

# MASTER OF SCIENCE IN MATERIALS SCIENCE AND ENGINEERING

The master of science degree program advances knowledge through post-baccalaureate coursework and state-of-the-art research in preparation for careers in industrial research and development. The M.S. degree is also generally acceptable as a prerequisite for study toward the doctorate. In line with the department's approach to its graduate programs, a student has considerable flexibility, in consultation with his or her program adviser, in formulating an M.S. program.

The master of science degree requires completion of a minimum of 32 credit hours of approved work, which includes 6-8 credit hours of thesis research. Before completion of the first semester of graduate study, full-time students should select an area of specialization and a permanent adviser. Graduate students pursuing the M.S. degree on a part-time basis should select a permanent adviser before registering for their twelfth credit hour. The student, in consultation with the adviser, prepares a program of study that reflects individual needs and interests. The adviser must approve this program, as well as the department's graduate studies committee, the department chair, and the Graduate College.

After completion of the thesis, the student is required to pass an oral comprehensive examination on his or her thesis and related topics. The examination committee consists of at least three appropriate faculty members who are nominated by the thesis adviser and appointed by the department's graduate studies committee.

## Curriculum

<b>Required Courses</b>		(18)
Select a minimum of six courses from the following:		18
MMAE 461	Failure Analysis	3
MMAE 468	Introduction to Ceramic Materials	3
MMAE 470	Introduction to Polymer Science	3
MMAE 472	Advanced Aerospace Materials	3
MMAE 501	Engineering Analysis I	3
MMAE 520	Advanced Thermodynamics	3
MMAE 533	Fatigue and Fracture Mechanics	3
MMAE 554	Electrical, Magnetic and Optical Properties of Materials	3
MMAE 561	Solidification and Crystal Growth	3
MMAE 562	Design of Modern Alloys	3
MMAE 563	Advanced Mechanical Metallurgy	3
MMAE 564	Dislocations and Strengthening Mechanisms	3
MMAE 565	Materials Laboratory	3
MMAE 566	Problems in High-Temperature Materials	3
MMAE 567	Fracture Mechanisms	3
MMAE 568	Diffusion	2
MMAE 569	Advanced Physical Metallurgy	3
MMAE 570	Computational Methods in Materials Science and Engineering	3
MMAE 571	Misrostructural Characterization of Materials	3
MMAE 573	Transmission Electron Microscopy	3
MMAE 574	Ferrous Transformations	3
MMAE 576	Materials and Process Selection	3
MMAE 578	Fiber Composites	3
MMAE 579	Advanced Materials Processing	3
MMAE 580	Thermodynamics in Materials Science	3
<b>Elective Courses</b>		(6-8)
Select 6-8 credit hours of non-core courses		6-8
<b>Thesis Research</b>		(6-8)
MMAE 591	Research and Thesis M.S.	6-8

**Minimum degree credits required: 32**

Up to 12 credit hours of 400-level, non-core courses that were not required for the completion of an undergraduate degree and approved by the department's graduate studies committee may count toward satisfying this requirement. Up to 6 credit hours of accelerated (700-level) courses are allowed.