MASTER OF SCIENCE IN MATERIALS SCIENCE AND ENGINEERING WITH SPECIALIZATION IN ENERGY/ ENVIRONMENT/ECONOMICS (E3)

Curriculum

Code	Title		Credit Hours
Core Courses			(15)
CHE 543	Energy, Environment, and Economics		3
MMAE 468	Introduction to Ceramic Materials		3
MMAE 569	Advanced Physical Metallurgy		3
Select one of the following:			3
CHE 503	Thermodynamics	3	
CHE 553	Advanced Thermodynamics	3	
MMAE 520	Advanced Thermodynamics	3	
Select a minimum of one course from the following:			3
CHE 541	Renewable Energy Technologies	3	
CHE 566	Electrochemical Engineering	3	
MMAE 522	Nuclear, Fossil-Fuel, and Sustainable Energy Systems	3	
MMAE 523	Fundamentals of Power Generation	3	
Non-Core Courses			(9)
Select a minimum of two courses from the following:			6
MMAE 470	Introduction to Polymer Science	3	
MMAE 525	Fundamentals of Heat Transfer	3	
MMAE 561	Solidification and Crystal Growth	3	
MMAE 563	Advanced Mechanical Metallurgy	3	
MMAE 566	Problems in High-Temperature Materials	3	
MMAE 571	Miscrostructural Characterization of Materials	3	
MMAE 573	Transmission Electron Microscopy	3	
MMAE 579	Advanced Materials Processing	3	
Select a minimum of one course from the following:			3
CHE 567	Fuel Cell Fundamentals	3	
ENVE 501	Environmental Chemistry	3	
ENVE 506	Chemodynamics	3	
ENVE 542	Physiochemical Processes in Environmental Engineering	3	
ENVE 551	Industrial Waste Treatment	3	
ENVE 561	Design of Environmental Engineering Processes	3	
ENVE 570	Air Pollution Meteorology	3	
ENVE 577	Design of Air Pollution Control Devices	3	
ENVE 578	Physical and Chemical Processes for Industrial Gas Cleaning	3	
ENVE 580	Hazardous Waste Engineering	3	
Thesis Research			(6-8)
MMAE 591	Research and Thesis M.S.		6-8
Electives			(0-2)
Select elective courses as needed			0-2

Minimum degree credits required: 32