SUNY ESF
320 Bray Hall
One Forestry Drive
Syracuse NY 13210
(315) 470-6536

Undergraduate Student Handbook

for

The Department of Sustainable Resources Management

August 2025

Table of Contents

Preface

Welcome to the 2024-25 Academic Year! This is the current version of the *Undergraduate Student Handbook*. Please retain this handbook, as it will be your guide throughout your degree program at ESF. If you read this handbook, your adviser has the tools to work with you on developing the best possible program of study for you.

Please read the first six pages of this handbook and then the pages appropriate to your degree program:

We always are looking for ways to improve this handbook and our advising services. Please let us know what we can do to make your undergraduate program more effective for you.

Chris A. Nowak, Chair, Department of Sustainable Resources Management

Eddie Bevilacqua, Chair, SRM Undergraduate Education Committee

July 15, 2025

Undergraduate Programs in the Department of Sustainable Resources Management

Mission and Vision

ESF's Sustainable Resources Management (SRM) programs are science-based and values-driven. The integration of values and scientific facts characterize professions that are successful in democracies. ESF-trained managers are able to integrate these two threads in America's complex society.

The SRM mission statement is:

> ***The mission of the ESF Sustainable Resources Management department is to advance our understanding of current environmental issues through cutting edge research, education, and outreach, with a special focus on sustainably managing renewable, natural and constructed resources, including energy, forests, recreation, soils, water, and building materials and other capital, to provide short- and long-term benefits with and for people. With a group of internationally known faculty, we address these issues both locally and nationally, across a range of scales through both applied and fundamental research, technology transfer and teaching.***

Our vision: Professional management of natural and built resources for the sustained betterment and benefit of society. Improving our world through sustainable resources management

Goals—Our Sustainable Resources programs have four broad goals:

- Understand the function and dynamics of forests and related renewable resources;
- Attain the skills to manipulate natural and built systems and to predict the consequences;
- Monitor stakeholder and owner values regarding forests and natural resources and respect them; and
- Integrate values with scientific facts and know the limits of our knowledge.

Today's resources management programs are based on a clear vision that combines professional competency with a strong foundation in the biophysical sciences, humanities and social sciences. Professional forestry education, currently known as **Forest Resources Management**, began over a century ago in New York. In 2002, a parallel program in **Natural Resources Management** was added to capture the current breadth of faculty and student interests in renewable natural resources and their management. In 2012, a program in **Sustainable Energy Management** was added, focusing on energy use and evaluating alternative renewable energy resources in order to satisfy current and future energy demands. In 2015, academic programs in **Construction Management** were moved into SRM.

Many students in ESF's Sustainable Resources Management programs like forests and the out-of-doors. They want to be in rural settings, they enjoy nature, and they want to master the knowledge and skills needed to conserve and manage forests and the environment. With 25,000 acres of forestlands as teaching laboratories, ESF provides many opportunities to meet student needs. The forest technology and land surveying technology programs at ESF's Wanakena campus prepares young people for careers in fieldwork and is a route to Sustainable Resources Management programs that emphasizes experiential learning. Internships with forest-based/natural resource-based organizations in the business, public and nonprofit sectors amplify these hands-on experiences. Experiential learning is combined with learning concepts and skills in the classroom and laboratory on ESF's Syracuse campus. The results are among the best anywhere in North America.

Educational Objectives

ESF's Department of Sustainable Resources Management has identified learning outcomes-based educational objectives for each of its undergraduate degree programs.

Construction Management (CM) Educational Objectives

(Referred to as Student Learning Outcomes of ACCE-American Council for Construction Education)

1) Create written communications appropriate to the construction discipline.
2) Create oral presentations appropriate to the construction discipline.
3) Create a construction project safety plan.
4) Create construction project cost estimates.
5) Create construction project schedules.
6) Analyze professional decisions based on ethical principles.
7) Analyze construction documents for planning and management of construction processes.
8) Analyze methods, materials, and equipment used to construct projects.
9) Apply construction management skills as a member of a multi- disciplinary team.
10) Apply electronic-based technology to manage the construction process.
11) Apply basic surveying techniques for construction layout and control.
12) Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
13) Understand construction risk management.
14) Understand construction accounting and cost control.
15) Understand construction quality assurance and control.
16) Understand construction project control processes.
17) Understand the legal implications of contract, common, and regulatory law to manage a construction project.
18) Understand the basic principles of sustainable construction.
19) Understand the basic principles of structural behavior.
20) Understand the basic principles of mechanical, electrical and piping systems.

Forest Ecosystem Science (FES) Educational Objectives

1) Understand forest ecosystems

a) Describe biotic components of forest environments at organismal, population, and community levels of organization.

b) Explain, using systems concepts, how biotic and abiotic components interact and give rise to ecosystem functions and dynamics.

c) Identify different types and roles of forest disturbance and describe how human activities can shape forest ecosystems

2) Analyze forest ecosystems

a) Describe and analyze forest ecosystem structure, function and dynamics based on field data, statistical methods, and/or models.

b) Identify functional units of ecosystems, describe their interactions across landscapes, and explain how ecosystem processes can be measured and/or modeled.

c) Design, conduct, analyze, and interpret results of ecological research and communicate findings in written and oral formats.

3) Identify forest ecosystem stewardship strategies

a) Describe how silviculture can be used to achieve multiple objectives related to ecosystem structure, function and services (benefits to society).

b) Identify tools/techniques from other disciplines (e.g., restoration science, conservation biology, biotechnology) and describe their applications in ecosystem stewardship.

c) Explain conceptual framework and systematic process for problem-solving and assessing tradeoffs associated with different ecosystem stewardship practices.

4) Understand human dimensions

a) Describe how laws, regulations and economic incentives shape current ecosystem conditions and stewardship activities, including forest management, on public and private forest lands.

b) Describe how stakeholder values, perceptions and beliefs may impact forest ecosystems and their stewardship.

Forest Resources Management (FRM) Educational Objectives

1) Understand forest ecosystems

a) Identify the major species, both flora and fauna, in a given area.

b) Describe relationships among flora and fauna including the biological and physical requirements.

2) Describe and analyze forest ecosystems

a) Describe technical forestry terms to different audiences using consistent and accurate terminology.

b) Plan, conduct, analyze forest inventories, including biological, physical, and social characteristics, using different statistical sampling methods, and communicate results in both written and oral form.

c) Explain forest development in both written and oral form and apply computer growth and yield models to project stand and forest development.

3) Analyze how forest resources are managed

a) Describe and explain to different audiences in both written and oral form alternative ways to change or maintain forest structure.

b) Evaluate tradeoffs among biological sustainability, economic feasibility, and social acceptability with respect to alternative forest management plans.

c) Explain the conceptual framework and systematic process for problem solving and demonstrate effective teamwork skills and ethics.

d) Describe and apply appropriate decision-making tools and techniques to evaluate alternative forest management practices appropriate to ownership goals and objectives.

4) Describe influence of government policies

a) Explain how U.S. and state government policies influence the management of forest resources on public and private lands.

b) Describe how government policies impact management opportunities.

Natural Resources Management (NRM) Educational Objectives

1) Understand natural ecosystems

a) Identify the major species, both flora and fauna, in a given area.

b) Describe relationships among flora and fauna including the biological and physical requirements.

2) Describe and analyze natural ecosystems

a) Describe the similarities and differences among major categories natural resources – i.e., soil, water, plants, wildlife and recreation.

b) Plan, conduct, analyze forest inventories, including biological, physical, and social characteristics, using different statistical sampling methods, and communicate results in both written and oral form.

3) Analyze how natural resources are managed

a) Describe and explain to different audiences in both written and oral form alternative ways to change or maintain natural resources, ecosystem functions and biodiversity.

b) Evaluate tradeoffs among biological sustainability, economic feasibility, and social acceptability with respect to alternative management options.

c) Explain the conceptual framework and systematic process for problem solving and demonstrate effective teamwork skills and ethics.

d) Describe and apply appropriate decision-making tools and techniques to evaluate alternative natural resources management practices appropriate to ownership goals and objectives.

4) Describe influence of government policies

a) Describe how laws governing business and management influence both large and small natural resource organizations.

b) Explain how U.S. and state government policies influence the management of natural resources on public and private lands.

Sustainable Energy Management (SEM) Educational Objectives

1) Describe the production and uses of renewable and non-renewable energy resources in the US and globally.
2) Describe approaches and techniques to manage people and projects.
3) Demonstrate verbal communication skills.
4) Demonstrate written communication skills.
5) Demonstrate effective teamwork skills.
6) Explain how policies, including U.S. and state government policies and laws, influence the management and use of energy resources in public and private settings.
7) Apply decision-making tools, conceptual frameworks, and systematic processes for problem solving.
8) Analyze energy resources data, including conversion of different forms of energy, physical resource availability, and environmental impacts.
9) Evaluate tradeoffs between environmental sustainability and economic feasibility for renewable energy resources.

The measurement of these outcomes is to be based on Bloom's Cognitive Levels of Knowledge (Table 1.1).

Table 1.1. Bloom's Cognitive Levels of Knowledge[1]

Bloom's Cognitive Levels	Activities
Remember	Recalling facts and basic concepts *define, duplicate, list, memorize, repeat, state*
Understand	Explain ideas or concepts *classify, describe, discuss, explain, identify, locate, recognize, report, select, translate*
Apply	Use information in new situations *execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch*
Analyze	Draw connections among ideas *differentiate, organize, relate, compare, contrast, distinguish, examine, experiment, question, test*
Evaluate	Justify a stand or decision *appraise, argue, defend, judge, select, support, value, critique, weigh*
Create	Produce new or original work *design, assemble, construct, conjecture, develop, formulate, author, investigate*

The Department of Sustainable Resources Management has defined the minimum competency level as ***Analysis***. This level of knowledge is our target for all educational objectives. While not every course deals with each of the educational objectives, we have structured the current curriculum to help us meet our goals by graduation.

These traits are best developed by a broad base in writing and public speaking, the natural and physical sciences, mathematics, and the social sciences and humanities. The majority of work scheduled during the first two years (lower division) is in these basics.

[1] Bloom, B.S., ed. 1956. *Taxonomy of Educational Objectives, Vol. 1: Cognitive Domain*. McKay, NY.

Comparison of course & credit hour requirements among SRM degree programs

1) FOUNDATION COURSES	Suggested ESF Class	SUNY GER	CM	FES	FRM	NRM	SEM
English I	EWP190 Writing & the Environment	Communications	3	3	3	3	3
English II	EWP290 Research, Writing & Humanities	Humanities	3	3	3	3	3
Biology I	EFB100 Survey of Biology **or** EFB101/102 General Biology I†	Natural Sci.		4†	4	4	4
Biology II	EFB103/104 General Biology II	Natural Sci.		4			
Chemistry I	FCH110/111 Survey of Chem. Prin. **or** FCH150/151 General Chemistry I†	Natural Sci.	4	4†	4	4	4
Chemistry II	FCH152/153 General Chemistry II	Natural Sci.		4			
Ecology I	FOR232 Natural Resources Ecology	Natural Sci.		3	3	3	
Physics	FOR110 Environmental Physics **or** EPH101/102 Fundamentals of Physics 1	Natural Sci.	3	4†		3	3
Mathematics	APM103 Appl. Alg. & Trig. **or** APM105 Survey of Calc & Applications	Math	3	4†	3	3	3
Statistics	APM391 Intro. to Probability & Statistics	Math	3	3	3	3	3
Economics	FOR207 Introduction to Economics	Social Sci.	3	3	3	3	3
Sociology	EST203 Introduction to Sociology‡	Social Sci.				3	
Prin. of Manage.	FOR360 Principles of Manage. for Env. Prof.	--	3	3	3	3	3
Public speaking	EWP220 Public Presentation Skills	Communications	3		3	3	3
Info. Literacy	ESF200 Information Literacy	--		1	1	1	1
General Education	Diversity, Equity, Inclusion and Social Justice		3	3	3	3	3
Additional General Education	Select one (1) course out of following four (4) categories: The Arts; US History and Civic Engagement; World History and Global Awareness; or World Languages		3	3	3	3	3
		Subtotal	**34**	**49**	**43**	**45**	**39**

† FES majors must take *EFB101/102, FCH150/151, EPH101/102, and APM105*

‡ NRM majors can satisfy *EST203* with *SOC101* or *PSY205*

2) REQUIRED PROFESSIONAL COURSES	CM	FES	FRM	NRM	SEM
CME106 Engineering Materials for Sustainable Construction	3				
CME132 Orientation Seminar: SCME	1				
CME142 Introduction to Construction Management: Light Construction	3				
CME215 Sustainable Construction **or** CME304 Environ. Performance Measures	3				
CME226 Statics and Mechanics of Materials	4				
CME255 Plan Interpretation and Quantity Takeoff	3				
CME303 Internship	1				
CME305 Sustainable Energy Systems for Buildings	3				3
CME327 Site Investigations and Solutions	3				
CME331 Construction Safety	3				
CME332 Mechanical and Electrical Equipment	3				
CME335 Cost Engineering	3				
CME343 Construction Estimating	3				
CME371 Surveying for Construction Management	1				
CME404 Applied Structures	3				
CME405 Building Information Modeling for Construction Management	3				
CME440 Capstone Planning	1				
CME453 Construction Planning and Scheduling	3				
CME454 Construction Project Management	3				
CME455 Construction Contracts and Specifications	3				
CME456 Advanced Skills in Construction Management	3				
CME497 Senior Ethics Seminar	1				
EFB336 Dendrology		3	3		
ESF300 Introduction to Geospatial Information Technologies		3	3	3	3
EWP407 Writing for Environmental and Science Professionals				3	3
FOR132 Orientation seminar: Sustainable Resources Management		1	1	1	1
FOR205 Principles of Accounting	3			3	3
FOR304 Adirondack Field Studies		4	4	4	
FOR322 Natural Resources Measurements and Sampling		3	3	3	
FOR323 Forest Biometrics		3	3		
FOR313 Tree Structure and Function		3	3		
FOR332 Forest Ecology		4	4		
FOR333 Natural Resources Managerial Economics			3	3	3
FOR334 Silviculture		4	4		
FOR345 Introduction to Soils		3	3	3	
FOR370 Forest Management Decision Making and Planning			3		
FOR372 Fundamentals of Outdoor Recreation				3	
FOR373 Sustainable Harvesting Practices			3		
FOR402 Professional Mentoring Program			1		
FOR421 Practical Ethics for Resource Managers			3		
FOR433 Advanced Silviculture			3		
FOR465 Natural Resources Policy		3	3	3	
FOR485 Business Law	3			3	3
FOR490 Integrated Resources Management			3	3	
FOR492 Capstone Research in Forest Ecosystem Science		3			
FOR493 Capstone Synthesis in Forest Ecosystem Stewardship		3			
LSA233 Plants in the Landscape				3	
RMS387 Renewable Materials for Sustainable Construction	3				
RMS422 Composite Materials for Sustainable Construction	3				
SME150 Introduction to Sustainable Energy Management					1
SRE325 Energy Systems					3
SRE337 Energy Resource Assessment					3
SRE416 Sustainable Energy Policy					3
SRE422 Energy Markets and Regulation					3
SRE441 Biomass Energy					3
SRE450 Renewable Energy Capstone Planning					1
SRE454 Renewable Energy Finance and Analysis					3
SRE479 Life Cycle Assessment					3
SRE491 Sustainable Energy Management Capstone					3
Subtotal	**69**	**40**	**53**	**35**	**45**
3) UPPER DIVISION TECHNICAL/DIRECTED ELECTIVES	**1**	**21**	**18**	**21**	**15**
4) FREE ELECTIVES	**18**	**14**	**15**	**21**	**21**
TOTAL	**122**	**124**	**125**	**122**	**120**

Construction Management

Coordinator: Dr. Endong Wang

Beginning fall 2020, the Construction Management (CM) degree program has undergone significant changes to better align the program to the standards of the American Council for Construction Education (ACCE). CM program has been officially accredited since July 2022.

The commercial construction industry represents almost 8 percent of the nation's gross domestic product, while the entire construction industry represents 20 percent of the nation's GDP. The industry is very competitive and with more construction companies bidding on jobs, organizations with the best-prepared professionals using the latest technology are the most successful.

This competition applies to construction contractors, as well as the engineers, human resource managers, and material and equipment suppliers. People engaged in this industry must have state-of-the-art skills and knowledge to thrive. Environmental issues are incorporated within the program by addressing workplace safety, environmental impact evaluation, and codes concerning structural, fire, and hazardous material requirements. Emphasis on environmental and personal safety includes asbestos mitigation, noise pollution, air monitoring and sampling techniques. Energy efficiency in buildings is studied based upon the New York State Energy Conservation Construction Code and federal guidelines. Legal and social aspects are integrated into the program in the later stages.

Program Requirements

As part of the bachelor's degree in CM, students are recommended to take the Associate Constructor Level I Exam for constructor certification. Students who successfully complete the exam receive the Associate Constructor (AC) designation from the American Institute of Constructors. This designation is part 1 of the process to become a Certified Professional Constructor (CPC). Students who successfully complete the course on construction safety receive the OSHA 30 Hour Construction Outreach Card.

Avenues for Completion

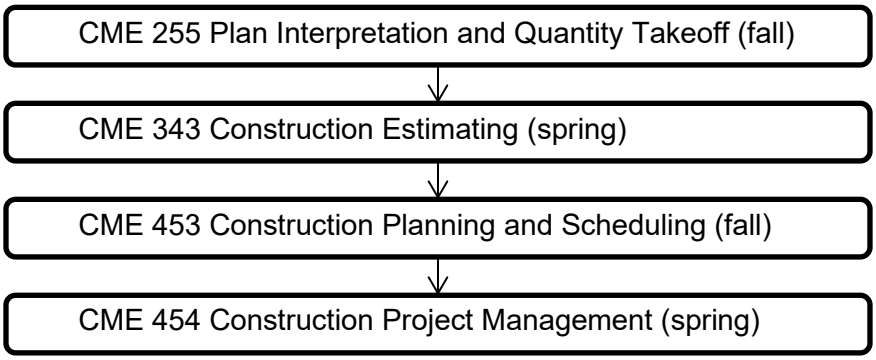
The CM degree prepares students for management careers in the construction industry with additional focus on sustainable construction management. Students may enter the Bachelor of Science program as first-year students or as transfer students. Students who are preparing to transfer to ESF as juniors must have earned at least 62 credits of college coursework, in courses comparable to the lower-division course requirements.

The CM bachelor's degree has a required curriculum, or list of courses, that must be completed to receive the degree. The Plan Sheet that you received when you entered the program is your contract for course requirements for the degree. The plan sheet contains all required courses by semester, including general education electives and elective slots. You are required to take all courses on the plan sheet including courses that are listed as prerequisites for other courses; these are required even if you have taken some or all the post-requisite courses prior to enrolling at ESF.

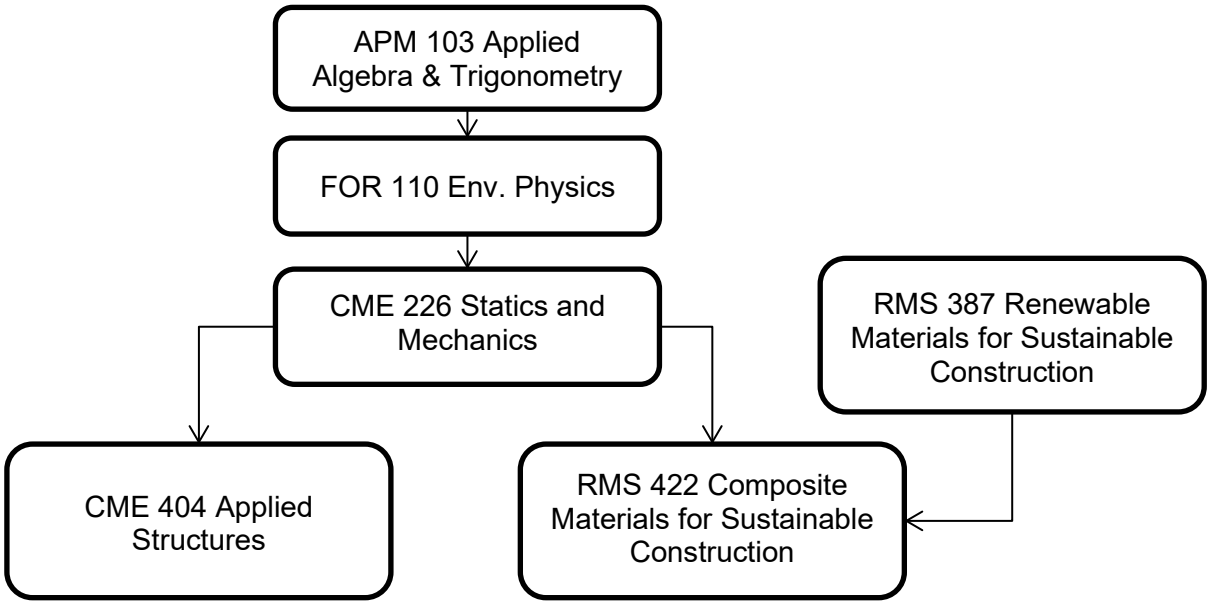
Course sequences

There are several course sequences that must be taken in order. Failure to do so may prolong your stay at ESF to an additional semester or additional year. The flowcharts below illustrate which courses are prerequisites for subsequent courses for both the **Construction Management** sequence and **Engineering/Construction Materials** sequence of courses.

- The Construction Management sequence:



- The Engineering/Construction Materials sequence:



Summary of General Education and Professional Education Core Requirements

The undergraduate curriculum in CM consists of two broad categories of courses. The first category, general education, provides students with knowledge and skills that are useful and important for all educated people regardless of their profession as well as preparation for advanced courses leading to a specific profession. The second category, professional courses, provides students with direct preparation for a career. The first years of college usually focus on general education and the remaining years on the professional studies.

FOUNDATION COURSES (with suggested ESF classes)		SUNY GER	Credits
English I	EWP190 Writing & the Environment	Communications	3
English II	EWP290 Research, Writing & Humanities	Humanities	3
Chemistry I (w/lab)	FCH110/111 Survey of Chemical Principles	Natural Science	4
Physics	FOR110 Environmental Physics	Natural Science	3
Algebra and Trig	APM103 Applied Algebra and Trigonometry	Math	3
Statistics	APM391 Intro. to Probability & Statistics	Math	3
Economics	FOR207 Intro. to Economics	Social Science	3
Presentation skills	EWP220 Public Presentation Skills	Communications	3
Prin. of Management	FOR360 Principles Manage. for Env. Prof.	--	3
General Education	Diversity, Equity, Inclusion & Social Justice	DEISJ	3
General Education*	Select from one (1) of four (4) subject areas	varies	3
		Minimum Foundation Credit Hours	**34**

CM PROFESSIONAL COURSES	Credits
CME106 Engineering Materials for Sustainable Construction	3
CME132 Orientation Seminar: Sustainable Construction Management and Engineering	1
CME142 Introduction to Construction Management: Light Construction	3
CME215 Sustainable Construction	3
CME226 Statics and Mechanics of Materials	4
CME255 Plan Interpretation and Quantity Takeoff	3
CME303 Internship	1
CME305 Sustainable Energy Systems for Buildings	3
CME327 Site Investigations and Solutions	3
CME331 Construction Safety	3
CME332 Mechanical and Electrical Equipment	3
CME335 Cost Engineering	3
CME343 Construction Estimating	3
CME371 Surveying for Construction Management	1
CME404 Applied Structures	3
CME405 Building Information Modeling for Construction Management	3
CME440 Capstone Planning	1
CME453 Construction Planning and Scheduling	3
CME454 Capstone in Construction Management	3
CME455 Construction Contracts and Specifications	3
CME456 Advanced Skills in Construction Management	3
CME497 Senior Ethics Seminar	1
FOR205 Principles of Accounting	3
FOR485 Business and Managerial Law	3
RMS387 Renewable Materials for Sustainable Construction	3
RMS422 Composite Materials for Sustainable Construction	3
Directed Elective (CME403, CME488, or CME490)	1
Minimum Professional Credit Hours	**70**
Liberal Arts & Science Electives	**18**
TOTAL REQUIRED FOR GRADUATION	**122**

* Students must complete a minimum of three (3) credits from one of the following four (4) general education subject areas: US History and Civic Engagement; The Arts; World History and Global Awareness; and World Languages. Approved courses are listed on the ESF Registrar's web site, the ESF General Catalog and student plan sheets

Undergraduate Program Requirements

General Education Courses

SUNY General Education Requirement (GER) enables students to acquire knowledge and skills that are useful and important for all educated people, regardless of their jobs or professions. Students must earn 30 credits in at least seven (7) of ten (10) GER subject areas. For CM students, five (5) of the subject areas are met through specific required courses. The remaining general education requirement can be fulfilled by selecting one course (3 credits) in Diversity, Equity, Inclusion and Social Justice, and one course (3 credits) from the following four (4) subject areas:

- US History and Civic Engagement
- World History and Global Awareness
- The Arts
- World Languages

A list of approved courses is provided on the Registrar's web page. Although it is usually expected that the SUNY-mandated general education courses will be taken in the freshman or sophomore years, it is possible to take several of these courses in either the junior or senior year. However, be sure to discuss the ramifications of such a delay with your advisor.

Freshman and Sophomore Courses

Students may be admitted directly as first-year freshman students at ESF or through a variety of transfer options. Regardless of which way students enter ESF, they must complete both the general and professional education requirements.

Freshmen at ESF

Below is a sample schedule of courses for students admitted to ESF's Syracuse campus programs as first-year freshmen.

Sample Freshman Year - Fall Semester

Course#	Course	Cr. Hr.
CME132	Orientation Seminar: Sust. Cons. Manag. And Engin.[1]	1
CME142	Intro to Cons. Mgmt: Light Construction	3
EWP190	Writing and the Environment *(GER, Comm.)*	3
FCH110/111	Survey of Chemical Principles and Lab *(GER, Nat. Sci.)*	4
FOR205	Principles of Accounting	3
	General Education Requirement in DEISJ *(GER, DEISJ)*	3
	TOTAL	17

[1]All students (freshmen and transfers) must take CME 132.

Sample Freshman Year - Spring Semester

Course#	Course	Cr. Hr.
APM103	Applied Algebra & Trigonometry (*GER Math*)	3
CME106	Engineering Materials for Sustainable Construction	3
EWP290	Writing, Humanities & the Environ. (*GER, Human.*)	3
FOR207	Introduction to Economics *(GER, Soc. Sci.)*	3
	Additional General Education Requirement *	3
	TOTAL	15

*Students must complete a minimum of three (3) credits from one of the following four (4) general education subject areas: US History and Civic Engagement; The Arts; World History and Global Awareness; and World Languages. Approved courses are listed on the ESF Registrar's web site, the ESF General Catalog and student plan sheets

Sample Sophomore Year - Fall Semester

Course#	Course	Cr. Hr.
CME331	Construction Safety	3
EWP220	Public Presentation Skills	3
FOR110	Environmental Physics	3
FOR360	Principles of Management for Env. Professionals	3
	Liberal Arts & Science Elective	3
	TOTAL	15

Sample Sophomore Year - Spring Semester

Course#	Course	Cr. Hr.
APM391	Intro to Probability & Statistics *(GER, Math)*	3
CME215	Sustainable Construction	3
CME255	Plan Interpretation & Quantity Takeoff	3
	Liberal Arts & Science Elective	3
	Liberal Arts & Science Elective	3
	TOTAL	15

Junior and Senior Courses

Coursework taken in the Junior and Senior years is usually a combination of courses from the professional education core. The following sample schedule of courses is appropriate for students that enter the program either as a freshman or as a transfer student.

Sample Junior Year - Fall Semester

Course#	Course	Cr. Hr.
CME226	Statics & Mechanics of Materials	4
CME303	Internship	1
CME305	Sustainable Energy Systems for Buildings	3
CME343	Construction Estimating	3
CME371	Surveying for Construction Management	1
RMS387	Renewable Material for Sustainable Construction	3
	TOTAL	15

Sample Junior Year - Spring Semester

Course#	Course	Cr. Hr.
CME332	Mechanical and Electrical Systems	3
CME404	Applied Structures	3
CME453	Construction Planning and Scheduling	3
FOR485	Business and Managerial Law	3
RMS422	Composite Materials for Sustainable Construction	3
	TOTAL	15

Sample Senior Year - Fall Semester

Course#	Course	Cr. Hr.
CME327	Site Investigations and Solutions	3
CME335	Cost Engineering	3
CME440	Capstone Planning	1
CME497	Senior Ethics Seminar	1
	Directed Elective†	1
	Liberal Arts & Science Elective	3
	Liberal Arts & Science Elective	3
	TOTAL	15

Sample Senior Year - Spring Semester

Course#	Course	Cr. Hr.
CME405	Building Information Modeling for Construction Management	3
CME454	Capstone in Construction Management	3
CME455	Construct Contracts & Specifications	3
CME456	Advanced Skills for Construction Management	3
	Liberal Arts & Science Elective	3
	TOTAL	15

†Directed Elective Choices for Senior Fall Semester

- CME 403 Construction Management Internship II
- CME 488 Professional Construction Project Management Presentation Seminar
- CME 490 Certified Associate Constructor Exam Preparation

Internships

Students taking an internship must first complete an **Internship Registration and Agreement Form**, found on the Registrar's website (https://www.esf.edu/registrar/) and meet with their advisor or other faculty member for approval of their study plan prior to starting their internship. Students enroll in **CME 303 Internship in Construction Management** for 1 to 3 credit hours. Most students take an internship during the summer; however, it is sometimes possible to take an internship during the semester. Summer internships must be preapproved in the spring. Internship requirements include employment (paid or unpaid) in a company with your duties of employment in some aspects of construction management, an evaluation by your supervisor in the company and two assignments, consisting of a journal of their daily job activities and tasks, and a paper describing your experience. It is possible to enroll in a second internship under **CME 403 Internship in Construction Management II** if the job description and duties in the second internship are in different areas of construction management compared to the first internship.

Forest Ecosystem Science

Coordinator: Dr. Colin Beier

The Bachelor of Science degree program in Forest Ecosystem Science (FES) is based on a vision that combines professional competency in forest management skills with an enhanced understanding of ecological sciences. Students interested in this program typically are drawn to natural settings and environments, enjoy nature, and want to understand how forested ecosystems work. ESF provides a wide variety of opportunities to meet student needs utilizing 25,000 acres of forest lands as teaching laboratories. Internships with natural resource-based organizations in the business, public and nonprofit sectors provide additional hands-on experiences. Experiential-field learning is combined with learning concepts and skills in the classroom and laboratory on ESF's Syracuse campus.

The FES program allows students to obtain the professional skills that employers look for in new employees and a deeper understanding of the scientific basis of those skills. These skills are developed through a combination of core courses focusing on biology, ecology, ecosystems, and management. The forest ecosystem science degree offers a wide variety of employment opportunities. Graduates work throughout the United States in public agencies, private industry, and for nonprofit organizations. They also are well prepared to enter graduate programs in management of forest and natural resources, ecological research, or other areas of applied forest biology.

Forest ecosystem science offers a wide variety of employment opportunities. Graduates work throughout the United States in public agencies, private industry, and for nonprofit organizations. They also are well prepared to enter graduate programs in management of natural resources, ecological research, or other areas of applied forest biology.

The educational program in Forest Ecosystem Science leading to the first professional degree is accredited by the Society of American Foresters (SAF).

Program Requirements

The Summer Program in Sustainable Resources Management is required for ALL students in Forest Ecosystem Science (except those who attend the Ranger School, Wanakena Campus in programs in Environmental and Natural Resources Conservation, Forest Technology or Land Surveying Technology). The Summer Program is a four-week session that begins at the end of May and lasts through June. It is taught at ESF's Wanakena Campus near Cranberry Lake. The program consists of one course: *FOR 304 Adirondack Field Studies*. The Summer Program is designed to be completed between sophomore and junior years.

Students have expectations of the Forest Ecosystem Science program and its faculty, and the faculty has expectations of the students as well. Students are expected to enter their junior year with the ability to write and speak clearly. Work should be presented in a professional manner, and criticism should be given and accepted in this same spirit. Students are expected to understand and use computers, including word processing of manuscripts, spreadsheets with functions, and basic database management. Students should be active learners who are mature and want to develop professional judgment for conducting and supervising field and office operations.

Avenues for Completion

Students may follow one of three paths to enter and complete the Forest Ecosystem Science degree program:

1. The freshman path is for students who enter ESF as freshmen and complete all degree requirements at ESF with the Summer Program in Sustainable Resources after the first or second year (first year preferred).
2. The combined A.A.S/B.S. path is for students who wish to have more field measurement and field problem solving skills and leadership development in context of forestry problems. The first year can be at ESF or another campus and the second year is spent at the Ranger School on the Wanakena campus. Students then complete their B.S. degree requirements at ESF. This path can usually be completed in a total of four and one-half years.
3. The transfer path is for students who complete all or part of their lower-division coursework at another two- or four-year campus, attend the Summer Program in Sustainable Resources the summer before entering ESF, and complete the upper-division requirements at ESF. Students preparing to transfer to ESF with full junior status must have earned at least 60 credits of college coursework.

Summary of General Education and Professional Education Core Requirements

The undergraduate curriculum in Forest Ecosystems Science consists of two broad categories of courses. The first category, general education, provides students with knowledge and skills that are useful and important for all educated people regardless of their profession as well as preparation for advanced courses leading to a specific profession. The second category, professional courses, provides students with direct preparation for a career. The first two years of college usually focuses on general education and the second two on the professional studies.

FOUNDATION COURSES (with suggested ESF classes)		**SUNY GER**	**Credits**
English I	EWP190 Writing & the Environment	Communication	3
English II	EWP290 Research, Writing & Humanities	Humanities	3
Biology I (w/lab)	EFB101/102 General Biology I	Natural Science	4
Biology II (w/lab)	EFB103/104 General Biology II	Natural Science	4
Chemistry I (w/lab)	FCH150/151 General Chemistry I	Natural Science	4
Chemistry II (w/lab)	FCH152/153 General Chemistry II	Natural Science	4
Ecology	FOR232 Natural Resources Ecology	Natural Science	3
Physics (w/lab)	EPH101/102 Fundamentals of Physics I	Natural Science	4
Calculus	APM105 Survey of Calc & Applications	Math	4
Statistics	APM391 Intro. to Probability & Statistics	Math	3
Economics	FOR207 Intro. to Economics	Social Science	3
General Education	Diversity, Equity, Inclusion & Social Justice	DEISJ	3
General Education*	Select from one (1) of four (4) subject areas	varies	3
Prin. of Management	FOR360 Principles Manage. for Env. Prof.	--	3
Info. Literacy	ESF200 Information Literacy	--	1
		Minimum Credit Hours	**49**

FES PROFESSIONAL COURSES	**Credits**
EFB336 Dendrology	3
ESF300 Introduction to Geospatial Information Technologies	3
FOR132 Orientation seminar: Sustainable Resources Management	1
FOR304 Adirondack Field Studies	4
FOR313 Tree Structure and Function	3
FOR322 Natural Resources Measurements and Sampling	3
FOR323 Forest Biometrics	3
FOR332 Forest Ecology	4
FOR334 Silviculture	4
FOR345 Introduction to Soils	3
FOR465 Natural Resources Policy	3
FOR492 Capstone Research in Forest Ecosystem Science	3
FOR493 Capstone Synthesis in Forest Ecosystem Stewardship	3
Biophysical Sciences Directed Electives	12
Management and Human Dimensions Directed Electives	9
Minimum Credit Hours	**61**
Free Electives	**14**
TOTAL REQUIRED FOR GRADUATION	**124**

* Students must complete a minimum of three (3) credits from one of the following four (4) general education subject areas: US History and Civic Engagement; The Arts; World History and Global Awareness; and World Languages. Approved courses are listed on the ESF Registrar's web site, the ESF General Catalog and student plan sheets.

Undergraduate Program Requirements

General Education Courses

SUNY General Education Requirement (GER) enables students to acquire knowledge and skills that are useful and important for all educated people, regardless of their jobs or professions. Students must earn 30 credits in at least seven (7) of ten (10) GER subject areas. For FES students, five (5) of the subject areas are met through specific required courses. The remaining general education requirement can be fulfilled by selecting one course (3 credits) in Diversity, Equity, Inclusion and Social Justice, and one course (3 credits) from the following four (4) subject areas:

- US History and Civic Engagement
- World History and Global Awareness
- The Arts
- World Languages

A list of approved courses is provided on the Registrar's web page. Although it is usually expected that the SUNY-mandated general education courses will be taken in the freshman or sophomore years, it is possible to take several of these courses in either the junior or senior year. However, be sure to discuss the ramifications of such a delay with your advisor.

Freshman and Sophomore Courses

Students may be admitted directly as first-year freshman students at ESF or through a variety of transfer options. Regardless of which way students enter ESF, they must complete both the general and professional education requirements.

First-Year Freshmen at ESF

Below is a sample schedule of courses for students admitted to ESF's Syracuse campus programs as first-year freshmen.

Sample Freshman Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
FOR132	Orientation Seminar: Sustainable Resources Mgt.[1]	1	
APM105	Survey of Calculus I *(GER, Math)*	4	
EFB101/102	General Biology I and Lab *(GER, Nat. Sci.)*	4	
EWP190	Writing and the Environment *(GER, Comm.)*	3	
FCH150/151	General Chemistry Lecture I and Lab *(GER, Nat. Sci.)*	4	
	TOTAL	16	

Sample Freshman Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
EFB103/104	General Biology II and Lab *(GER, Nat. Sci.)*	4	
ESF200	Information Literacy	1	
FCH152/153	General Chemistry Lecture II and Lab *(GER, Nat. Sci.)*	4	
FOR207	Introduction to Economics *(GER, Soc. Sci.)*	3	
FOR232	Natural Resources Ecology *(GER, Nat. Sci.)*	3	
	TOTAL	15	

[1]All students (freshmen and transfers) must take FOR 132.

Sample Sophomore Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
FOR313	Tree Structure and Function	3	
FOR332	Forest Ecology	4	
FOR360	Principles of Management for Env. Professionals	3	
EPH101/102	Fundamentals of Physics I and Lab *(GER, Nat. Sci.)*	4	
	TOTAL	14	

Sample Sophomore Year - Spring Semester

Course#	Course	Cr. Hr.		Check Off
APM391	Introduction to Probability and Statistics *(GER, Math)*	3		
EWP290	Writing, Humanities & the Environ. (*GER, Human.*)	3		
	General Education Requirement in DEISJ *(GER, DEISJ)*	3		
	Additional General Education Requirement *	3		
	Free Elective	2		
	TOTAL	14		

**Students must complete a minimum of three (3) credits from one (1) of the following four (4) general education subject areas: US History and Civic Engagement; The Arts; World History and Global Awareness; and World Languages. Approved courses are listed on the ESF Registrar's web site, the ESF General Catalog and student plan sheets.

Transfer Entry Program

Students preparing to transfer to ESF with full junior status must have earned at least 60 credits of college course work. The sample courses listed above represent the type of course requirements for students admitted to ESF's Syracuse campus programs as transfers.

Junior and Senior Courses

Coursework taken in the Junior and Senior years is usually a combination of courses from the professional education core and technical electives. Technical electives may be chosen to allow the student to either broaden their education in forest management or to concentrate in a particular component of forest science. The following sample schedule of courses is appropriate for students that enter the program either as a freshman or as a transfer student.

Sample Sophomore Year - Summer Semester

Course#	Course	Cr. Hr.	Check Off
FOR304	Adirondack Field Studies	4	
	TOTAL	4	

Sample Junior Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
EFB336	Dendrology	3	
FOR334	Silviculture	4	
FOR345	Introduction to Soils	3	
	Biophysical Science Elective†	3	
	Management/Human Dimensions Elective†	3	
	TOTAL	16	

Sample Junior Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
ESF300	Introduction to Geospatial Information Technologies	3	
FOR323	Forest Biometrics	3	
	Biophysical Science Elective†	3	
	Management/Human Dimensions Elective†	3	
	Free Elective	3	
	TOTAL	15	

Sample Senior Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
FOR322	Natural Resources Measurements and Sampling	3	
FOR465	Natural Resources Policy	3	
FOR492	Capstone Research in Forest Ecosystem Science	3	
	Biophysical Science Elective†	3	
	Free Elective	3	
	TOTAL	15	

Sample Senior Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
FOR493	Capstone Synthesis in Forest Ecosystem Stewardship	3	
	Biophysical Science Elective†	3	
	Management/Human Dimensions Elective†	3	
	Free Elective	3	
	Free Elective	3	
	TOTAL	15	

†See “Directed Elective Courses” on page 23.

Directed Elective Courses

Students must choose four (4) courses from Biophysical Sciences directed elective area and three (3) courses from Management and Human Dimensions directed electives to meet graduation requirements. Courses that satisfy these requirements include the following (other courses may be substituted with an approved petition):

Biophysical Science Electives (chose at least 12 credits)

Biology courses

Course#	Course	Semester	Credits
EFB307/308	Principles of Genetics with Lab	Spring	4
EFB311	Principles of Evolution	Spring	3
EFB325	Cell Biology	Spring	3

Ecosystems/Ecology courses

Course#	Course	Semester	Credits
EFB320	General Ecology	Fall	4
EFB413	Introduction to Conservation Biology	Fall	3
EFB445	Plant Ecology and Global Change	Spring	3
EFB446	Ecology of Mosses	Spring	3
EFB523	Tropical Ecology	Spring	3
FOR338	Meteorology	Spring	3
FOR340	Watershed Hydrology	Spring	3

Forest Health Science and Protection courses

Course#	Course	Semester	Credit
EFB303	Introductory Environmental Microbiology	Fall	4
EFB340	Forest and Shade Tree Pathology	Fall	3
EFB342	Fungal Diversity and Ecology	Summer	3
EFB345	Forest Health	Summer	3
EFB351	Forest Entomology	Fall (even)	3
EFB352	Entomology	Fall (odd)	3
EFB439	Forest Health Monitoring	Spring	3
EFB440	Mycology	Fall	3
EFB554	Aquatic Entomology	Fall	3
FOR496	Fire Ecology & Management	Fall	3

Plant Biology/Science courses

Course#	Course	Semester	Credit
EFB326	Plant Evolution, Diversification & Conservation	Spring	3
EFB327	Adirondack Flora	Summer	3
EFB337	Field Ethnobotany	Summer	3
EFB427	Plant Anatomy and Development	Fall	3
EFB435	Flowering Plants: Diversity, Evolution and Sys.	Fall	3

Animal Biology/Science courses

Course#	Course	Semester	Credit
EFB355	Invertebrate Zoology	Spring	4
EFB384	Field Herpetology	Summer	3
EFB385	Comparative Vertebrate Anatomy	Spring	4
EFB388	Ecology of Adirondack fishes	Summer	3
EFB424	Limnology: Study of Inland Waters	Fall	3
EFB462	Animal Physiology: Environmental and Ecol.	Spring	3
EFB480	Principles of Animal Behavior	Spring	4
EFB482	Ornithology	Spring	4
EFB483	Mammal Diversity	Fall	4
EFB484	Mammalian Winter Ecology	Spring	3
EFB485	Herpetology	Spring	3
EFB486	Ichthyology	Spring	3
EFB491	Applied Wildlife Science	Spring	3
EFB493	Wildlife Habitats and Populations	Fall	4

Management and Human Dimensions Electives (chose at least 9 credits)

Management courses

Course#	Course	Semester	Credit
EFB390	Wildlife Ecology and Management	Fall	4
EFB487	Fisheries Science and Management	Fall	3
FOR333	Natural Resources Managerial Economics	Spring	3
FOR370	Forest Mgt Planning and Decision Making	Spring	3
FOR373	Sustainable Harvesting Practices	Fall	3
FOR442	Watershed Ecology and Management	Fall	3
FOR480	Urban Forestry	Fall	3
FOR481	Introduction to Arboriculture	Spring	3
FOR496	Forest Management and Wildlife	Spring	3

Human Dimensions courses

Course#	Course	Semester	Credit
EST366	Environmental Ethics	Fall	3
EST390	Social Processes and the Environment	Spring	3
FOR372	Fundamentals of Outdoor Recreation	Spring	3

Forest Resources Management

Coordinator: Dr. René Germain

Professional forestry education has been featured at ESF since the College's founding in 1911. The forestry program is listed among the top ten forestry schools in the US by numerous rankings, including the College Post, College Gazette, College Factual and Universities.com. The program is based on a clear vision that combines professional competency with a strong foundation in the biophysical sciences, humanities, and social sciences to meet society's needs for forest managers.

Many ESF students enjoy trees and forests and want to work in forested settings. They appreciate nature and want to master the knowledge and skills needed to conserve and manage forests and the environment. With 25,000 acres of college forestlands as teaching and research laboratories, ESF provides many opportunities to meet student needs for experiential learning. The Forest Technology program at ESF's Wanakena campus prepares students for careers in field forestry and is one option towards the Forest Resources Management program that emphasizes field skills. Internships with forest-based organizations in the private, public and nonprofit sectors amplify these hands-on experiences. Practical experience is combined with learning concepts and problem solving and critical thinking skills in the classroom and laboratory on ESF's Syracuse campus.

Forest Resources Management is an integration of forest ecology and biology, forest measurements, forest policy and administration, and courses to predict and evaluate the effects of manipulation. Timber, water, recreation, wildlife, and a broad array of environmental values and services, such as biodiversity and healthy forest systems, are important results of effective management. This major prepares students to be well-rounded forest managers who can practice forestry and succeed as professionals in a variety of allied natural resources management fields.

Forest resources management offers a wide variety of employment opportunities. Our graduates are working throughout the United States as professional foresters and natural resource managers in private industry, public agencies, and for nonprofit organizations. Their duties can range from timber management to recreation planning to environmental education, to name a few.

The educational program in Forest Resources Management leading to the first professional degree in forestry is accredited by the Society of American Foresters (SAF).

Program Requirements

The Summer Program in Sustainable Resources Management is required for ALL students in Forest Resources Management (except those who attend the Ranger School, Wanakena Campus in programs in Environmental and Natural Resources Conservation, Forest Technology or Land Surveying Technology). The Summer Program is a four-week session that begins at the end of May and lasts through June. It is taught at ESF's Wanakena Campus near Cranberry Lake. The program consists of one course: *FOR 304 Adirondack Field Studies*. The Summer Program is designed to be completed between sophomore and junior years.

Students have expectations of the Forest Resources Management program and its faculty, and the faculty have expectations of the students as well. Students are expected to enter their junior year with the ability to write and speak clearly. Work should be presented in a professional manner, and criticism should be given and accepted in this same spirit. Students are expected to understand and use computers, including word processing of manuscripts, spreadsheets with functions, and basic database management. Students should be mature, active learners who want to develop professional judgment for conducting and supervising field and office operations.

Avenues for Completion

Students may follow one of three “paths” to enter and complete the Forest Resources Management program:

1. The “freshman” path is for students who enter ESF as a freshman and complete all degree requirements at ESF with the Summer Program in Sustainable Resources after the second year.
2. The “combined A.A.S/B.S.“ path is for students who wish to have more field measurement and field problem solving skills in the context of forestry problems. The first year can be at ESF or another campus and the second year is spent at the Ranger School, Wanakena campus. Students then complete their B.S. degree requirements at ESF. This path can usually be completed in a total of four years.
3. The “transfer” path is for students who complete all or part of their lower division course work at another two or four-year campus, attend the Summer Program the summer before entering ESF, and complete the upper-division requirements at ESF. Students preparing to transfer to ESF with full junior status must have earned at least 60 credits of college course work.

Summary of General Education and Professional Education Core Requirements

The undergraduate curriculum in forest resources management consists of two broad categories of courses. The first category, lower division, provides students with foundational knowledge and skills that are useful and important for all educated people regardless of their profession as well as preparation for advanced courses leading to a specific profession. The second category, professional courses, provides students with direct preparation for a career. The first two years of college usually focuses on general education and the second two on professional studies.

FOUNDATION COURSES (with suggested ESF classes)		SUNY GER	Credits
English I	EWP190 Writing & the Environment	Communications	3
English II	EWP290 Research, Writing & Humanities	Humanities	3
Biology I (w/lab)	EFB100 Survey of Biology	Natural Science	4
Chemistry I (w/lab)†	FCH110/111 Survey of Chem. Principles	Natural Science	4
Ecology	FOR232 Natural Resources Ecology	Natural Science	3
Math*	APM103 Appl. Alg. & Trig.	Math	3
Statistics	APM391 Intro. to Probability & Statistics	Math	3
Economics	FOR207 Intro. to Economics	Social Science	3
General Education	Diversity, Equity, Inclusion & Social Justice	DEISJ	3
General Education**	Select from one (1) of four (4) subject areas	varies	3
Info. Literacy	ESF200 Information Literacy	--	1
Prin. of Management	FOR360 Principles Manage. for Env. Prof.	--	3
Public speaking	EWP220 Public Presentation Skills.	Communications	3
		Minimum Credit Hours	**39**

FRM PROFESSIONAL COURSES	Credits
EFB336 Dendrology	3
ESF300 Introduction to Geospatial Information Technologies	3
FOR132 Orientation seminar: Sustainable Resources Management	1
FOR313 Tree Structure and Function	3
FOR304 Adirondack Field Studies	4
FOR322 Natural Resources Measurements and Sampling	3
FOR323 Forest Biometrics	3
FOR332 Forest Ecology	4
FOR333 Managerial Economics for Environmental Professionals	3
FOR334 Silviculture	4
FOR345 Introduction to Soils	3
FOR370 Forest Management Decision Making and Planning	3
FOR373 Sustainable Harvesting Practices	3
FOR402 Professional Mentoring Program	1
FOR421 Practical Ethics for Resource Managers	3
FOR433 Advanced Silviculture	3
FOR465 Natural Resources Policy	3
FOR490 Integrated Resources Management	3
Business Finance Technical Elective	3
Forest Health/Protection Technical Elective	3
Human Dimensions Technical Elective	3
Water Resources Technical Elective	3
Wildlife Management Technical Elective	3
Wood Technology/Science Technical Elective	3
Minimum Credit Hours	**71**
Free Electives	**15**
TOTAL REQUIRED FOR GRADUATION	**125**

† FCH150/151 (taken together) will also satisfy this requirement.

* APM104 will also satisfy this requirement.

** Students must complete a minimum of three (3) credits from one of the following four (4) general education subject areas: US History and Civic Engagement; The Arts; World History and Global Awareness; and World Languages. Approved courses are listed on the ESF Registrar's web site, the ESF General Catalog and student plan sheets.

Undergraduate Program Requirements

General Education Courses

SUNY General Education Requirement (GER) enables students to acquire knowledge and skills that are useful and important for all educated people, regardless of their jobs or professions. Students must earn 30 credits in at least seven (7) of ten (10) GER subject areas. For FRM students, five (5) of the subject areas are met through specific required courses. The remaining general education requirement can be fulfilled by selecting one course (3 credits) in Diversity, Equity, Inclusion and Social Justice, and one course (3 credits) from the following four (4) subject areas:

- US History and Civic Engagement
- World History and Global Awareness
- The Arts
- World Languages

A list of approved courses is provided on the Registrar's web page. Although it is usually expected that the SUNY-mandated general education courses will be taken in the freshman or sophomore years, it is possible to take several of these courses in either the junior or senior year. However, be sure to discuss the ramifications of such a delay with your advisor.

Freshman and Sophomore Courses

Students may be admitted directly as first-year freshman students at ESF or through a variety of transfer options. Regardless of which way students enter ESF, they must complete both the general and professional education requirements. To meet degree requirements, students must successfully complete all lower- and upper-division courses. The following are lower division requirements presented in sample schedules for first-year students and transfer students.

First-Year Students at ESF

Below is a sample schedule of courses for students admitted to ESF's Syracuse campus programs as first-year freshmen.

Sample Freshman Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
FOR132‡	Orientation Seminar: Sustainable Resources Mgt.	1	
APM103*	Appl. College Algebra & Trigonometry *(GER, Math)*	3	
FOR207	Introduction to Economics *(GER, Soc. Sci.)*	3	
EWP190	Writing and the Environment *(GER, Comm.)*	3	
FCH110/111	Survey of Chemical Principles and Lab *(GER, Nat. Sci.)*	4	
	TOTAL	14	

Sample Freshman Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
EFB100	Survey of Biology *(GER, Nat. Sci.)*	4	
EWP220	Public presentation Skills *(GER, Comm.)*	3	
EWP290	Writing, Humanities, & the Environ. (*GER, Human.*)	3	
FOR232	Natural Resources Ecology *(GER, Nat. Sci.)*	3	
	Free Elective	3	
	TOTAL	16	

‡ All students (freshmen and transfers) must take FOR 132.

* Students with higher math aptitude are encouraged to take either APM 104 or 105.

Sample Sophomore Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
EFB336	Dendrology	3	
FOR332	Forest Ecology	4	
FOR313	Tree Structure and Function	3	
ESF200	Information Literacy	1	
	General Education Requirement in DEISJ *(GER, DEISJ)*	3	
	TOTAL	14	

Sample Sophomore Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
APM391	Introduction to Probability and Statistics *(GER, Math)*	3	
	Additional General Education Requirement *	3	
	Free Elective	3	
	Free Elective	3	
	Free Elective	3	
	TOTAL	15	

* Students must complete a minimum of three (3) credits from one (1) of the following four (4) general education subject areas: US History and Civic Engagement; The Arts; World History and Global Awareness; and World Languages.. Approved courses are listed on the ESF Registrar's web site, the ESF General Catalog and student plan sheets.

Transfer Entry Program

Students preparing to transfer to ESF with full junior status must have earned at least 60 credits of college course work. The sample courses listed above represent the type of course requirements for students admitted to ESF's Syracuse campus programs as transfers.

Junior and Senior Courses

Coursework taken in the Junior and Senior years is usually a combination of courses from the professional education core and technical electives. Technical electives may be chosen to allow the student to either broaden their education in forest management or to concentrate in a particular component of forest resources management. The following sample schedule of courses is appropriate for students that enter the program as either a freshman or as a transfer student.

Sample Sophomore/Junior Year - Summer Semester at Wanakena

Course#	Course	Cr. Hr.	Check Off
FOR304	Adirondack Field Studies	4	
	TOTAL	4	

Sample Junior Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
FOR322	Natural Resources Measurements and Sampling	3	
FOR334	Silviculture	4	
FOR345	Introduction to Soils	3	
FOR360	Principles of Management for Env. Professionals	3	
	Technical Elective† (recommend business finance)	3	
	TOTAL	16	

Sample Junior Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
ESF300	Introduction to Geospatial Information Technologies	3	
FOR323	Forest Biometrics	3	
FOR333	Natural Resources Managerial Economics	3	
FOR370	Forest Management Decision Making and Planning	3	
FOR433	Advanced Silviculture	3	
	TOTAL	15	

Sample Senior Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
FOR373	Sustainable Harvesting Practices	3	
FOR402	Professional Forestry Mentoring Program	1	
FOR421	Practical Ethics for Resource Managers	3	
FOR465	Natural Resources Policy	3	
	Technical Elective†	3	
	Free Elective	3	
	TOTAL	16	

Sample Senior Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
FOR490	Integrated Resources Management	3	
	Technical Elective†	3	
	Technical Elective†	3	
	Technical Elective†	3	
	Technical Elective†	3	
	TOTAL	15	

† Technical electives must include at least one course in each of the following areas: business finances, forest protection/health, human dimensions, water resources, wildlife management, wood technology/science and general resource management (see table on next page for list of approved courses).

Technical Electives

Eighteen (18) technical elective hours are restricted to six (6) resource areas: business finances, forest health or protection, human dimensions, water resources, wildlife management, and wood technology/science. Students must choose one course from each of these resource areas to meet graduation requirements. Courses that satisfy this requirement include the following (other courses may be substituted with an approved petition):

Course	Business Finances	Semester	Credits
FOR205	Principles of Accounting	F/S	3
ACC151	Intro. to Financial Accounting	F/S	3
ACC201	Essentials of Accounting	F/S	3

Course	Forest Health/Protection	Semester	Credits
EFB340	Forest and Shade Tree Pathology	Fall	3
EFB351	Forest Entomology	Fall (even)	3
EFB352	Entomology	Fall (odd)	3
FOR496	Fire Ecology & Management	Fall	3

Course	Human Dimensions	Semester	Credits
EST353	Behavior Change & the Environment	Fall	3
EST370	Intro. Personal Environ. Interpret. Methods	Fall	3
EST471	Non-personal Environ. Interpret. Methods	Spring	3
EST366	Environmental Ethics	Fall	3
FOR372	Fundamentals of Outdoor Recreation	Spring	3

Course	Water Resources	Semester	Credits
FOR340	Watershed Hydrology	Spring	3
FOR442	Watershed Ecology and Management	Fall	3

Course	Wildlife Management	Semester	Credits
EFB390	Wildlife Ecology and Management	Fall	4
EFB413	Introduction to Conservation Biology	Fall	3
EFB484	Mammalian Winter Ecology	Spring	3
EFB487	Fisheries Science and Management	Fall	3
FOR496	Forest Management and Wildlife	Spring	3

Course	Wood Technology/Science	Semester	Credits
CME400	Introduction to Forest Products	Spring	3
CME444	Materials Marketing	Fall	3
RMS387	Renewable Materials for Sustainable Construction	Fall	3

Natural Resources Management

Coordinator: Dr. John Wagner

The Natural Resources Management program is based on a vision that combines professional competency in management skills with a strong foundation in the social and biophysical sciences. The program was constructed so that students would have the freedom to work in a specialty area associated with a minor from ESF or Syracuse University (see pages 30-32).

Students interested in this program typically are drawn to natural settings and environments, enjoy nature, and want to develop the professional knowledge and skills needed to conserve, steward, and manage natural resources and the environment. ESF provides a wide variety of opportunities to meet student needs utilizing 25,000 acres of forestlands as teaching laboratories and college faculty in many natural resource management disciplines. Internships with natural resource-based organizations in the business, public and nonprofit sectors provide additional hands-on experiences. Experiential-field learning is combined with learning concepts and skills in classrooms and laboratories on ESF's Syracuse campus.

The Natural Resources Management program develops professional skills that employers tell us are the most important traits they look for in new employees. These traits are developed through a broad base of classes in the natural sciences, social sciences and humanities, communication, and quantitative and qualitative problem-solving skills. The majority of work scheduled during the first two years (lower division) is in these areas. This major prepares students to be well-rounded natural resources managers.

Natural Resources Management offers a wide variety of employment opportunities. Our graduates are working throughout the United States in public agencies, private industry, and for nonprofit organizations. Their duties range from policy analysts for federal agencies to resource managers for non-profit organizations, from recreation planning for state park agencies to recreation management in federal wilderness areas, and from watershed hydrologists to land managers maintaining surface water quality.

Program Requirements

The Summer Program in Sustainable Resources Management is required for ALL students in Natural Resources Management (except those who attend the Ranger School, Wanakena Campus in programs in Environmental and Natural Resources Conservation, Forest Technology or Land Surveying Technology). The Summer Program is a four-week session that begins at the end of May and lasts through June. It is taught at ESF's Wanakena Campus near Cranberry Lake. The program consists of one course: *FOR 304 Adirondack Field Studies*. The Summer Program is designed to be completed between sophomore and junior years.

Students have expectations of the Natural Resources Management program and its faculty, and the faculty has expectations of the students as well. Students are expected to enter their junior year with the ability to write and speak clearly. Work should be presented in a professional manner, and criticism should be given and accepted in this same spirit. Students are expected to understand and use computers, including word processing of manuscripts, spreadsheets with functions, and basic database management. Students should be active learners who are mature and want to develop professional judgment for conducting and supervising field and office operations.

Avenues for Completion

Students may follow one of three “paths” to enter and complete the natural resources management program:

1. The “freshman” path is for students who enter ESF as a freshman and complete all degree requirements at ESF with the Summer Program in Sustainable Resources Management after the second year.

2. The “combined A.A.S/B.S.“ path is for students who wish to have more field measurement and field problem solving skills and leadership development in context of forest and natural resources problems. The first year can be at ESF or another campus and the second year is spent at the Ranger School, Wanakena campus. Students then complete their B.S. degree requirements at ESF. This path can usually be completed in a total of four years.

3. The “transfer” path is for students who complete all or part of their lower division course work at another two or four-year campus, attend the Summer Program in Sustainable Resources the summer before entering ESF, and complete the upper-division requirements at ESF. Students preparing to transfer to ESF with full junior status must have earned at least 60 credits of college course work.

Summary of General Education and Professional Education Core Requirements

The undergraduate curriculum in Natural Resources Management consists of two broad categories of courses. The first category, general education, provides students with knowledge and skills that are useful and important for all educated people regardless of their profession as well as preparation for advanced courses leading to a specific profession. The second category, professional courses, provides students with direct preparation for a career.

FOUNDATION COURSES (with suggested ESF classes)		**SUNY GER**	**Credits**
English I	EWP190 Writing & the Environment	Communications	3
English II	EWP290 Research, Writing & Humanities	Humanities	3
Biology I (w/lab)	EFB100 Survey of Biology	Natural Science	4
Chemistry I (w/lab)†	FCH110/111 Survey of Chem. Principles	Natural Science	4
Physics	FOR110 Environmental Physics	Natural Science	3
Ecology	FOR232 Natural Resources Ecology	Natural Science	3
Math††	APM103 Appl. Alg. & Trig.	Math	3
Statistics	APM391 Intro. to Probability & Statistics	Math	3
Economics	FOR207 Intro. to Economics	Social Science	3
Sociology*	EST203 Intro. to Sociology	Social Science	3
General Education	Diversity, Equity, Inclusion and Social Justice	DEISJ	3
General Education**	Select from one (1) of four (4) subject areas	varies	3
Prin. of Management	FOR360 Principles Manage. for Env. Prof.	--	3
Info. Literacy	ESF200 Information Literacy	--	1
Public speaking	EWP220 Public Presentation Skills.	Communications	3
		Minimum Credit Hours	**45**

NRM PROFESSIONAL COURSES	**Credits**
ESF300 Introduction to Geospatial Information Technologies	3
FOR132 Orientation seminar: Sustainable Resources Management	1
FOR205 Principals of Accounting	3
FOR304 Adirondack Field Studies	4
FOR322 Natural Resources Measurements and Sampling	3
FOR333 Managerial Economics for Environmental Professionals	3
FOR345 Introduction to Soils	3
FOR372 Fundamentals of Outdoor Recreation	3
FOR465 Natural Resources Policy	3
FOR485 Business Law	3
FOR490 Integrated Resources Management	3
LSA233 Plants in the Landscape	3
Vegetation Management Directed Elective	3
Water Resources Directed Elective	3
Technical Writing Directed Elective	3
Wildlife or Fisheries Directed Elective	3
Human Dimensions Directed Elective	3
Specialized NRM Directed Electives (2 courses)	6
Minimum Credit Hours	**56**
Free Electives	**21**
TOTAL REQUIRED FOR GRADUATION	**122**

† FCH 150 and FOR151 (taken together) will also satisfy this requirement.
†† APM104 will also satisfy this requirement.
* Other courses can fulfill this requirement; see Registrar's website and/or student plan sheets.
** Students must complete a minimum of three (3) credits from one of the following four (4) general education subject areas: US History and Civic Engagement; The Arts; World History and Global Awareness; and World Languages. Approved courses are listed on the ESF Registrar's web site, the ESF General Catalog and student plan sheets.

Undergraduate Program Requirements

Students may be admitted directly as first-year freshman students at ESF, or through a variety of transfer options. Regardless of which way students enter ESF, to meet NRM degree requirements, students must successfully complete both the general and professional education courses, including SUNY-mandated general education courses.

General Education Requirements

SUNY General Education Requirement (GER) enables students to acquire knowledge and skills that are useful and important for all educated people, regardless of their jobs or professions. Students must earn 30 credits in at least seven (7) of ten (10) GER subject areas. For NRM students, five (5) of the subject areas are met through specific required courses. The remaining general education requirement can be fulfilled by selecting one course (3 credits) in Diversity, Equity, Inclusion and Social Justice, and one course (3 credits) from the following four (4) subject areas:

- US History and Civic Engagement
- World History and Global Awareness
- The Arts
- World Languages

A list of acceptable courses is provided on the Registrar's web page. Although it is usually expected that the SUNY-mandated general education courses will be taken in the freshman or sophomore years, it is possible to take several of these courses in either the junior or senior year. However, be sure to discuss the ramifications of such a delay with your advisor.

While the SUNY General Education requirements allow students to meet the social science requirement by completing the introductory economics course, the NRM degree requires an additional social science course (the three options for this social science course are noted in the tables below with an †). To meet this added social science requirement, students can either choose one of these three courses, or petition for approval to take a course in one of the following subject areas:

- Government
- Political theory
- Public policy

Freshman and Sophomore Courses

The following are lower division requirements presented in sample schedules for first-year students and transfer students at ESF.

First-Year Freshmen at ESF

Below is a sample schedule of courses for students admitted to ESF's Syracuse campus programs as first-year freshmen.

Sample Freshman Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
FOR132‡	Orientation Seminar: Sustainable Resources Mgt.	1	
APM103*	Appl. College Algebra & Trigonometry *(GER, Math)*	3	
ESF200	Information Literacy	1	
EWP190	Writing and the Environment *(GER, Comm.)*	3	
FCH110/111	Survey of Chemical Principles and Lab *(GER, Nat.Sci.)*	4	
	TOTAL	12	

Sample Freshman Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
EFB100	Survey of Biology *(GER, Nat. Sci.)*	4	
EWP220	Public Presentation Skills *(GER, Comm.)*	3	
EWP290	Research, Writing & Humanities *(GER, Human.)*	3	
FOR232	Natural Resources Ecology *(GER, Nat.Sci.)*	3	
	General Education Requirement in DEISJ *(GER, DEISJ)*	3	
	TOTAL	16	

‡ All students (freshmen and transfers) must take FOR 132.

* Students with higher math aptitude are encouraged to take either APM 104 or 105.

Sample Sophomore Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
FOR110	Environmental Physics *(GER, Nat.Sci.)*	3	
FOR207	Introduction to Economics *(GER, Soc.Sci.)*	3	
FOR360	Principles of Management for Env. Professionals	3	
LSA233	Plants in the Landscape	3	
	Free elective	3	
	TOTAL	15	

Sample Sophomore Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
APM391	Introduction to Probability and Statistics *(GER, Math)*	3	
EST203	Introduction to Sociology *(GER, Soc.Sci.)*†	3	
	Additional General Education Requirement **	3	
	Free elective	3	
	Free elective	3	
	TOTAL	15	

† Other sociology or psychology courses can fulfill this requirement, including EST312 Sociology of Natural Resources, SOC 101 Introduction to Sociology or PSY 205 Foundations of Human Behavior

** Students must complete a minimum of three (3) credits from one (1) of the following four (4) general education subject areas: US History and Civic Engagement; The Arts; World History and Global Awareness; and World Languages. Alternative courses are listed on the ESF Registrar's web site, the ESF General Catalog and student plan sheets.

Transfer Entry Program

Students preparing to transfer to ESF with full junior status must have earned at least 60 credits of college course work. The sample courses listed above, under *Freshman and Sophomore courses*, represent the type of course requirements for students admitted to ESF's Syracuse campus programs as transfers.

Junior and Senior Courses

Coursework taken in the Junior and Senior years is usually a combination of courses from the professional education core and free electives. The following sample schedule of courses is appropriate for students that enter the program as either a freshman or as a transfer student.

Sample Sophomore/Junior Year - Summer Semester

Course#	Course	Cr. Hr.	Check Off
FOR304	Adirondack Field Studies	4	
	TOTAL	4	

Sample Junior Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
FOR205	Principles of Accounting[§]	3	
FOR322	Natural Resources Measurements and Sampling	3	
FOR345	Introduction to Soils	3	
	Vegetation Management Directed Elective[†]	3	
	Free Elective	3	
	TOTAL	15	

[§] Other courses can fulfill this requirement, including ACC151 or ACC201

Sample Junior Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
ESF300	Introduction to Geospatial Information Technologies	3	
FOR333	Natural Resources Managerial Economics	3	
FOR372	Fundamentals of Outdoor Recreation	3	
FOR485	Business Law	3	
	Water Resources Directed Elective[†]	3	
	TOTAL	15	

Sample Senior Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
FOR465	Natural Resources Policy	3	
EWP407	Writing for Environmental and Science Professionals	3	
	Human Dimensions Directed Elective[†]	3	
	Wildlife or Fisheries Directed Elective[†]	3	
	Free Elective	3	
	TOTAL	15	

Sample Senior Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
FOR490	Integrated Resources Management	3	
	Specialized NRM Directed Elective (1)[†]	3	
	Specialized NRM Directed Elective (2)[†]	3	
	Free Elective	3	
	Free Elective	3	
	TOTAL	15	

[†] See table on next page for list of courses

Specialized NRM Directed Electives

Six (6) credits that build on one or more of the six core natural resources management areas: policy, recreation, soils, vegetation, water, and wildlife. Courses that satisfy this requirement include:

Policy and Law

Course#	Course	Semester	Credit
FOR487	Environmental Law and Policy	Fall	3
FOR489	Natural Resources Law	Spring	3

Human Dimensions

Course#	Course	Semester	Credit
EST353	Behavior Change and the Environment	Fall	3
EST366	Environmental Ethics	Fall	3
EST370	Introduction to Personal Environmental Interpretation Methods	Fall	3
EST390	Social Processes and the Environment	Fall	3
EST474	Advanced Interpretation and Environmental Education	Spring	3
FOR421	Practical Ethics for Resource Managers	Fall/Spring	3

Soils

Course#	Course	Semester	Credit
FOR535	Advanced Forest Soils	Spring (odd)	3

Vegetation Management

Course#	Course	Semester	Credit
FOR334	Silviculture	Fall	3
FOR433	Advanced Silviculture	Spring	3
FOR480	Urban Forestry	Fall	3
FOR481	Introduction to Arboriculture	Spring	3

Water Resources

Course#	Course	Semester	Credit
EFB424	Limnology: Study of Inland Waters	Fall	3
EFB542	Freshwater Wetland Ecosystems	Spring	3
FOR340	Watershed Hydrology	Spring	3
FOR442	Watershed Ecology and Management	Fall	3
GEO422	Water: Environment, Society and Politics	Spring	3

Wildlife or Fisheries

Course#	Course	Semester	Credit
EFB390	Wildlife Ecology and Management	Fall	4
EFB413	Introduction to Conservation Biology	Fall	3
EFB484	Mammalian Winter Ecology	Spring	3
EFB487	Fisheries Science and Management	Fall	3
EFB502	Ecology & Management of Invasive Spp.	Spring	3
FOR496	Forest Management and Wildlife	Spring	3

Geospatial Information Technology (GIT)

Course#	Course	Semester	Credit
EAR410	Applications of GIS in the Earth Sciences	Spring	3
ERE365	Principles of Remote Sensing	Spring	3
GEO381	Cartographic Design	Spring	3
GEO482	Environmental Remote Sensing	Spring	3
FOR458	Advanced Topics in GIS	Fall	3

Sustainable Energy

Course#	Course	Semester	Credit
SRE325	Energy Systems	Fall	3
SRE416	Sustainable Energy Policy	Fall	3
SRE422	Energy Markets and Regulations	Fall	3
SRE441	Biomass Energy	Spring	3
SRE454	Renewable Energy Finance and Analysis	Spring	3
SRE479	Life Cycle Assessment	Spring	3

Sustainable Energy Management

Coordinator: Dr. Obste Therasme

The Sustainable Energy Management (SEM) degree program introduces students to a wide range of energy markets and resources (e.g., fossil fuels, electricity, renewable and sustainable energy resources), while maintaining substantial flexibility for student-centered learning in understanding and managing energy systems. It combines professional competency in management skills with a strong foundation in the social and biophysical sciences.

The study of energy use and the development of sustainable sources of energy has become a critical national and global issue. Energy issues include concerns about the quality and quantity of the different potential resources, energy security, and the potential impacts on the environment and human health. It is essential that energy professionals understand the production and conversion of different forms of energy, their current and potential future supplies, the markets and policy mechanisms that regulate their supply, and their associated impacts on the environment.

The SEM program exposes students to views from a variety of disciplines as they investigate issues related to current and future energy supply and use. Students explore sustainable uses of energy and resources and develop the professional knowledge and skills needed to conserve and manage energy resources.

The SEM program develops the professional skills that private industry, public agency, and nonprofit organization employers look for in employees. These traits are acquired through foundational courses in the natural sciences, social sciences and humanities, communication, and quantitative and qualitative problem-solving, and critical thinking skills. The program requires a base of coursework in math and science, and additional work in applied economics, statistics, and applied energy courses. It has a strong focus on developing management skills needed to work in the energy field so that alumni are well-rounded managers in the energy field. The program also provides the skills and knowledge needed to be successful in future graduate degree work.

ESF provides a variety of opportunities to meet students' needs through on-campus sustainable energy demonstration projects and research. Classroom- and laboratory-learned concepts and skills are expanded upon through experiential ESF-based and off-campus field learning. For example, the Central NY region has significant and diverse (e.g., solar and wind installations, hydropower, and biomass-based facilities) that the program uses for experiential learning opportunities.

SEM students integrate the skills and knowledge accumulated from professional and supporting coursework in their senior year capstone experience. Capstone projects analyze the technical, financial, and environmental aspects of a real-world energy related issue and develop recommendations based on those analyses. The results are presented orally and in a written report to demonstrate their abilities as future energy resource managers.

Importantly, the SEM major was designed with enough flexibility so that students can focus on specific interests and, if desired, supplement their employment credentials with one or more ESF minors (e.g., Sustainable Construction, Economics, Management). Many students also study aboard, and nearly all SEM students have paid internships between their junior and senior years.

Avenues for Completion

Students may follow one of two “paths” to enter and complete the SEM program:

1. The “freshman” path is for students who enter ESF as a freshman and complete all degree requirements at ESF.

2. The “transfer” path is for students who complete all or part of their lower division course work at another two or four-year campus and complete the upper-division requirements at ESF. Students preparing to transfer to ESF with full junior status must have earned at least 60 credits of college course work.

Undergraduate Program Requirements

Students may be admitted directly as first-year freshman students at ESF, or through a variety of transfer options. Regardless of which way students enter ESF, students must successfully complete both the general and professional education courses, including SUNY-mandated general education courses.

Students have expectations of the SEM program and its faculty, and the faculty have expectations of the students as well. Students are expected to enter their junior year with the ability to communicate clearly in both written and oral formats. Work needs to be presented in a professional manner, and criticism should be given and accepted in this same spirit. Students are expected to understand and use current software, including word processing of manuscripts, spreadsheets with functions, and basic database management. Students should be active learners who are mature and want to develop professional judgment and skills that will prepare them for a career in the energy field.

General Education Requirements

SUNY General Education Requirement (GER) enables students to acquire knowledge and skills that are useful and important for all educated people, regardless of their jobs or professions. Students must earn 30 credits in at least seven (7) of ten (10) GER subject areas. For SEM students, five (5) of the subject areas are met through specific required courses. The remaining general education requirement can be fulfilled by selecting one course (3 credits) in Diversity, Equity, Inclusion and Social Justice, and one course (3 credits) from the following four (4) subject areas:

- US History and Civic Engagement
- World History and Global Awareness
- The Arts
- World Languages

A list of acceptable courses is provided on the Registrar's web page. Although it is usually expected that the SUNY-mandated general education courses will be taken in the freshman or sophomore years, it is possible to take several of these courses in either the junior or senior year. However, students should discuss the ramifications of such a delay with their advisor.

Summary of General Education and Professional Education Core Requirements

The undergraduate curriculum in SEM consists of two broad categories of courses. The first category, general education, provides students with knowledge and skills that are useful and important for all educated people regardless of their profession as well as preparation for advanced courses leading to a specific profession. The second category, professional courses, provides students with direct preparation for a career.

FOUNDATION COURSES (suggested ESF course)		SUNY GER	Credits
English I	EWP190 Writing & the Environment	Communications	3
English II	EWP290 Research, Writing & Humanities	Humanities	3
Biology I (w/lab)	EFB100 Survey of Biology	Natural Science	4
Chemistry I (w/lab)†	FCH110/111 Survey of Chem. Principles	Natural Science	4
Physics††	FOR110 Environmental Physics	Natural Science	3
Math‡‡	APM103 Appl. Alg. & Trig.	Math	3
Statistics	APM391 Intro. to Probability & Statistics	Math	3
Economics	FOR207 Intro. to Economics	Social Science	3
General Education	Diversity, Equity, Inclusion and Social Justice	DEISJ	3
General Education*	Select from one (1) of four (4) subject areas	varies	3
Prin. of Management	FOR360 Principles Manage. for Env. Prof.	--	3
Info. Literacy	ESF200 Information Literacy	--	1
Public Speaking	EWP220 Public Presentation Skills.	Communications	3
		Minimum Credit Hours	**39**

SEM PROFESSIONAL COURSES	Credits
CME305 Sustainable Energy Systems for Buildings	3
ESF300 Introduction to Geospatial Information Technologies	3
EWP407 Writing for Environmental and Science Professionals	3
FOR132 Orientation Seminar: Sustainable Resources Management	1
FOR205 Principles of Accounting	3
FOR333 Managerial Economics for Environmental Professionals	3
FOR485 Business Law	3
SRE150 Introduction to Sustainable Energy Management	1
SRE325 Energy Systems	3
SRE337 Energy Resources Assessment	3
SRE416 Sustainable Energy Policy	3
SRE422 Energy Markets and Regulation	3
SRE441 Biomass Energy	3
SRE450 Renewable Energy Management Capstone Planning	1
SRE454 Renewable Energy Finance and Analysis	3
SRE479 Life Cycle Assessment	3
SRE491 Sustainable Energy Management Capstone	3
Five (5) Upper Division Directed Electives (see page 47)	15
Minimum Credit Hours	**60**
Free Electives	**21**
TOTAL REQUIRED FOR GRADUATION	**120**

† FCH 150 and FCH151 (taken together) will also satisfy this requirement.

†† EPH101 will also satisfy this requirement.

‡‡ APM104 or APM 105 will also satisfy this requirement.

* Students must complete a minimum of three (3) credits from one of the following four (4) general education subject areas: US History and Civic Engagement; The Arts; World History and Global Awareness; and World Languages. Approved courses are listed on the ESF Registrar's web site, the ESF General Catalog and student plan sheets.

Freshman and Sophomore Courses

The following are lower division requirements presented in sample schedules for first-year students and transfer students at ESF.

First-Year Freshmen at ESF

Below is a sample schedule of courses for students admitted to ESF's Syracuse campus programs as first-year freshmen.

Sample Freshman Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
FOR132‡	Orientation Seminar: Sustainable Resources Mgt.	1	
APM103*	Applied College Algebra and Trig. *(GER, Math)* *	3	
ESF200	Information Literacy	1	
EWP190	Writing and the Environment *(GER, Comm.)*	3	
FCH110/111†	Survey of Chemical Principles & Lab (*GER, Nat.Sci.)*	4	
SRE150	Introduction to Sustainable Energy Management	1	
	TOTAL	13	

Sample Freshman Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
EFB100	Survey of Biology *(GER, Nat. Sci.)*	4	
EWP290	Research, Writing & Humanities *(GER, Human.)*	3	
	Directed Elective††	3	
	General Education Requirement in DEISJ *(GER, DEISJ)*	3	
	Additional General Education Requirement‡‡	3	
	TOTAL	16	

‡ All students (freshmen and transfers) must take FOR 132.

† FCH150 and FCH151 (taken together) will also satisfy this requirement.

* Students with higher math aptitude are encouraged to take either APM 104 or 105, which will also satisfy this requirement.

†† See page 47 for a list of courses that satisfy this Directed Elective

‡‡ Students must complete a minimum of three (3) credits from one (1) of the following four (4) general education subject areas: US History and Civic Engagement; The Arts; World History and Global Awareness; and World Languages. Alternative courses are listed on the ESF Registrar's web site, the ESF General Catalog and student plan sheets.

Sample Sophomore Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
EWP220	Public Presentation Skills *(GER, Comm.)*	3	
FOR110	Environmental Physics† *(GER, Nat.Sci.)*	3	
FOR207	Introduction to Economics *(GER, Soc.Sci.)*	3	
FOR360	Principles of Management for Env. Professionals	3	
	Free Elective	3	
	TOTAL	15	

Sample Sophomore Year - Spring Semester

Course#	Course	Cr. Hr.	Check Off
ESF300	Introduction to Geospatial Information Technologies	3	
FOR205	Principles of Accounting	3	
	Directed Elective**	3	
	Free Elective	3	
	Free Elective	3	
	TOTAL	15	

†EHP101 will also satisfy this requirement.

** See page 47 for a list of courses that satisfy this Directed Elective

Transfer Entry Program

Students preparing to transfer to ESF with full junior status must have earned at least 60 credits of college course work. The sample courses listed above under *Freshman and Sophomore courses* represent the type of course requirements for students admitted to ESF's Syracuse campus programs as transfers.

Junior and Senior Courses

Coursework taken in the Junior and Senior years is usually a combination of courses from the professional education core and free electives. The following sample schedule of courses is appropriate for students that enter the program as either a freshman or as a transfer student.

Sample Junior Year - Fall Semester

Course#	Course	Cr. Hr.	Check Off
APM391	Introduction to Probability and Statistics *(GER, Math)*	3	
CME305	Sustainable Energy Systems for Buildings	3	
EWP407	Writing for Environmental and Science Professionals	3	
SRE325	Energy Systems	3	
	Directed Elective**	3	
	TOTAL	15	

** See page 46 for a list of courses that satisfy this Directed Elective

Sample Junior Year – Spring Semester

Course#	Course	Cr. Hr.	Check Off
FOR333	Natural Resources Managerial Economics	3	
SRE337	Energy Resource Assessment	3	
SRE441	Biomass Energy	4	
	Free Elective	3	
	Free Elective	3	
	TOTAL	16	

** See page 46 for a list of courses that satisfy this Directed Elective

Sample Senior Year – Fall Semester

Course#	Course	Cr. Hr.	Check Off
SRE416	Sustainable Energy Policy	3	
SRE422	Energy Markets and Regulation	3	
SRE450	Renewable Energy Capstone Planning	1	
SRE479	Life Cycle Assessment	3	
	Directed Elective**	3	
	Free Elective	3	
	TOTAL	16	

** See page 47 for a list of courses that satisfy this Directed Elective

Sample Senior Year – Spring Semester

Course#	Course	Cr. Hr.	Check Off
FOR485	Business and Managerial Law	3	
SRE454	Renewable Energy Finance and Analysis	3	
SRE491	Sustainable Energy Management Capstone	3	
	Directed Elective**	3	
	Free Elective	3	
	TOTAL	15	

** See page 46 for a list of courses that satisfy this Directed Elective

Directed Elective Courses

Fifteen (15) credits. Courses that satisfy this requirement include:

Course#	Course	Semester	Credits
CME215	Sustainable Construction	Fall	3
CME306	Engineering Materials for Sustainable Construction	Spring	3
CME444	Materials Marketing	Fall	3
EEE370	Intro. to Entrepreneurship and Emerging Enterprises	Fall/Spring	3
EFB103/104	Biology II Lecture and Lab	Spring	4
EFB303	Introductory Environmental Microbiology	Fall	3
EFB320	General Ecology	Fall	4
EST203	Introduction to Sociology	Spring	3
EST220	Urban Ecology	Fall	3
EST231	Environmental Geology	Spring	3
EST366	Environmental Ethics	Fall	3
EST390	Social Processes and the Environment	Spring	3
EST395	Public Communication of Science and Technology	Spring	3
EST426	Community Planning and Sustainability	Fall	3
EST427	Environmental and Energy Auditing	Spring	3
EST550	Environmental Impact Analysis	Fall	3
FIN301	Essentials of Finance	Fall/Spring	3
FOR232	Natural Resources Ecology	Spring	3
FOR338	Meteorology	Spring	3
FOR465	Natural Resources Policy	Fall	3
FOR487	Environmental Law and Policy	Fall	3
FOR489	Natural Resources Law and Policy	Spring	3
LSA460	Land Use Law	Spring	3
MAR301	Essentials of Marketing	Fall/Spring	3
PSC302	Environmental Politics and Policy	Spring	3
PSE456	Management in Industry	Spring	3
PSY205	Foundations of Human Behavior	Fall/Spring	3
RMS387	Renewable Materials for Sustainable Construction	Fall	3
SOC101	Introduction to Sociology	Fall/Spring	3
SRE419	Policy Assessment	Spring	3

Undergraduate Minors

Syracuse University and SUNY ESF Minors

There are a growing set of minors available to SUNY ESF students from both SU and ESF, including the following (see College Catalog for more information): computer and information technology (SU); entrepreneurship, management studies, and marketing (SU); and urban environmental science (ESF). The Department of Sustainable Resources Management sponsors eight (8) minors: Applied Statistics; Construction Management; Economics; Forestry; Management; Recreation Resources and Protected Area Management; Urban Forestry; and Water Resources.

Applied Statistics Minor

Coordinator: Dr. Eddie Bevilacqua

This minor provides students with an opportunity to extend their understanding of and ability to apply statistical methods beyond the basic techniques presented in introductory courses. The minor is intended to provide students with a strong background in statistical design (both sampling design and experimental design) and analysis. The 12-credit minor consists of two required courses (6 credits), APM 391 (or APM 395) and FOR 323 and 6 credits of directed electives of advanced courses, independent study, or teaching experience related to applied statistics.

This minor requires 12 credits and includes the required courses (6 credits) and directed electives (6 credits) listed below. Other applied statistics courses may be substituted by petition for any course in the directed elective list with the approval of the SRM Undergraduate Education Committee.

Required Courses (6 credits)

- APM 391 Introduction to Probability and Statistics (3), **or**
  APM 395 Introduction to Statistics in Engineering (3) (cannot use both)
- FOR 323 Forest Biometrics (3)

Choose from the following directed electives (6 credits)

- APM 620 Experimental Design and Analysis of Variance (3)
- APM 625 Sampling Methods (3)
- APM 630 Regression Analysis (3)
- APM 635 Multivariate Statistical Methods (3)
- APM 645 Nonparametric Statistics and Categorical Data Analysis (3)
- FOR 495 Undergraduate Teaching Assistance (associated with APM 391 or FOR323) (1)
- FOR 498 Independent Study (guidance of instructor of APM applied statistics courses) (2-3)
- MAT 222 Elementary Probability and Statistics II
- MAS 362 Decision Tools for Management
- MAX 201 Quantitative Methods for the Social Sciences

Students from all programs at ESF are eligible for this minor if they have a cumulative grade point average of 3.00 or better after one semester at ESF (or as a transfer student with same standing) and completion of ESF Minor Enrolment Form. +

Construction Management Minor

Coordinators: Dr. Endong Wang
The construction management minor prepares students for management careers in the construction industry. Eighteen credit hours (6 courses) are required to complete the minor. Four courses are specified, with an additional two courses selected from the list of six courses given below. A cumulative grade point average of 2.000 or higher is required for the construction management courses.

Required courses (12 credits) are:

- CME 255 Plan Interpretation and Quantity Takeoff (3);
- CME 343 Construction Estimating (3);
- CME 453 Construction Planning and Scheduling (3);
- CME 454 Construction Project Management (3).

Two additional courses (6 credits) are chosen from the following:

- CME 331 Construction Safety (3);
- CME 335 Cost Engineering (3);
- CME 444 Materials Marketing (3);
- CME 455 Construction Contracts and Specifications (3).

It is the responsibility of the student to meet any prerequisites associated with courses in the minor. Students from all programs at ESF (except students in construction management) are eligible for this minor if they are at least sophomore status, have a cumulative grade point average of 2.70 or higher, and completion of ESF Minor Enrolment Form.

Economics Minor

Coordinator: Dr. John Wagner

The minor in economics provides a program of courses designed for students who wish to extend their knowledge beyond an introductory economics course required of all majors at ESF. Completing this minor will enhance a student's understanding of how individuals with limited resources make choices concerning the optimal management of natural resources.

The Economics minor totals 15 credits. Required courses (6 credits) are:

- FOR 207 Introduction to Economics (3) and
- SRE 454 Sustainable Energy Finance and Analysis (3)

In addition, students must choose from the following directed electives (minimum of 9 credits):

- ECN 301 Intermediate Microeconomic Theory (3) **or**
  ECN 311 Intermediate Math Microeconomics (3) **or**
  FIN 301 Essentials of Finance (3).
- ERE 430 Engineering Decision Analysis (3);
- FOR 333 Natural Resources Managerial Economics (3);
- FOR 495 Undergraduate Teaching Assistant
  (must be in association with FOR207 **or** FOR333) (3);
- FOR 670 Resource and Environmental Economics (3) **or**
  ECN 437 Resource and Environmental Economics (3);
- SRE 422 Energy Markets and Regulation (3)

It is the responsibility of the student to meet any prerequisites associated with courses in the minor. Admission to the minor requires students to have an accumulative grade point average of

2.5 or better after one semester at ESF (or as a transfer student with the same standing), and completion of ESF Minor Enrolment Form.

Forestry Minor

Coordinator: Dr. René Germain

The minor in Forestry draws from the biological, physical, social, and managerial sciences. The curriculum aids in understanding the biological complexities of the forest and the interactions between the forest and social and economic demands. The minor is designed to provide students with an appreciation of forest resources management. Course themes include forest measurements, forest ecology, forest management and silviculture, and forest policy and economics. The minor in Forestry includes courses taught at ESF in the Department of Sustainable Resources Management (SRM); required course prerequisites are in both SRM and Environmental and Forest Biology. It is the responsibility of the student to meet any prerequisites associated with courses in the minor.

Required courses (17 credit hours):

- FOR 322 Natural Resources Measurements and Sampling (3);
- FOR 332 Forest Ecology (4);
- FOR 334 Silviculture (4);
- FOR 370 Forest Mgt. Decision Making & Planning (3) **or**
  FOR 373 Sustainable Harvesting Practices (3);
- FOR 333 Natural Resources Manag. Economics (3) **or**
  FOR 465 Natural Resources Policy (3).

Admission to the minor requires students to have a cumulative grade point average of 2.750 or better after one semester at ESF (or as a transfer student with same standing), and completion of ESF Minor Enrolment Form.

Management Minor

Coordinator: Dr. René Germain

The management minor is available to all ESF undergraduate students who want to develop greater skills and knowledge of business fundamentals. In addition to understanding basic financial and managerial accounting principles, students can further develop focus in their minor through coursework in entrepreneurship, finance, marketing, human resources, and other topics. Admission to the minor requires sophomore status, a cumulative grade point average of 2.70 or better and permission (via the ESF Minor Enrollment Form) of the Coordinator of the minor. Normally, students are allowed to take only one management course at Syracuse University's Whitman School per semester, so careful planning is required.

The management minor requires fifteen (15) credits, six (6) credits from a required course and nine (9) credits of elective courses. It is the responsibility of the student to meet any prerequisites associated with any courses in the minor.

Required Course (6 credits):

- FOR 360 Principles of Management (3)***; and***
- FOR 205 Principles of Accounting (3)

Choose from the following directed electives (9 credits):

- CME 444 Materials Marketing (3)
- EST 450 Sustainable Enterprise (3)
- FOR 485 Business and Managerial Law (3)

(SU courses below)

- EEE 370 Introduction to Entrepreneurship and Emerging Enterprises (3)
- EEE 375 Entrepreneurial and Family Business Management (3)
- EEE 382 Entrepreneurial Marketing (3)
- EEE 442 Emerging Enterprise Law (3)
- EEE 443 Emerging Enterprise Consulting (3)
- FIN 301 Essentials of Finance (3)
- MAR 301 Essentials of Marketing (3)
- SHR 247 Introduction to Strategic Management (3)
- SRE 422 Energy Markets and Regulation (3)*
- SRE 454 Renewable Energy Finance and Analysis (3)*

*Students in the Sustainable Energy Management major may not use SRE 422 and SRE 454 to satisfy the requirements in the Management minor.

Recreation Resource and Protected Area Management Minor

Coordinator: Dr. Danielle Kloster

This minor provides students with an opportunity to combine visitor management with protected area management. Protected area managers need to be able to manage natural resources and a wide variety of users (e.g., campers, hikers, bird watchers, boaters, nature photographers and others who enjoy nature-based experiences), while working in diverse protected area environments owned by public agencies, private landowners, and non-governmental organizations. Completing an independent study or internship as part of this minor will give students hands-on experience in the field of recreation resources and protected area management. Students who complete this minor will better understand the motivations, preferences, and behaviors of recreational users; the environmental, social, and economic impacts resulting from natural resource use; and the balance needed between recreation and sustaining the natural resources within protected areas.

Students from all programs at ESF are eligible for this minor if they have completed a general ecology course, have a cumulative grade point average of 2.750 or better in their major program of study after one semester at ESF (or as a transfer student with same standing) and completion of ESF Minor Enrolment Form. Maximum of three courses are permitted to overlap between required or directed elective courses from a student's major and the minor; other courses taken for the minor cannot overlap with the major.

This interdisciplinary minor requires 15 credits and includes the following courses taught at ESF in the Departments of Sustainable Resources Management and Environmental and Forest Biology:

Required Courses (9 credits)

- EST 370 Introduction to Personal Environmental Interpretation Methods (3)
- FOR 372 Fundamentals of Outdoor Recreation (3)
- FOR 475 Recreation Behavior and Management (3)

Required independent study or internship (3 credits)

- FOR 498 Section 20, **or** FOR 499 Section 20

One of the following management/protected area courses (3 credits)

- EFB 413 Introduction to Conservation Biology (3)
- FOR 404 Ecotourism Abroad (3)

- FOR 476 Ecotourism and Nature Tourism (3)
- FOR 478 Wilderness and Wildlands Management (3)
- FOR 523 Tropical Ecology (3)

Renewable Energy Minor

Coordinator: Dr. Tim Volk

The development of sustainable sources of energy has become a critical national and global issue due to concerns about the quality and quantity of the different potential resources, energy security, and potential impacts of each on the environment and human health. It is essential that our society and energy professionals understand the production and conversion of different forms of energy, their current and future supplies, the markets and policy mechanisms that regulate their supply, and the associated impacts on the environment for each fuel. In the past both traditional and renewable energy sources have been studied one resource at a time and usually from the perspective of a single discipline. This minor provides students an opportunity to examine different sources of traditional and renewable energy simultaneously in the context of our total energy use using a systems perspective. Students are exposed to views from a variety of disciplines which allows them to consider a wide array of issues related to current and future energy supply and use.

The Renewable Energy minor is available to all ESF and Syracuse University undergraduate students (except students who are in the **Sustainable Energy Management** Major and Environmental Science's **Renewable Energy** option) who have a GPA of 2.70 or better by the end of their sophomore year. The minor will require a minimum of 15 credits, 12 of which are required courses. The remaining 3 credits can be selected from a list of suggested courses.

Required courses:

- SRE 325 Energy Systems (3);
- SRE 337 Energy Resources Assessment (3);SRE 479 Life Cycle Assessment (3); and either
- CME 305 Sustainable Energy Systems for Buildings (3) **or** SRE 441 Biomass Energy (3)

Suggested elective course (other courses may be used to meet this requirement with approval of minor coordinator):

- CME 305 Sustainable Energy Systems for Buildings (3) or SRE 441 Biomass Energy (3)
- ECH 202 Principles of Mass and Energy Balance (3);
- ECH 212 Engineering Thermodynamics (3);
- ERE 380 Energy Systems Engineering (3);
- EST 427 Environmental and Energy Auditing (3);
- FCH 360 Physical Chemistry I (3);
- SRE 416 Sustainable Energy Policy (3);
- SRE 422 Energy Markets and Regulation (3);
- SRE 454 Renewable Energy Finance and Analysis (3);
- SRE 481 Advanced Life Cycle Assessment (3)

Sustainable Construction Minor

Coordinator: Dr. Endong Wang

The sustainable construction minor is available to all ESF undergraduates (except students in construction management) and prepares students for careers related to sustainable construction. The objective of the minor is to provide a fundamental understanding of the concepts and methods used to take a design into the field and build a quality sustainable structure in the most efficient and effective manner with minimal environmental impact. Admission to the minor requires sophomore status and a cumulative grade point average of 2.70 or higher.

A cumulative grade point average of 2.000 or higher is required for the sustainable construction management courses in order to obtain the minor.

Fifteen credit hours are required to complete satisfy the minor. Choose 5 courses (15 credits) from the following:

- CME 215 Sustainable Construction (3)
- CME 305 Sustainable Energy Systems for Buildings (3)
- CME 306 Engineering Materials for Sustainable Construction (3)
- CME 343 Construction Estimating (3)
- CME 405 Building Information Modeling (3)
- CME 444 Materials Marketing (3)
- CME 453 Planning and Scheduling (3)
- CME 454 Project Management (3)
- EST 426 Community Planning and Sustainability (3)
- EST 427 Environmental & Energy Auditing (3)
- EST 460 Land Use Law (3)
- EST 550 Environmental Impact Analysis (3)
- RMS 387 Renewable Materials for Sustainable Construction (3)
- RMS 422 Composite Materials for Sustainable Construction (3)

Urban Forestry Minor

Coordinator: Dr. Deborah Hilbert

The Urban Forestry minor will provide students with the opportunity to better understand complex human-dominated ecosystems where trees and people coexist in close proximity. Understanding and attempting to manage this complexity requires a basic knowledge of plant physiology, nutrition, and tending at the individual tree level (Arboriculture). In addition, the urban forester also must understand the changing dynamic of groups of trees and the effects of those trees on numerous ecosystem services and human health and well-being in a city (Urban Forestry). Because human activity is so dominant in the urban ecosystem, it is essential that the urban forester have some understanding of ecological interactions and human motivations for sustaining and maintaining existing trees (Urban Ecology). The courses listed below will provide the professional knowledge required for careers in these and related fields.

The Urban Forestry minor requires fifteen (15) credit hours, nine (9) credits from the required courses and six (6) additional credits from the directed elective courses. It is the responsibility of the student to meet any prerequisites associated with any courses in the minor.

Required courses:

- ESF 300 Introduction to Geospatial Information Technologies (3);
- FOR 480 Urban Forestry (3); and

- FOR 481 Introduction to Arboriculture (3);

Directed Elective Courses (choose at least 2)

- EFB 351 Forest Entomology (3);
- EFB 502 Ecology & Mgt of Invasive Species (3);
- EST 220 Urban Ecology (3);
- EST 353 Behavior Change and the Environment (3);
- EST 415 Environmental Justice (3);
- EST 426 Community Planning and Sustainability (3);
- LSA 451 Comprehensive Land Planning (3);
- LSA 480 Seminar in Urban Design (3);
- SUS 310 Human & Social Dimensions of Sustainability (3);
- SUS 410 Sustainable Urbanism (3)

The interdisciplinary minor includes courses taught at ESF in the Departments of Sustainable Resources Management, Environmental Studies, and Landscape Architecture. Admission to this minor requires students to have (1) completed a general ecology course (e.g., FOR 232 Natural Resources Ecology, FOR 332 Forest Ecology, EFB 320 General Ecology, or EFB 445 Plant Ecology & Global Change), and (2) a cumulative grade point average of 2.70 or greater after one semester at ESF (or as a transfer student with the same GPA), and (3) completion of ESF Minor Enrolment Form.

Water Resources Minor

Coordinator: Dr. John Stella (SRM), Dr. Kim Schulz (EFB), and Dr. Chuck Kroll (ERE)

Water resources is a multi-disciplinary field that integrates the physical, geochemical and biological processes of the water cycle and their application to management of water resources, water policy, and human dimensions of water quality and quantity. The interdisciplinary minor in water resources is designed as a flexible program for undergraduate students to study and integrate principles of physical hydrology, geochemistry, aquatic and terrestrial ecology, natural resources management, and environmental policy. The minor can include courses in the Departments of Sustainable Resources Management, Environmental Resources and Forest Engineering, Environmental and Forest Biology, Chemistry, and Environmental Studies, as well as relevant courses at Syracuse University. The minor comprises 15 credit hours total that must be distributed across three departments at minimum (i.e., course numbers with three separate prefixes), with the intent of covering a breadth of disciplines. These courses must include at least one foundation course, either FOR 442 Watershed Ecology and Management, or EFB 424 Limnology: Study of Inland Waters, or both. Courses taken for the minor can also count toward students' majors or other academic requirements, subject to those other program guidelines. Students are responsible for meeting the prerequisite requirements for individual courses, as applicable. Admission to this minor requires that a student from any ESF program has a cumulative grade point average of 2.70 or better after one semester at ESF (or as a transfer student with same GPA).

Required foundation course (3 credits); students must take at least one of these:

- FOR 442 Watershed Ecology and Management (3)
- EFB 424 Limnology: Study of Inland Waters (3)

Approved elective courses (12 credits) subject to availability and pre-requisite requirements. Other relevant courses may be petitioned.

Fall courses:

- EFB 400 Toxic Health Hazards (3)
- EFB 438 Ecology and Management of Waterfowl (3)
- EFB 487 Fisheries Science and Management (3)
- EFB 488 Fisheries Science Practicum (1)
- EFB 525 Limnology Practicum (2)
- EFB 554 Aquatic Entomology (3)
- EFB 681 Aquatic Ecosystem Restoration and Enhancement (2)
- ERE 412 River Form and Process (3)
- ERE 440 Water and Wastewater Treatment (3)
- ERE 465 Environmental Systems Engineering (3)
- ERE 527 Stormwater Management (3)
- ERE 533 Ecological Modeling (3)
- ERE 575 Ecological Engineering for Water Quality (3)
- FCH 515 Methods in Environmental Chemical Analysis (3)
- FCH 520 Marine Biogeochemistry (3) (even years only)

Spring courses:

- EFB 423 Marine Ecology (4) (even years only)
- EFB 486 Ichthyology (3)
- EFB 542 Freshwater Wetland Ecosystems (3)
- EFB 692 Ecology and Management of Waterfowl (3)
- ERE 445 Hydrologic Modeling (3)
- ERE 480 Fate & Transport of Contaminants (3)
- ERE 520 Wastewater Resource Recovery (3)
- ERE 570 Hydrology in a Changing Climate (3)
- EST 470 Water in the Middle East: Issues and Opportunities (3)
- FCH 510 Environmental Chemistry I (3)
- FCH 525 Oceanography (3)
- FOR 338 Meteorology (3)
- FOR 340 Watershed Hydrology (3)

Summer courses:

- EFB338 Ecology of Adirondack Fishes

Approved Syracuse University courses:

- CIE 457 Biogeochemistry (3; Fall)
- CEE 571 Water Quality Modeling (3; Spring)
- EAR 419 Environmental Aqueous Geochemistry (3; Fall)
- EAR 401 Hydrogeology (3; Fall)
- GEO 422 Water: Environment, Society and Politics

Combining Ranger School A.A.S. Diploma with an SRM B.S. Degree

SUNY ESF Ranger School graduates who go on to pursue a bachelor's degree have a solid field education as well as a professional orientation. Students wishing to transfer from the Ranger School into either the FRM, or the NRM, or the FES programs are usually admitted as juniors. They will be given credit for the Summer Program and several other courses depending on the program pursued at the Range School and the program chosen at Syracuse. Each student must complete all physical sciences, social sciences and humanities requirements while at ESF in Syracuse. The number of courses taken depends on the student's prior preparations. All other requirements in the undergraduate degree programs must be met. The table on the next page illustrates how Ranger School credits can be brought into the B.S. degree.

For More Information Contact:
Dr. Eddie Bevilacqua
Undergraduate Education Committee Chair
Department of Sustainable Resources Management
State University of New York, College of Environmental Science and Forestry
301 Bray Hall, One Forestry Drive
Syracuse, NY 13210; TEL: (315) 470-6697; Email: ebevilacqua@esf.edu

ENRC Degree — BS degree

Semester	Course	Title	Cr	FES		FRM		NRM		SEM	
Fall	FTC 200	Dendrology	3	**EFB336**	**(3)**	**EFB336**	**(3)**	**LSA233**	**(3)**	Free	(3)
Fall	FTC 202	Introduction to Surveying	3	Free	(3)	Free	(3)	Free	(3)	Free	(3)
Fall	FTC 204	Intro to Nat Res Measure	4	**FOR304**	**(4)**	**FOR304**	**(4)**	**FOR304**	**(4)**	Free	(4)
Fall	FTC 206	Forest Ecology	4	**FOR332**	**(4)**	**FOR332**	**(4)**	**FOR232**	**(3)**	Free	(4)
Fall	FTC 207	Communications and Safety	3	Free	(3)	Free	(3)	Free	(3)	Free	(3)
Fall	FTC 208	Remote Sensing & GIS Tech	3	**ESF300**	**(2)**	**ESF300**	**(2)**	**ESF300**	**(2)**	**ESF300**	**(2)**
Fall	FTC 210	Wildlife Techniques 1	1	Free	(1)	Free	(1)	Free	(1)	Free	(1)
Fall	FTC 212	Adirondack Cultural Ecology	1					Free	(1)		
Spring	FTC 211	Silviculture	3	**FOR334**	**(3)**	**FOR334**	**(3)**	**Veg. Elec**	**(3)**	Free	(3)
Spring	FTC 219	Intro to For Recreation	1	**FOR334**	**(1)**	**FOR334**	**(1)**	Free	(1)		
Spring	FTC 221	Nat Resources Management	3	**Mgmt. Elec**	**(3)**	Free	(3)	Free	(3)		
Spring	FTC 234	Wildlife Conservation	3	**Mgmt. Elec**	**(3)**	**Wildlife Elec**	**(3)**	**Wildlife Elec**	**(3)**		
Spring	FTC 236	Env Interpret Princ & Tech	3	Free	(3)	**Human Elec**	**(3)**	**FOR372**	**(3)**		
Spring	FTC 237	Intro to Water & Soil Res	4	Free	(4)	Free	(4)	Free	(4)		
Spring	FTC 238	Forest Insects and Disease	3	**Biol. Elec**	**(3)**	**Prot. Elec**	**(3)**	Free	(3)		
Spring	FTC 239	GIS Practicum	1	**ESF300**	**(1)**	**ESF300**	**(1)**	**ESF300**	**(1)**	**ESF300**	**(1)**
Spring	FTC 240	Wildlife Techniques 2	1			Free	(1)	Free	(1)		
		TOTAL TRANSFER CREDITS		**Required** Free	**27** 14	**Required** Free	**27** 15	**Required** Free	**22** 21	**Required** Free	**3** 21

FT Degree — BS degree

Semester	Course	Title	Cr	FES		FRM		NRM		SEM	
Fall	FTC 200	Dendrology	3	**EFB336**	**(3)**	**EFB336**	**(3)**	**LSA233**	**(3)**	Free	(3)
Fall	FTC 202	Introduction to Surveying	3	Free	(3)	Free	(3)	Free	(3)	Free	(3)
Fall	FTC 204	Intro to Nat Res Measure	4	**FOR304**	**(4)**	**FOR304**	**(4)**	**FOR304**	**(4)**	Free	(4)
Fall	FTC 206	Forest Ecology	4	**FOR332**	**(4)**	**FOR332**	**(4)**	**FOR232**	**(3)**	Free	(4)
Fall	FTC 207	Communications and Safety	3	Free	(3)	Free	(3)	Free	(3)	Free	(3)
Fall	FTC 208	Remote Sensing & GIS Tech	3	**ESF300**	**(2)**	**ESF300**	**(2)**	**ESF300**	**(2)**	**ESF300**	**(2)**
Fall	FTC 209	Timber Harvesting	2	**FOR334**	**(1)**	**FOR334**	**(1)**	Free	(2)	Free	(2)
Spring	FTC 211	Silviculture	3	**FOR334**	**(3)**	**FOR334**	**(3)**	**Veg. Elec**	**(3)**		
Spring	FTC 213	Forest Inventory Practicum	2	Free	(2)	Free	(2)	Free	(2)		
Spring	FTC 214	Leadership & Org Perform	2	Free	(2)	Free	(2)	Free	(2)	Free	(2)
Spring	FTC 217	Wildland Firefighting & Ecol	2	Free	(2)			Free	(2)		
Spring	FTC 219	Intro to For Recreation	1					Free	(1)		
Spring	FTC 221	Nat Resources Management	3	**Mgmt. Elec**	**(3)**	Free	(3)	Free	(3)		
Spring	FTC 225	Timber Trans & Utilization	2	Free	(2)	Free	(2)				
Spring	FTC 234	Wildlife Conservation	3	**Mgmt. Elec**	**(3)**	**Wildlife Elec**	**(3)**	**Wildlife Elec**	**(3)**		
Spring	FTC 238	Forest Insects and Disease	3	**Biol. Elec**	**(3)**	**Prot. Elec**	**(3)**	Free	(3)		
Spring	FTC 239	GIS Practicum	1	**ESF300**	**(1)**	**ESF300**	**(1)**	**ESF300**	**(1)**	**ESF300**	**(1)**
		TOTAL TRANSFER CREDITS		**Required** Free	**27** 14	**Required** Free	**27** 15	**Required** Free	**19** 21	**Required** Free	**3** 21

LST Degree — BS degree

Semester	Course	Title	Cr	FES		FRM		NRM		SEM	
Fall	FTC 200	Dendrology	3	**EFB336**	**(3)**	**EFB336**	**(3)**	**LSA233**	**(3)**	Free	(3)
Fall	FTC 202	Introduction to Surveying	3	Free	(3)	Free	(3)	Free	(3)	Free	(3)
Fall	FTC 204	Intro to Nat Res Measure	4	**FOR304**	**(4)**	**FOR304**	**(4)**	**FOR304**	**(4)**	Free	(4)
Fall	FTC 205	CADD 1	2	Free	(2)	Free	(2)	Free	(2)	Free	(2)
Fall	FTC 206	Forest Ecology	4	**FOR332**	**(4)**	**FOR332**	**(4)**	**FOR232**	**(3)**	Free	(4)
Fall	FTC 207	Communications and Safety	3	Free	(3)	Free	(3)	Free	(3)	Free	(3)
Fall	FTC 208	Remote Sensing & GIS Tech	3	**ESF300**	**(2)**	**ESF300**	**(2)**	**ESF300**	**(2)**	**ESF300**	**(2)**
Spring	FTC 214	Leadership & Org Perform	2	Free	(2)	Free	(2)	Free	(2)	Free	(2)
Spring	FTC 225	Timber Trans & Utilization	2	Free	(2)	Free	(2)	Free	(2)		
Spring	FTC 239	GIS Practicum	1	**ESF300**	**(1)**	**ESF300**	**(1)**	**ESF300**	**(1)**	**ESF300**	**(1)**
Spring	FTC 251	Adv Surv Measure & Comp	4					Free	(4)		
Spring	FTC 253	Survey Law	3			Free	(3)	Free	(3)		
Spring	FTC 255	Boundary Surveying	3								
Spring	FTC 256	Subdivision Surveys	2	Free	(2)			Free	(2)		
Spring	FTC 257	Construction & Topo Surveys	3								
Spring	FTC 259	CADD II	2								
		TOTAL TRANSFER CREDITS		**Required** Free	**14** 14	**Required** Free	**14** 15	**Required** Free	**13** 21	**Required** Free	**3** 21

Appendices

Appendix A: Miscellany

Petitions

The petition process exists to provide needed flexibility in the curriculum. Students often encounter situations that require minor adjustments from the academic requirements. As such, petitions at ESF generally handle two basic kinds of actions: (1) variances to degree requirements and (2) transfer of credit from another institution after the admissions process is completed. Petition forms are available from the Registrar's Office. Before completing a petition form, meet with your advisor. Many simple problems can be solved with a memo from the advisor to the Undergraduate Education Committee. Complete the petition forms legibly and clearly explain what you want to have happen. There are four parts of the petition form that must be completed:

***Informational heading*.** Be sure to provide all contact information requested and *sign* at the appropriate place. A petition that is missing this information cannot be processed.

***Request*.** This should be clear and concise. What is the variance being requested? What specific course is being transferred? ... from which institution?

- Requests to substitute courses require the consent of the instructors.
- Often, the best way to fill out a petition is to write a simple memorandum and attach it to the petition form.

***Justification*.** This should be clear, logical, and detailed. You want to include a reasoned justification for the request. Explain the rationale for your request. Clarity is important, but more detail is better than less. It is important to remember that those acting on the petition will only see what you have written as a justification for your request. If the request is a variance, what are the circumstances? If a course transfer, what requirement is it meeting (how should it be slotted on the Plan Sheet)? Depending upon what is being petitioned, you will want to include additional information here:

- *Variances*. The student to obtain any additional items that are helpful - letters of support or explanation from relatives, doctors, instructors, etc. - and to attach them to the petition before the advisor signs the petition.
- *Course transfers*. The student must attach a description of the course, obtained from a catalog, or the WWW address. Exceptions include any course for which a transfer agreement has already been established (see below: such a listing should be noted on the petition).

***Signatures*.** Undergraduate petitions must be signed by the advisor, then brought to the Undergraduate Curriculum Coordinator (Dr. Eddie Bevilacqua) who signs and forwards it to the Department Chair (Dr. David Newman) and then to the Dean of Instruction and Graduate Study for final approval. The Dean may choose to consult with the Committee on Instruction (Academic Standards Subcommittee) before acting. If approved, the petition is forwarded to the Registrar, who makes the appropriate change in the record.

More on Transferring Courses

- *Transfer Articulation Guidelines (TAG).* The Admissions Office maintains a listing of courses at articulating institutions that are predetermined to be acceptable substitutes for requirements in the various ESF curricula. The list (TAG-list) is available from the Admissions homepage, under *Cooperative Transfer Colleges*.
- *Grades do not transfer.* Credit can be transferred - if the grade is C or better - but the grade cannot, so it cannot affect the GPA.
- *Making up lower division deficiencies.* These should be satisfied as soon as possible, since they may be prerequisites for upper division classes or conflict with desired electives. Students should try to make up these classes (commonly organic chemistry, physics, and calculus) during the summer, at a local community college, if possible.
- *Petition courses before taking them. S*tudents should submit petitions *before* taking classes elsewhere. This way they know in advance if the course will transfer and meet the intended purpose.
- *Required upper division subjects* may be satisfied by acceptable lower division courses taken at another institution. Usually the transfer is handled at admission, but sometimes a course is named in a way that obscures its relationship to the SRM curriculum, and a later petition is needed. Such courses are placed in the upper division of the Plan Sheet, in the appropriate slot.

Late Adds, Late Drops

After the add date, about 10 days into the semester, students must petition to add a class. By that time considerable material usually has been presented, and the instructor has the right to refuse admission; if the instructor approves, the petition is virtually always successful. Common late adds include research projects (FOR 498) or internships (FOR 499) that are developed later in the semester.

In contrast, no petition is harder to get approved than one to drop a course after the drop deadline. Late drop petitions go automatically to the Academic Standards subcommittee, who look for some significant circumstance that occurred after the drop date (which is a couple months into the semester). Before filing such a petition, be sure you have read about the process on the Registrar's FAQ page (important enough to reproduce below).

Guideline Criteria for Successful Late Drops. A petition must exhibit a clear and significant mitigating or extenuating circumstance outside of "normal" and predictable distractions from college coursework, etc. Examples might include illness, injury, death in the immediate family, financial emergency, and others.

> The mitigating or extenuating circumstance must occur after or extend beyond the college designated "drop deadline".
>
> The mitigating or extenuating circumstance must be clearly the result of actions outside the control of the student, i.e. not self-inflicted hardship. Similarly, if the student is innocently a victim of poor advising or administrative mishandling, justifiable grounds for the petition may be found
>
> The clear message contained in these criteria should be "late drops are only justifiable under exceptional conditions." The drop deadline placed by the college (ESF, not SU - it differs in intent and date) is exactly that - normal drops are not accepted after that

deadline. You may find it useful to see what is not appropriate as well as knowing what is.

The following are "typical" examples of petition justifications which would **not** be accepted:

- *student missed the "drop deadline" by accident*
- *student coursework load is too heavy*
- *student is failing the course*
- *student has missed too many classes or has fallen too far behind*
- *student has changed major and the course is not required in the new major*
- *student intends to retake the course later or at another college*
- *student gambles unsuccessfully in taking an exam or attempting a project on or after the drop deadline*

Two other points are of noteworthy consideration: first, a late change to "audit" a course is considered equivalent to dropping, and all the above criteria apply; second, a petition to late drop is not approved until final review by the Dean of Instruction and the Subcommittee on Academic Standards. Students petitioning for late drops should continue to attend class until they receive final notification of the subcommittee's action. Even if your advisor and instructor approve the petition, it is not a done deal.

Incompletes

A grade of “I” may be assigned only when the student is passing and has nearly completed the course, if the work is not completed because of circumstances beyond the student's control. The incomplete must be resolved prior to the end of the semester following the one in which the grade was given. It may be extended by one semester by petition with the consent of the instructor. If the incomplete is not resolved by the appropriate deadline it will be changed to a grade of “F”.

Taking a Course at another College after Matriculation at ESF

Following matriculation at ESF, students who wish to take courses for credit at other colleges or universities (other than ESF or Syracuse University) must submit a petition prior to taking the course. If the petition is approved, the student must request the registrar at the other college send a transcript directly to the ESF Registrar. To receive credit, a grade of "C" or higher must be earned. Before taking the course the student should:

- Obtain a course description or syllabus and submit it with the petition.
- Have the instructor of the ESF course review the proposed substitution and write a brief memo evaluating its applicability.
- Obtain a signature from the faculty advisor on the petition.

Taking Graduate Courses

ESF courses numbered 500 and above are graduate courses. Undergraduate enrollment in these is governed as follows:

700-900 level classes - undergraduates are *absolutely excluded*

600-level classes - to enroll, undergraduates must have: 1) senior standing; 2) a GPA of 3.0 or better; and 3) an approved petition (at least pending at time of registration) showing instructor consent (this consent also needs to be indicated on the registration form).

500-level classes - according to written ESF academic policy, instructor permission is required. This may be ignored by faculty members and the Registrar, but it does provide the instructor with some control over enrollment.

Credit-Hour Loads

For four-year students with no Advanced Standing credit, an average of 15 credit-hours per semester is an appropriate pace. The amount of AS credit awarded to transfer students often affects the loads they attempt to carry; they may have lower division deficiencies but still want to complete a BS degree in four years. A common problem is to over-reach the first semester, under the false assumption that ESF classes are no more difficult than what they have had in the past. Academic difficulties may result.

- Undergraduate students are considered full-time with a load of 12 credit-hours. This status is important for most forms of financial aid.
- 14-16 credit hours are typical semester loads; only exceptional students should take 18 or more.
- Students in academic difficulty, or those enrolled through the Educational Opportunity Program (EOP), should try to minimize their credit-hour loads.

Academic Warning, Suspension and Dismissal

While some subjectivity is involved, the Dean of Instruction and Graduate Studies will usually place a student on academic probation if their cumulative grade point average (GPA) drops below 2.0, which is the minimum required for graduation. If satisfactory progress is not made after one semester on probation, the student is suspended from ESF. Advisors are kept appraised by the Dean by means of copies of communication with probationary students.

- *Satisfactory progress* is determined in comparison with a target GPA, the semester GPA a student would need to maintain to finish with a 2.0 cumulative GPA.
- Students on probation are restricted to a maximum load of 15 credit hours and should minimize extra-curricular activities. *Reminder*: while courses may be taken over the summer and transferred to lighten loads at ESF, the grades do not count in the GPA.
- Students may appeal an academic dismissal, and the advisor may volunteer (or be solicited for) comment on the probability of success, should the appeal be granted. Suspended students may reapply after one semester. A second suspension leads to dismissal, which is permanent.

Privacy Issues

Most information about you is private. Examples of private information include:

- Grades, or other information on plan sheets and transcripts **(*private even from parents!*)**
- Special enrollment (EOP, for example) or minority standing
- Disabilities
- Probationary standing
- Non-public personal information, including social security numbers.

Changing between SRM undergraduate degree programs

Undergraduate students in the Department of Sustainable Resources Management are admitted to either the Construction Management (CM), Forest Resources Management (FRM), Natural Resources Management (NRM), Forest Ecosystem Science (FES) degree program, or Sustainable Energy Management (SEM) degree program. Consequently, to change from one to another after admission is considered a change of degree program and you must follow the established College policy. Students considering making this type of change should go to the **Office of Career and Counseling Services** and discuss their request.

Appendix B: Classroom Etiquette Expectations

Arrive to class on time. Entering the classroom after the professor's lecture has started is distracting both to the professor as well as to other students. Students who arrive late should consult other students about any announcements made at the beginning of class. Quizzes missed by late arrival may not be “made up”, except at the permission of the professor.

Be attentive in class. If you are going to make the effort to arrive on time and be in class, you should also make the effort to stay actively engaged in class. Refrain from chatting, snickering or side discussions during class. It is disrespectful to the professor and to your classmates who are trying to pay attention.

Avoid walking out once class has started. Students should not normally leave or re-enter the classroom during the class period unless it is urgent. For instance, leaving to get a drink, to fill your water bottle or to use your phone, except in genuine emergencies, is not urgent. This behavior is distracting, and gives the impression that you do not respect the professor and the educational process taking place. If you expect you will need to leave class for any reason, notify the professor before class begins.

Turn off the smartphone and put it away. Texting, social media, and engaging in all other forms of smartphone use is disrespectful and distracting to the professor and fellow students. If you need to have your phone on for an emergency, let the professor know in advance and set your phone to vibrate.

If you’re using your laptop to take notes, do not use it to surf the internet. First, by not paying attention to the professor, you’re showing disrespect. Second, surfing the web during class is distracting to your classmates around you.

Before recording a professor’s lecture or taking pictures of presentation slides, ask for permission. This is for two reasons. First, a classroom lecture could be considered a private conversation. Thus, everyone who would be recorded would need to consent — that includes your professor and your classmates. Second, classroom lectures are considered intellectual property of the professor. By recording or taking pictures without the professor’s consent, you are in effect violating his or her copyright on the lecture.

Show patience toward the end of class. The professor has the right to finish his or her thought at the end of the class period. Please do not start putting books away, closing up notebooks, and zipping up book bags 5 minutes before the official end of class.

Appendix C: Internships

Internship Guidelines for Students

These are general guidelines to be followed by any student undertaking an internship for academic credit. These general guidelines can be supplemented or amended by the particular faculty advisor and student depending on special circumstances.

1. All internships for which academic credit is desired must be set up prior to the start of the internship.
2. Students must complete, in consultation with the faculty advisor and field internship supervisor, a Internship Registration and Agreement Form (see 'Student Forms' on Registrar's webpage (https://www.esf.edu/registrar/).
3. Students will maintain periodic contact with their faculty advisor during the internship. This can either be by phone, email, or regular mail. Contact every two weeks is recommended.
4. Students will keep a journal in which they will record any and all activities in which they participated, meetings attended, and observations about the company/agency for which they are working.
5. Students will keep a record of any projects for which they have particular responsibility for completion. This record should include copies of written reports, display material, data analyses, etc.
6. At the completion of the internship, the student will
    a. prepare a written report that will address the following:
        i. How did the internship relate to the course work you have had?
        ii. What different courses might you have taken or might now take after completing this internship?
        iii. What were the particular things you learned during this internship?
    b. Have their field supervisor complete an evaluation form (see next page),
    c. have a one to two-hour debriefing session which shall include the student and faculty advisor, and, if feasible, the field supervisor or another faculty member. During this debriefing, the student will be asked questions such as those addressed in the written report.
7. The grade for the internship will be determined by the faculty advisor and field supervisor based on student's performance on the job, depth of thinking, observations contained in journal, final written report, and any written or oral presentations.

Internship Evaluation

Supervisor: _____

Student: _____

Please rate the student intern on each of the characteristics listed below by circling the appropriate number: (1) Outstanding, (2) Above average, (3) Average, (4) Below Average, (5) Unsatisfactory and (6) Unable to Judge.

1. Ability to learn:	1	2	3	4	5	6
2. Interest:	1	2	3	4	5	6
3. Preparation of assignments:	1	2	3	4	5	6
4. Initiative:	1	2	3	4	5	6
5. Quality of Work:	1	2	3	4	5	6
6. Reaction to criticism:	1	2	3	4	5	6
7. Cooperation:	1	2	3	4	5	6
8. Dependability:	1	2	3	4	5	6
9. Judgment:	1	2	3	4	5	6
10. Communication:	1	2	3	4	5	6
11. Creativity	1	2	3	4	5	6
12. Overall Evaluation:	1	2	3	4	5	6

Where your expectations of the intern [ ] met, [ ] exceeded, or [ ] not met?

In which ways? Please comment on the student's overall performance, including any strengths or weaknesses you feel are important.

Signature: _____ Date:_____

Appendix D: Faculty Directory

Colin Beier, Professor and Forest Ecosystem Science Program Coordinator, 311 Bray Hall, 315-470-6578, email: cbeier@esf.edu. Forest ecology and management, climate change, ecological economics, public policy.

Eddie Bevilacqua, Professor and Undergraduate Education Chair: 301 Bray Hall, 315-470-6697, email: ebevilacqua@esf.edu. Forest Measurements, Applied Statistics, and Geospatial Technologies.

Russell D. Briggs, Distinguished Teaching Professor: 358 Illick Hall, 315-470-6989, email: rdbriggs@esf.edu. Forest Soils and Silviculture.

Tristen Brown, Professor: 302 Bray Hall, 315-565-3003, email: trbro100@esf.edu. Renewable Energy Systems.

Mariela Cavo, Assistant Professor: 310B Bray Hall, 315-470-6561, email: mcavo@esf.edu. Environmental Economics, Economics, Sustainable Development.

Paul Crovella. Associate Professor: 219 Baker Lab, 315-470-6839, email: plcrovella@esf.edu. Sustainable Construction Management

John Drake. Associate Professor, 308 Bray Hall, 315-470-6574, email: jedrake@esf.edu. Physiologist and Applied Ecologist.

Jenny Frank. Assistant Professor, 413A Bray Hall, 315,470-3037. email: jrfan01@esf.edu, Energy Economics

René H. Germain, Professor and Forest Resources Management Program Coordinator: 316 Bray Hall, 315-470-6698, email: rhgermai@esf.edu. Forest Operations and Management, Sustainable Forestry Systems.

Cole Gross, Assistant Professor, 312 Bray Hall, 315-470-4788, email: cdgross@esf.edu. Agroforestry, Carbon Cycling, Soil Carbon, Soil Health, Soil-Root Interactions, Sustainable Ecosystem Management.

Deborah Hilbert, Assistant Professor, 317 Bray Hall, 315-470-6577, email: drhilber@esf.edu, Urban Forestry and Arboriculture.

Mohammad Uzzal Hossain, Assistant Professor, 222 Baker Lab, 315-470-6835, email: mhossa18@esf.edu. Sustainable Built Environment, Low Carbon Construction Materials Design, Circular Economy, Building Energy Simulation and Modeling.

Danielle Kloster, Assistant Professor, 303A Bray Hall, 315-470-6594. email: dpkloste@esf.edu. Natural Resources Science, Technology and Communications.

Robert W. Malmsheimer, Distinguished Teaching Professor: 305 Bray Hall, 315-470-6909, email: rwmalmsh@esf.edu. Forest and Natural Resource Law and Policy.

Shayan Mirzabeigi, Assistant Professor, 221 Baker Lab, 315-470-3038. email: smirzabeigi@esf.edu. Sustainable and Resilient Built Environment.

David Newman, Professor and Graduate Education Coordinator, 309 Bray Hall, 315-470-6534, email: dnewman@esf.edu. Forest resource economics and policy, resource and environmental economics, tax policy

Christopher A. Nowak, ***Department Chair*** and Professor: 320 Bray Hall, 315-470-6575, email: canowak@esf.edu. Vegetation Management, Silviculture, Forest Ecology, Sustainable Forest Management.

Richard Ross Shaker, Assistant Professor: 323 Bray Hall, 315-470-6500, email: rrshaker@esf.edu. Environmental & Sustainability Indicators; Sustainable Development, Global Change, Landscape Ecology, Applied Statistics, GIS/Spatial Analysis, Ecological Restoration, Environmental Planning & Management

William Smith, Professor: 218 Baker Lab, 315-470-6832, email: wbsmith@esf.edu. Wood Drying and Moisture Relations, Wood Preservation and Protection, Manufacturing and Processing, Wood Properties and Utilization, Marketing.

Stephen V. Stehman, Distinguished Teaching Professor: 322 Bray Hall, 315-470-6692, email: svstehma@syr.edu. Statistics, Sampling.

Obste Therasme, Associate Professor and Sustainable Energy Management Program Coordinator: 312 Bray Hall, 315-470-4934, email: otherasm@esf.edu. Life Cycle Assessment, Sustainable Energy System Analysis

Andy Vander Yacht, Assistant Professor: 317 Bray Hall, 315-470-6568, email: avandery@esf.edu. Fire Science, Silviculture, Forest Ecosystem Management

Timothy A. Volk, Professor: 346 Illick Hall, 315-470-6774, email: tavolk@esf.edu. Short Rotation Intensive Culture Forestry, International Forestry.

John E. Wagner, Professor and Natural Resources Management Program Coordinator: 304 Bray Hall, 315-470-6971, email: jewagner@esf.edu. Forest Resources Economics.

Endong Wang, Associate Professor and Construction Management Program Coordinator: 223 Baker Lab, 315-470-6747, email: ewang01@esf.edu. Construction Management, Engineering for Sustainability, Resilience and Livability; Informatics

Ruth Yanai, Distinguished Professor: 210 Marshall Hall, 315-470-6955, email: rdyanai@syr.edu. Northern Hardwood Ecosystems, Quantifying Uncertainty in Ecosystem Studies, REDD+ Carbon Accounting for Climate Mitigation.

Nathan L. Young, Assistant Professor: 414A Bray Hall, 315-470-6675, email: nyoung07@esf.edu. Hydrogeology and hydrology

Appendix E: Who to Call

Below is a short list of offices/people that help get answers to your questions.

Sustainable Resources Management Undergraduate Education Committee Chair
(Dr. Eddie Bevilacqua, 315-470-6697) for questions about:
- SRM academic policies (general or specific)
- advisor assignments, temporary substitutions
- complaints and (hopefully) recommendations

Sustainable Resources Management Undergraduate Program Coordinators

- **Construction Management**: Dr. Endong Wang (x6747)
- **Forest Ecosystem Science** Dr. Colin Beier (x6578)
- **Forest Resources Management**: Dr. René Germain (x6698)
- **Natural Resources Management**: Dr. John Wagner (x6971)
- **Sustainable Energy Management**: Dr. Obste Therasme (x6568)
  - advisor assignments
  - advising and registration schedules
  - petitions

Academic Advisor
- advising and clarification of course slotting on Degree Works Audit

Admissions Office (Susan Sanford, Director, x 6600) for questions about:
- explanation and (early) modification of advanced standing credit
- advice on course equivalencies relating to petitions

Registrar's Office (Leslie A. Rutkowski, Registrar, x 6663, x 6655) for questions about:
- access to online advising services mentioned above
- implementation of academic policies and procedures

Office of Academic Administration (Zora Thomova, Associate Provost, x 6980) for questions about:
- interpretation of academic policies and procedures
- student probation and dismissal
- applicability of courses to General Education requirements
- special programs (minors, honors, science education)

Office of Financial Aid & EOP (Mark J. Hill, Director, x 6673) for questions about:
- effects of credit load and academic standing on financial aid
- special considerations for students in Educational Opportunity Program

Office of Student Diversity and Inclusion (Danushi Fernando, Chief Diversity Officer, 315-565-3016) for questions about:- special concerns of underrepresented students

Office of Student Affairs (Anne E. Lombard, Executive Student Affairs Officer and Dean of Students, x 6660) for questions about:
- career exploration, testing, and related services
- personal advising/counseling, tutoring, disabilities
- program changes, withdrawal, and readmission