

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

OR
APM 104
OR
APM 105

APM 210

EFB 100

ESF 200

EWP 190

EWP 220

EWP 290

FCH 110
AND
FCH 111
OR
FCH 150
AND
FCH 151

FOR 132

FOR 110

FOR 207

FOR 360

SRE 150

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

ESF 300

EWP 407

FOR 205

FOR 333

FOR 485

SRE 325

SRE 337

SRE 416

SRE 422

SRE 441

SRE 450

SRE 454

SRE 479

SRE 491

Upper Division Elective Courses

Course	Codes*	Credits
Directed Elective (see list below)		15
Free Electives		21

Directed Elective

- CME 215 Sustainable Construction
- CME 306 Engineering Materials for Sustainable Construction
- CME 444 Materials Marketing
- EEE 370 Intro. to Entrepreneurship and Emerging Enterprises
- EFB 103/104 Biology II Lecture and Lab

- EFB 303 Introductory Environmental Microbiology
- EFB 320 General Ecology
- EST 203 Introduction to Sociology
- EST 220 Urban Ecology
- EST 231 Environmental Geology
- EST 366 Environmental Ethics
- EST 390 Social Processes and the Environment
- EST 395 Public Communication of Science and Technology
- EST 426 Community Planning and Sustainability
- EST 427 Environmental and Energy Auditing
- EST 550 Environmental Impact Analysis
- FIN 301 Essentials of Finance
- FOR 232 Natural Resources Ecology
- FOR 338 Meteorology
- FOR 465 Natural Resources Policy
- FOR 487 Environmental Law and Policy
- FOR 489 Natural Resources Law and Policy
- LSA 460 Land Use Law
- MAR 301 Essentials of Marketing
- PSC 302 Environmental Politics and Policy
- PSE 456 Management in Industry
- PSY 205 Foundations of Human Behavior
- RMS 387 Renewable Materials for Sustainable Construction
- SRE 419 Policy Assessment

Total Minimum Credits for Degree: 120

