Energy Management and Design

Department of Environmental Studies and Planning
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Careers in Energy Management and Design

The Energy Management and Design Program (EMD) provides excellent preparation for professional careers in the energy field or for graduate studies. Graduates find employment in a wide variety of agencies, firms, and organizations including private consulting firms, solar and renewable energy businesses, private corporations, non-profit organizations, government agencies, and utilities.

Our graduates benefit from several factors when seeking employment. California is a worldwide leader in energy efficiency and renewable energy applications. Aggressive energy building codes, an active renewable energy industry, and foresighted government agencies all contribute to an excellent employment market. Our past EMD graduates have had great success in the field and look to our graduates as a source of potential employees. The EMD program has thus developed a strong reputation in the professional community, giving our graduates an edge when competing for jobs.

An Education in Energy Management and Design

The Energy Management and Design Program is founded in the belief that energy professionals need to be knowledgeable about the assets, liabilities and appropriate application of a wide variety of technologies and management techniques for energy efficiency and renewable energy utilization. An innovative synthesis of architecture, engineering, computer science and energy policy, the EMD Program has established itself as a leader in energy education.

Students in the EMD Program are taught specific management and design skills including heat load analysis, energy efficient building design, energy efficient lighting, solar design (active, passive, and photovoltaics), computer-aided energy analysis, and economics payback analysis. In addition, students have the opportunity to expand their knowledge of business management, economics, environmental science, physics, and computer science through courses available at SSU.

The EMD Program is designed to provide a solid foundation of specifically focused technical courses and the flexibility to meet personal career goals in the advancing and expanding fields of energy management and design.

EMD students may pursue either a Bachelor of Arts or Bachelor of Science Degree in Environmental Studies.

The EMD Faculty

EMD faculty are leaders in their field. Current faculty hold advanced degrees in engineering, architecture, landscape architecture, resource policy and management, and computer science. All faculty also remain current and active in this field as private consultants.

The EMD Professional Community Connection

We have a strong working relationship with a variety of agencies and organizations throughout California. These agencies and organizations include the California Energy Commission, Lawrence Berkeley National Laboratory, Pacific Gas and Electric Company, Sacramento Municipal Utility District, California Association of Building Energy Consultants, Association of Demand Side Management, Association of Professional Energy Managers, the American Solar Energy Society, and the Northern California Solar Energy Association.

Internship Program

All EMD students are required to complete an internship. This internship provides students an opportunity to apply what they have learned in courses while gaining valuable experience in a professional setting. Many internships are paid. Students work closely with their advisor in choosing an internship that matches their personal and professional interests.

The EarthLab and the Environmental Technology Center

The EarthLab is a one-acre education, demonstration and research facility at the university. This learning laboratory focuses on agroecology and renewable energy applications. Students in the EMD program are involved in a variety of experiments in the EarthLab. The Environmental Technology Center, a state-of-the-art building utilizing the latest in energy efficiency and renewable energy applications, is a unique teaching laboratory in which students can practice building science "live."

Check our website: www.sonoma.edu/ensp/

Other ENSP Study Plans include Education and the Environment • Environmental Conservation and Restoration • Outdoor Leadership • Planning Concentration • Water Quality and Hazardous Materials Management

ENERGY MANAGEMENT AND DESIGN STUDY PLANS

BA DEGREE

Total for Degree:	120 units
Prerequisites & Recommended	14-19 units
Environmental core & emphasis requirements	28-29 units
GE courses	51 units
ENSP Electives	12 units

PREREQUISITES (14-19 units)

MATH 160	Precalculus Math	4
PHYS 114	Intro. to Physics I **OR**	4
PHYS 210	General Physics	3
ENSP 202	Quantitative Methods (or pass challenge exam)	3
Chemistry: one of the following courses		
CHEM 102	Chemistry and Society	3
CHEM 105	Elements of General, Organic & Biochem.	5
CHEM 110	Intro. General Chemistry	3
CHEM 115	General Chemistry	5
Economics: one of the following courses – need not be completed before the ENSP Core		
ECON 204	Macro Economics	4
ECON 205	Micro Economics	4

Recommended Courses

CS 101	Intro to Computing	3

Architectural drafting course at community/junior college

ENSP Core Courses (1 unit)

ENSP 201	Environmental Forum	1

EMD Core Requirements (27-28 units)

ENSP 330	Energy, Technology & Society	4
ENSP 337	Thermal Energy Management	4
ENSP 338	Electrical Energy Management	4
ENSP 430	Energy Forum (taken twice)	2,2
ENSP 499	Internship in EMD	4
At least two of the following:		
ENSP 437	Passive Solar Design	4
ENSP 438	Small-Scale Energy	4
ENSP 439L	Computer Applications in EMD	3

ENSP Electives (12 units)

Humanities: *at least one of the following*		
ENSP 306	Environmental Ethics	3
ENSP 307	Environmental History	4
ENSP 308	Environmental Literature	3
ENSP 314	The Urban Design I	3
ENSP 414	The Urban Design II-Placemaking	3
ENSP 421	Landscapes of the American West	3
Social Sciences: *at least one of the following*		
ENSP 310	Introduction to Planning	3
ENSP 311	Planning Theory & Methodology	4
ENSP 401	Environmental Policy	4
ENSP 404	Environmental Law	3
ENSP 416	Environmental Planning	4
ENSP 418	Planning for Sustainable Communities	3
ENSP 419	Transportation Planning	3
Other major courses: *select 12 units in consultation with an advisor*		
ENSP 302	Applied Ecology	4
ENSP 303	Applied Physical Science	4
ENSP 305L	Computer Aided Communications	3
ENSP 403	Computer Modeling	3
ENSP 405	Environmental Research & Writing	3
GEOG 387	Geographic Information Systems **OR**	4

ENSP 437, 438 or 439L

BS DEGREE 120 units

Total for Degree:	
Natural Science Support Courses	29-31 units
ENSP Core and EMD Requirements	32 units
GE courses	51 units

Natural Science Support Courses (29-31 units)

CS 101	Intro to Computers (or equivalent)	3
CHEM 115A, B	General Chemistry	5,5
MATH 161	Calculus 1	4
MATH 211-S	Calculus II	2
MATH 165	Elementary Statistics	4
Physics: either sequence		
PHYS 210A,B	General Physics	3,3
PHYS 114, 214	Introduction to Physics I, II	4,4

ENSP Core Courses (1 unit)

ENSP 201	Environmental Forum	1

EMD Core Requirements (31 units)

ENSP 330	Energy, Technology and Society	4
ENSP 337	Thermal Energy Management	4
ENSP 338	Electrical Energy Management	4
ENSP 430	Energy Forum (taken twice)	2,2
ENSP 437	Passive Solar Design	4
ENSP 438	Small-Scale Energy	4
ENSP 499	Internship in EMD	4
One of the following:		
ENSP 403	Computer Modeling	3
ENSP 439L	Computer Applications in EMD	3

Note: You may need to take upper division courses (300-400 level) in addition to those listed above (and in your upper division GE selection) in order to meet the required number of upper division units for graduation (40).

Changes to 8/1/11: Math 107 is now Math 160; added PHYS 114 as requisite; ENSP 421 & GEOG 387 updated titles.
Changes 1/1/2012: Advisor change to Prof. Rocky Rohwedder

. 1/1/2012