

BSE Chemical Engineering / MEng in Manufacturing

SGUS Program

Sequential graduate/undergraduate study (SGUS) programs are offered through the Program in Manufacturing (PIM) and MEM-TMI. The SGUS program follows the template for SGUS programs as approved by the College of Engineering. In addition, SGUS applicants to PIM/MEM-TMI must:

- Have completed 80 or more credits of course work with a 3.6 GPA or better.
- Apply to PIM/MEM-TMI for admission no later than the second semester of their junior year.
- Have two manufacturing-related summer internships or co-op work experience (an internship planned for the summer following the application submission is acceptable with a write-up about the plan).
- Meet all requirements for both the B.S.E. and M. Eng. degrees, but can "double count" up to nine (9) credit hours of technical electives, to receive both degrees simultaneously in 5 years with a total of at least 149 credit hours.

Master of Engineering in Manufacturing

The Master of Engineering in Manufacturing (M. Eng. in Mfg.) degree is an interdisciplinary 30-credit program. This is a professional practice-oriented degree designed to further the education of engineers who already have experience working in industry and plan to return to an industrial environment after completing their studies. The degree requirements can be completed in one calendar year (12 months). The M. Eng. in Mfg. is an interdisciplinary degree combining course work from various engineering disciplines (80%) and business (20%).

Degree Objectives

The main goal of the degree is:

To prepare engineers to improve the quality and efficiency of manufacturing systems by giving them advanced skills in their engineering discipline, breadth across engineering disciplines, and an understanding of the complete product development and manufacturing process, including its management.

Degree Requirements

The Master of Engineering in Manufacturing degree has the following requirements:

A total of 30 credit hours of course work, of which at least 30 credit hours must be graded A-E (not pass/fail), and at least 24 A-E credit hours must be in courses at the 500 level. A minimum grade point average of 5.0/9.0 (i.e., a B average) is also required.

A. Students must take the Topics in Manufacturing or Manufacturing Systems Design (MFG 501 or MFG 502, 3 credits and the Project/Internship (MFG 503, 3 credits).

B. Students must take at least three classes in the Manufacturing Engineering Core (9 credits, graded), and one in each of the areas described below. Sample courses in the College of Engineering that are appropriate for chemical engineering students, in that they do not have prerequisites, are shown below. Please visit the manufacturing Engineering web page for additional courses.

- Manufacturing Design/Process Integration:

MFG 452	ME 452 - Design for Manufacturability
Eng 477	NAME 477 - Principles of Virtual Reality
MFG 480	MSE 480 - Materials and Engineering Design
MFG 513	ME 513 – Automotive Body Structures
MFG 518	ME 518 - Composite Materials: Mechanics, Manufacturing, and Design
MFG 553	ME 553 - Microelectromechanical Systems
MFG 557	ME 557 - Materials in Manufacturing and Design

- Manufacturing Processes and Production Control

MFG 414	MSE 414 - Applied Polymer Processing
MFG 448	ChE 447 - Waste Management in Chemical Engineering
MFG 517	ChE 517 - Biochemical Science and Technology (req. Biology 310/311)
MFG 536	CEE 536 - Critical Path Methods
MFG 566	ChE 566 - Process Control in the Chemical Industries
MFG 583	ME 583 - Scientific Basis for Reconfigurable Manufacturing
MFG 587	ME 587 – Reconfigurable Manufacturing for Market Responsiveness
MFG 605	OMS 605 – Manufacturing and Supply Operations

- Quality Control

MFG 402	ME 401 - Engineering Statistics for Manufacturing Systems*
MFG 461	IOE 461 – Quality Engineering Principles and Analysis*
MFG 466	IOE 466 – Statistical Quality Control*
MFG 561	ME 563 – Time Series Modeling, Analysis, Forecasting

* Only one of these courses may be taken to fulfill degree requirements

C. Students must take at least three classes in the Management and Systems Core (9 credits, graded). Sample courses in the College of Engineering that are appropriate for chemical engineering students, in that they do not have prerequisites, are shown below. Please visit the Manufacturing Engineering web page for additional courses in the College of Engineering and the Business School.

MFG 426	IOE 425 - Manufacturing Strategies
	MKT 501 – Marketing Management
	OMS 552 - Operations Management
MFG 433	IOE 433 - Occupational Ergonomics

MFG 535	IOE 522 – Theories of Administration IOE533 - Human Factors in Engineering Systems I
MFG 505	MO 503 – Human Behavior and Organization Financial Analysis for Modern Manufacturing ACC 501 – Principles of Financial Accounting

D. Students must also take two manufacturing engineering related classes of their choosing in their area of expertise. Typically a student takes two manufacturing related courses in the engineering discipline in which they received their bachelor's degrees. Sample courses in the College of Engineering that are appropriate for chemical engineering students are shown below. Please visit the Manufacturing Engineering web page for additional courses.

MFG 536	CEE 536 - Critical Path Methods
MFG 566	ChE 566 - Process Control in the Chemical Industries
MFG 557	ME 557 - Materials in Manufacturing and Design
MFG 536	CEE 536 - Critical Path Methods MSE 412 - Polymeric Materials
MFG 414	MSE 414/ChE 414 - Applied Polymer Processing

The incoming student must obtain the approval of the course advisor for the planned M. Eng. in Manufacturing degree courses selected. A course advisor will be assigned to the student upon admission.

CONTACTS

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