

# BACHELOR OF SCIENCE IN SUSTAINABLE ENERGY MANAGEMENT

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 abroad, and nearly all SEM students have paid internships between their junior and senior years.

## *Lower Division Required Courses*

APM 103

Applied Algebra & Trigonometry

3

OR		
APM 104	College Algebra & PreCalculus	3
OR		
APM 105	Survey Of Calc & Appl I	4
APM 391	Intro/Probability&Stats	3
EFB 100	Survey of Biology	4
ESF 200	Information Literacy	1
EWP 190	Writing And The Envrnmnt	3
EWP 220	Public Presentation Skills	3
EWP 290	Research Writing & Humanities	3
FCH 110	Survey of Chemical Principles	3
AND		
FCH 111	Survey/Chemical Principles Lab	1
OR		
FCH 150	General Chemistry I	3
AND		
FCH 151	General Chemistry I Lab	1
FOR 132	Orientation Seminar: SRM	1
FOR 110	Environmental Physics	3
FOR 207	Introduction To Economics	3
FOR 360	Principles of Mgmt/Envrn Prof	3
SRE 150	Intro to Sust Energy Managemnt	1

## Lower Division Elective Courses

Course	Codes*	Credits
General Education Courses - Select one from the following four subject areas: US History & Civic Engagement, The Arts, World History and Global Awareness, World Languages	G	3
General Education Course in Diversity, Equity, Inclusion and Social Justice	G	3

*Upper Division Required Courses*

CME 305	Sustainable Energy Sys/Bldgs	3
ESF 300	Intro/Geospatial Info Tech	3
EWP 407	Writing/Env & Sci Professionls	3
FOR 205	Principles of Accounting	3
FOR 333	Natural Resrc Managerial Econ	3
FOR 485	Business and Managerial Law	3
SRE 325	Energy Systems	3
SRE 337	Energy Resource Assessment	3
SRE 416	Sustainable Energy Policy	3
SRE 422	Energy Markets and Regulation	3
SRE 441	Biomass Energy	3
SRE 450	Sustainbl Energy Capstone Plng	1
SRE 454	Sustainable Energy Fin&Analysis	3
SRE 479	Life Cycle Assessment	3
SRE 491	Sustainable Energy Mgt Capstne	3

**Upper Division Elective Courses**

Course	Codes*	Credits
Students should consult with their advisor and the Sustainable Resources Management Handbook for recommended courses		15
Free Electives		21

**Total Minimum Credits For Degree: 120**

