Elective Focus Area in Mechanical Engineering

Energy and Environment

Revised on October 2, 2018

The Energy and Environment (EAE) EFA provides advanced education in the increasingly important area of energy production, utilization and its environmental impact, with particular attention to emerging technologies. The EFA also provides a solid foundation in transport process modeling and an introduction to environmental engineering. Engineers working in this area must possess not only the fluid dynamics and heat and mass transport modeling abilities typical of mechanical engineers, but also a level of understanding of sustainability of engineered systems.

Semester	Course	Session	SH	Pre-/Co-Requisites
4 (Spring)	Elective		3	
6 (Spring)	Elective		3	
6 (Spring)	ME:3040 Thermodynamics II	S	3	ENGR:2130
7 (Fall)	ME:5160 Intermediate Mechanics of Fluids, or ME:5145 Intermediate Heat Transfer	F, or F	3 3	ENGR:2510, or ME:3045
7 (Fall)	Elective		3	
8 (Spring)	Elective		3	
8 (Spring)	Elective		3	

Energy & Environment Electives (minimum of 2 required)	Session	SH	Pre-/Co-Requisites
CEE:4107 Sustainable Systems	S	3	None
ME:5149 Propulsion Engineering	F	3	ME:3040
ME:4142 Wind Turbine Aerodynamics	S	3	ENGR:2510
ME:4164 Fundamentals of Wind Turbines	F[1]	3	ME:3040
General Electives	**Session**	**SH**	**Pre-/Co-Requisites**
ME:4111 Scientific Computing and Machine Learning	F, S	3	MATH:2560
ME:4024 Product Design and Realization	S	3	ME:2200 or ENGR:2760, /ENGR:2750
ME:4125 Biomimetic Fluid Dynamics	S[2]	3	ENGR:2510
ME:4175 Computational Naval Hydrodynamics	S[3]	3	ENGR:2510
ME:5210 Intermediate Thermodynamics	F[2]	3	ME:3040
ME:5143 Computational Fluid and Thermal Engineering	F	3	ME:3045
ME:5145 Intermediate Heat Transfer	F	3	ME:3045
ME:5160 Intermediate Mechanics of Fluids	F	3	ENG:2510
ME:5162 Experimental Methods in Fluid Mechanics	Sum	3	None
ME:4186 Enhanced Design Experience	S	3	ME:4086
CBE:5405 Green Chemical and Energy Technology	S*	3	CBE:2105
CBE:5415 Satellite Image Processing and Remote Sensing of Atmosphere	S*	3	
CBE:5417 Physical Meteorology and Atmospheric Radiative Transfer	S*	3	
EES:1080 Introduction to Environmental Science, or EES:1290 Energy and the Environment	F, S, or F	3	None
CEE:2150 Environmental Eng: Natural Systems	S	3	CHEM:1110

For further information, please contact: Professor A. Ratner (albert-ratner@uiowa.edu), Department of Mechanical Engineering, University of Iowa, Iowa City, IA 52242.

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CEE:3371 Principles of Hydraulics and Hydrology	S	3	ENGR:2510
CEE:4102 Groundwater	F	3	None
CEE:4159 Air Pollution Control Technology	S	3	
CEE:5374 Environmental Fluid Mechanics	F	3	
CEE:5380 Fluid Flows in Environmental Systems	F	3	
IE:2500 Engineering Economy	S	3	STAT:2020
IE:4550 Wind Power Management	S	3	None
Flexible Elective – Choose at most one course from: (i) engineering courses that are required in another (non-ME) program, (ii) engineering courses at an upper level (e.g. ME courses numbered 4100 and above), (iii) mathematics, physics or chemistry courses at a more advanced level than those required in the ME curriculum, (iv) independent investigation in a mechanical engineering subject area, or (v) courses that appear on a list of approved courses found at https://me.engineering.uiowa.edu/me-elective-focus-areas-efa	Any	3	

[1] offered most years, Fall Semesters
[2] offered odd years
[3] offered even years
*Irregular offerings, check schedule for specific semesters
Substitutions are discouraged and will only be approved under exceptional circumstances requiring the approval of the advisor, EFA coordinator and DEO.

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