
2 Refer to FOREM FMGT checksheet and your degree audit for clarification about how FOR 401, FOR 450W, ERM 448, FOR 439, FOR 475, FOR 409, SOILS 102, FOR 430/WFS 430, FOR 410, and Supporting Courses satisfy degree requirements.

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:

- 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 (https://ecosystems.psu.edu) under Undergraduate > 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.
- Questions about FOREM academic plans or degree audits should be directed to academic advisers or to FOREM Program Coordinator Ellen Rom, exr2@psu.edu or 814-863-0362.

Community and Urban Forestry Management Option: Forest Ecosystem Management, B.S. at University Park Campus and 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
MATH 22 and MATH 33, or MATH 22 and MATH 34, or MATH 22 and AGBM 106, or MATH 110, or MATH 140‡†	4-6	CHEM 110†	3
BIOL 110 or 127†	3-4	CHEM 111†	1
ENGL 15 or 30H‡†	3	AGBM 101, ECON 102, or ECON 104†	3
General Education Course[1]	3	CAS 100‡†	3
First-Year Seminar	1-3	STAT 200, 240, or 250‡†	3-4
		General Education Course[1]	3
	14-19		**16-17**

Second Year

Fall	Credits	Spring	Credits
FOR 200*	1	FOR 204*	2
FOR 203*	3	FOR 266*	4
FOR 255*	3	HORT 301	3
SOILS 101†	3	ENT 313	2
LARCH 60, 65, or ARCH 316†	3	ENT 314	1
General Education Course (GHW)	1.5	ENGL 202C or 202D‡†	3
	14.5		**15**

Third Year

Fall	Credits	Spring	Credits
FOR 308*	3	PPEM 318	2
HORT 138	3	PLANT 217	3
ERM 448, FOR 439, or FOR 475 (or Supporting Course)[2]	3	FOR 409 & SOILS 102 (or Supporting Course)[2]	3
RPTM 320, 325, 435, or 470	3	FOR 455, GEOG 363, or SOILS 450	3
Supporting Course	3	General Education Course[1]	3
		Elective	0-5
	15		**14-19**

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 450W*	3
General Education Course[1]	3	Elective	2
		General Education Course (GHW)	1.5
	15		**16.5**

Total Credits 120-131

* 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

[1] Refer to your degree audit to determine which General Education requirements need yet to be fulfilled.
[2] Refer to FOREM CURFM checksheet and your degree audit for clarification about how ERM 448, FOR 439, FOR 475, FOR 409, SOILS 102, and Supporting Courses satisfy degree requirements.

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:

- 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 (https://ecosystems.psu.edu) under Undergraduate > Student Resources > Student Handbooks.
- 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.

- Questions about FOREM academic plans or degree audits should be directed to academic advisers or to FOREM Program Coordinator Ellen Rom, exr2@psu.edu or 814-863-0362.

[1] Use this Suggested Academic Plan in consultation with your degree audit. SOILS 102 and Supporting Courses are not C-required.

Watershed Management Option: Forest Ecosystem Management, B.S. at University Park Campus and 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
First-Year Seminar	1-3	CHEM 110†	3
AGBM 101, ECON 102, or ECON 104†	3	CHEM 111†	1
MATH 110 or 140‡†	4	CAS 100‡†	3
ENGL 15 or 30H‡†	3	MATH 111 or 141†	2-4
General Education Course[1]	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	PHYS GN Selection from List†	3-4
SOILS 101†	3	Social Sciences GS Selection from List†	3
General Education Course[1]	3	General Education Course[1]	3
General Education Course (GHW)	1.5		
	14.5		**16-17**

Third Year

Fall	Credits	Spring	Credits
FOR 308*	3	FOR 470*	3
ERM 448, FOR 439, or FOR 475 (or Geospatial Analysis Selection from List)[2]	3	FOR 471*	1
PHYS GN Selection from List†	3-4	FOR 409 & SOILS 102 (or Geospatial Analysis Selection from List)*[2]	3
Resources Management Selection from List	3	Physical Sciences Selection from List	3
Water Sciences Selection from List	3	Social Sciences GS Selection from List	3
		General Education Course (GHW)	1.5
	15-16		**14.5**

Fourth Year

Fall	Credits	Spring	Credits
FOR 421	3	FOR 450W	3
Physical Sciences Selection from List	3	Resources Management Selection from List	3
Water Sciences Selection from List	3	Water Sciences Selection from List	3
General Education Course[1]	3	Three Additional Credits at the 300- or 400-level from Selections Lists	3
Elective	3-5	Elective	3-6
	15-17		**15-18**

Total Credits 116-128

* 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

1 Refer to your degree audit to determine which General Education requirements need yet to be fulfilled.
2 Refer to FOREM WMGT checksheet and your degree audit for clarification about how ERM 448, FOR 439, FOR 475, FOR 409, SOILS 102, and Geospatial Analysis selection satisfy degree requirements.

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:

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

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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 (https://ecosystems.psu.edu/undergraduate/resources/alumni-profiles/forest-ecosystem-management/)

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

Professional Resources

- Society of American Foresters (https://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 (https://www.eforester.org)

Contact

University Park

DEPARTMENT OF ECOSYSTEM SCIENCE AND MANAGEMENT

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