

MASTER OF SCIENCE IN MANUFACTURING ENGINEERING

The master of science degree program advances knowledge through post-baccalaureate coursework. The program requires 32 credit hours. Students have the option of completing a thesis based on up to eight credit hours of research (MMAE 591) with the approval of a thesis adviser, or completing the program with courses, which may include up to six credit hours of projects (MMAE 594 or MMAE 597). In line with the department's approach to its graduate programs, a student has considerable flexibility, in consultation with their adviser, in formulating an M.S. program. Registration and 80%-class session attendance--required for a passing grade--in the Seminar course MMAE 593 is required of all M.S. graduate students (Non-thesis or Thesis) and Ph.D. students. A satisfactory grade is required, in each semester of full-time enrollment, to fulfill degree requirements.

Before completion of the first semester of graduate study, full-time students should select 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 as well as the department's graduate studies committee and the department chair must approve this program. Students with the thesis option are required to pass an oral comprehensive examination on their 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.

Admissions Requirements: GPA 3.0, GRE 300, TOEFL - according to university minimum standards and B.S. Degree in Mechanical Engineering, Aerospace Engineering, Electrical Engineering¹, Physics², Industrial Engineering^{1,2}, or Mathematics^{1,2}.

¹Requires the following course (or equivalent) to be taken prior to first term: MMAE 305 – Dynamics

²Requires the following course (or equivalent) to be taken prior to or in the first term: MMAE 443 – System Analysis and Control

Master of Science in Manufacturing Engineering, Materials Science and Engineering Emphasis (Coursework Only Option)

Requirement	Credits
Minimum Credits Required	32
Maximum 400-Level Credit	12
Maximum 700-Level Credit	6

Code	Title	Credit Hours
Required Courses		(18)
MMAE 547 or MMAE 557	Comp Intgrted Manuf Technlgies Comp Intgrtd Manfctrng Systems	3
MMAE 560	Ststcl Quality Procs Control	3
MMAE 563	Advanced Mechanical Metallurgy	3
MMAE 569	Advanced Physical Metallurgy	3
Select a minimum of three credit hours from the following:		3
MMAE 445	Computer-Aided Design	3
MMAE 545	Advanced CAD/CAM	3
MMAE 546	Adv Manufacturing Engineering	3
MMAE 576	Materials Process Selection	3
Select a minimum of three credit hours from the following:		3
MMAE 451	Finite Elmnt Methods in Engrg	3
MMAE 517	Computational Fluid Dynamics	3
MMAE 532	Finite Element Methods II	3
MMAE 544	Design Optimization	3
MMAE 570	Computational Methods in MSE	3
Elective Courses		(14)
Select 14 credit hours of 400-level and above MMAE courses ¹		14

¹ Students may include up to six credit hours of MMAE 594. Up to three credit hours of INTM courses may be used with adviser approval.

Master of Science in Manufacturing Engineering, Materials Science and Engineering Emphasis (Thesis Option)

Requirement	Credits
Minimum Credits Required	32
Maximum 400-Level Credit	12
Maximum 700-Level Credit	6

Code	Title	Credit Hours
Required Courses		(18)
MMAE 547 or MMAE 557	Comp Intgrtd Manuf Technlgies Comp Intgrtd Manfctrng Systems	3
MMAE 560	Ststcl Quality Procs Control	3
MMAE 563	Advanced Mechanical Metallurgy	3
MMAE 569	Advanced Physical Metallurgy	3
Select a minimum of one course from the following;		3
MMAE 445	Computer-Aided Design	3
MMAE 545	Advanced CAD/CAM	3
MMAE 546	Adv Manufacturing Engineering	3
MMAE 576	Materials Process Selection	3
Select a minimum of one course from the following numerical methods courses:		3
MMAE 451	Finite Elmnt Methods in Engrg	3
MMAE 517	Computational Fluid Dynamics	3
MMAE 532	Finite Element Methods II	3
MMAE 544	Design Optimization	3
MMAE 570	Computational Methods in MSE	3
Elective Courses		(6-8)
Select six to eight credit hours of 400-level and above MMAE courses ¹		6-8
Thesis Research		(6-8)
MMAE 591	Research and Thesis M.S.	6-8

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Master of Science in Manufacturing Engineering, Mechanical and Aerospace Engineering Emphasis (Coursework Only Option)

Requirement	Credits
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Maximum 400-Level Credit	12
Maximum 700-Level Credit	6

Code	Title	Credit Hours
Required Courses		(18)
MMAE 545	Advanced CAD/CAM	3
MMAE 546	Adv Manufacturing Engineering	3
MMAE 547 or MMAE 557	Comp Intgrtd Manuf Technlgies Comp Intgrtd Manfctrng Systems	3
MMAE 560	Ststcl Quality Procs Control	3
Select a minimum of three credit hours from the following:		3
MMAE 445	Computer-Aided Design	3
MMAE 563	Advanced Mechanical Metallurgy	3
MMAE 569	Advanced Physical Metallurgy	3

MMAE 576	Materials Process Selection	3
Select a minimum of three credit hours from the following:		3
MMAE 445	Computer-Aided Design	3
MMAE 451	Finite Elmnt Methods in Engrg	3
MMAE 517	Computational Fluid Dynamics	3
MMAE 532	Finite Element Methods II	3
MMAE 544	Design Optimization	3
MMAE 570	Computational Methods in MSE	3
Elective Courses		(14)
Select 14 credit hours of 400-level and above MMAE courses ¹		14

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Master of Science in Manufacturing Engineering, Mechanical and Aerospace Engineering Emphasis (Thesis Option)

Requirement	Credits
Minimum Credits Required	32
Maximum 400-Level Credit	12
Maximum 700-Level Credit	6

Code	Title	Credit Hours
Required Courses		(18)
MMAE 545	Advanced CAD/CAM	3
MMAE 546	Adv Manufacturing Engineering	3
MMAE 547	Comp Intgrtd Manuf Technlgies	3
or MMAE 557	Comp Intgrtd Manfctrng Systems	
MMAE 560	Ststcl Quality Procs Control	3
Select a minimum of one course from the following:		3
MMAE 445	Computer-Aided Design	3
MMAE 563	Advanced Mechanical Metallurgy	3
MMAE 569	Advanced Physical Metallurgy	3
MMAE 576	Materials Process Selection	3
Select a minimum of one course from the following:		3
MMAE 445	Computer-Aided Design	3
MMAE 451	Finite Elmnt Methods in Engrg	3
MMAE 517	Computational Fluid Dynamics	3
MMAE 532	Finite Element Methods II	3
MMAE 544	Design Optimization	3
MMAE 570	Computational Methods in MSE	3
Elective Courses		(6-8)
Select six to eight credit hours of 400-level and above MMAE courses ¹		6-8
Thesis Research		(6-8)
MMAE 591	Research and Thesis M.S.	6-8

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