ENERGY SYSTEMS ENGINEERING UNDERGRADUATE MAJOR (BS, HBS)

Available only at OSU-Cascades.

At Oregon State University, the Energy Systems Engineering degree program combines engineering fundamentals with energy-focused technical courses and business management classes. This multidisciplinary curriculum provides students with a strong foundation in the core principles of mechanical, electrical and industrial engineering.

Program Educational Objectives—Energy Systems Engineering

Note: The Bachelor of Science and Honors Bachelor of Science degrees in Energy Systems Engineering are accredited by the Engineering Accreditation Commission of ABET, http://www.ABET.org (http://www.abet.org/), which requires stated program educational objectives and student outcomes to support these.

OSU Energy Systems Engineering graduates receive an innovative education, and within 3 to 5 years of graduation will have:

1. Created value to organizations through the analysis, evaluation, and improvement of engineered systems and processes using appropriate systems engineering methods and tools.
2. Communicated effectively across disciplines and cultures to manage and/or lead activities in support of organizational goals and objectives.
3. Innovated systems and processes, in response to organizational challenges, though the application of structured and unstructured systems engineering methodologies, including engineering design and problem-solving.

Major Code: 293

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively with a range of audiences.
- recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.

Code	Title	Credits
Baccalaureate Core		
Communications		
WR 121	*ENGLISH COMPOSITION	3
WR 327	*TECHNICAL WRITING	3
COMM 111	*PUBLIC SPEAKING	3
or COMM 114	*ARGUMENT AND CRITICAL DISCOURSE	
Skills		
HHS 231	*LIFETIME FITNESS FOR HEALTH	2
HHS 241	*LIFETIME FITNESS (or any PAC course)	1-2
Perspectives		
Western Culture		3
Cultural Diversity		3
Literature & The Arts		3
ECON 201	*INTRODUCTION TO MICROECONOMICS	4
Difference, Power & Discrimination		3
Synthesis		
SUS 350	*SUSTAINABLE COMMUNITIES	4
Science, Technology & Society		3
Math and Science		
CH 201	CHEMISTRY FOR ENGINEERING MAJORS	3-4
or CH 231	GENERAL CHEMISTRY	
CH 202 & CH 205	CHEMISTRY FOR ENGINEERING MAJORS and LABORATORY FOR CH 202	4-5
or CH 232 & CH 261	GENERAL CHEMISTRY and *LABORATORY FOR CHEMISTRY 231	
MTH 251	*DIFFERENTIAL CALCULUS	4
MTH 252	INTEGRAL CALCULUS	4
MTH 254	VECTOR CALCULUS I	4
MTH 256	APPLIED DIFFERENTIAL EQUATIONS	4
MTH 341	LINEAR ALGEBRA I	3
PH 211	*GENERAL PHYSICS WITH CALCULUS	4
PH 212	*GENERAL PHYSICS WITH CALCULUS	4
PH 213	*GENERAL PHYSICS WITH CALCULUS	4
ST 314	INTRODUCTION TO STATISTICS FOR ENGINEERS	3
Biological Science Elective		4
Business Management Courses		
BA 357	OPERATIONS MANAGEMENT	4
ENGR 390	ENGINEERING ECONOMY	3
IE 471	PROJECT MANAGEMENT IN ENGINEERING	3
Engineering		
IE 212	COMPUTATIONAL METHODS FOR INDUSTRIAL ENGINEERING	4
ESE 330	MODELING AND ANALYSIS OF DYNAMIC SYSTEMS	4
ESE 355	ENERGY REGULATION	4
ESE 360	ENERGY CONSUMPTION ANALYSIS	4
ESE 430	FEEDBACK CONTROL SYSTEMS	4
ESE 450	ENERGY GENERATION SYSTEMS	4
ESE 470	ENERGY DISTRIBUTION SYSTEMS	4
ESE 471	ENERGY STORAGE SYSTEMS	4
ESE 497	^MIME CAPSTONE DESIGN	4
ESE 498	^MIME CAPSTONE DESIGN	4
ENGR 112	INTRODUCTION TO ENGINEERING COMPUTING	3
ENGR 201	ELECTRICAL FUNDAMENTALS I	3
ENGR 202	ELECTRICAL FUNDAMENTALS II	3
ENGR 211	STATICS	3
ENGR 212	DYNAMICS	3
IE 415	SIMULATION AND DECISION SUPPORT SYSTEMS	4
IE 425	INDUSTRIAL SYSTEMS OPTIMIZATION	4
ME 311/NSE 311	INTRODUCTION TO THERMAL-FLUID SCIENCES	4
ME 312/NSE 312	THERMODYNAMICS	4
ME 331/NSE 331	INTRODUCTORY FLUID MECHANICS	4
ME 332/NSE 332	HEAT TRANSFER	4
MIME 101	INTRODUCTION TO MIME	3

Restricted Technical Electives (no more than 3 credits from 200-level courses)	7
Total Credits	180-182

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Baccalaureate Core Course (BCC)

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Writing Intensive Course (WIC)

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