

MASTER OF ENGINEERING IN ENERGY SYSTEMS, ENERGY CONSERVATION AND BUILDINGS TRACK

The Master of Engineering in Energy Systems, Energy Conservation and Buildings Track is a coursework-only graduate degree program oriented toward students who wish to develop more knowledge about the design, construction, and operation of buildings and their energy and environmental systems, as well as their integration with renewable energy systems and the electric grid.

Students with a variety of academic backgrounds are eligible to apply for the program, including those with undergraduate degrees in engineering disciplines (e.g., architectural, chemical,

civil, mechanical, environmental, or electrical engineering) and non-engineering disciplines (e.g., architecture, construction management, or environmental technology).

Students in the program must complete a minimum of 30 credit hours in total. Up to 12 credit hours of 400-level undergraduate coursework may be included in the program with advisor approval. A maximum of 3 hours of 597 Special Problems coursework is allowed.

Curriculum

Code	Title	Credit Hours
Core Courses		(9)
CHE 543	Energy, Environment, and Economics	3
ECE 418	Power System Analysis	3
MMAE 522	Nuclear, Fossil-Fuel, and Sustainable Energy Systems	3
Energy Conservation and Buildings Courses		(12)
Select a minimum of 12 credit hours from the following courses:		12
CAE 513	Building Science	3
CAE 517	HVAC Systems Design	3
CAE 524	Building Enclosure Design	3
CAE 526	Energy Conservation in Buildings	3
CAE 538	Control of Building Environmental Systems	3
CAE 550	Applied Building Energy Modeling	3
CAE 552	Introduction to Sustainable Building Design	3
CAE 554	Building Commissioning	3
CAE 556	Net Zero Energy Building Design I	3
CAE 557	Net Zero Energy Building Design II	3
Elective Courses		(9)
Select up to nine credit hours from the following courses:		9
CAE 466	Building Electrical/Lighting Systems Design	3
CAE 467	Lighting Systems Design	3
CAE 505	Applications of Computational Fluid Dynamics in Engineering	3
or CAE 405	Applications of Computational Fluid Dynamics in Engineering	
CAE 515	Building Energy Modeling	3
or CAE 474	Introduction to Building Information Modeling	
CAE 553	Measurement and Instrumentation in Architectural Engineering	3
CAE 597	Special Problems	1-4
or CHE 597	Special Problems	
or ECE 597	Special Problems	
or ENVE 597	Special Problems	
or MMAE 597	Special Topics	
CHE 541	Renewable Energy Technologies	3
ECE 411	Power Electronics	4
ECE 412	Hybrid Electric Vehicle Drives	4
ECE 537	Next Generation Smart Grid	3
ECE 539	Computer Aided Design of Electric Machines	3
ECE 551	Advanced Power Electronics	3
ECE 552	Adjustable Speed Drives	3

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ECE 555	Power Market Operations	3
ECE 556	Power Market Economics and Security	3
ECE 561	Deregulated Power Systems	3
ECE 562	Power System Transaction Management	3
ECE 564	Control and Operation of Electric Power Systems	3
ECE 580	Elements of Sustainable Energy	3
ECE 581	Elements of Smart Grid	3
ECE 582	Microgrid Design and Operation	3
ECE 597	Special Problems	1-3
ENVE 522	Global Environmental Change and Sustainability Analysis	3
MMAE 425	Direct Energy Conversion	3
MMAE 433	Design of Thermal Systems	3
MMAE 453	Electrified Vehicle Powertrains	3
MMAE 523	Fundamentals of Power Generation	3
MMAE 525	Fundamentals of Heat Transfer	3
Total Credit Hours		30

Up to 12 credit hours of 400-level courses can be applied to the program.

A maximum of 4 credit hours of 597 Special Problems can be applied to the degree program.