

Master of Science in Engineering Management

This new self-supported program was recommended by the Academic Senate on November 12, 2015 and concurred by the President on November 25, 2015.

Program Description

Engineering Management (EM) is the discipline of planning, organizing, securing, and managing resources to achieve an organization's specific goals. It is required in circumstances such as optimizing manufacturing processes, implementing technological improvements, construction projects of all sizes and any additional situation where efficiency and smooth implementation are desired. These projects require management capabilities to coordinate the work of all relevant stakeholders.

Program Admission Requirements

Admission decisions are based on consideration of the applicant's previous academic record, statement of purpose, resume, letters of recommendation, and performance on admission and English proficiency exams:

- A bachelor's degree in engineering or engineering technology from a regionally accredited university
- A minimum GPA of 2.7 for the last 60 (semester) or 90 (quarter) upper-division major units attempted, and good standing at the last college attended
- A statement of purpose
- A recent resume
- Two letters of recommendation
- Admission and English proficiency exams
- A satisfactory score is required on either the Graduate Management Admission Test (GMAT) or the Graduate Record Exam (GRE) that demonstrates balance between verbal and mathematical skills.
- International applicants must take TOEFL and score a minimum of (i) 80 on the online version or (ii) 550 on the paper version of this examination. A score of 4.0 or higher on the writing portion of the GMAT or GRE may be used to waive the TOEFL requirement for international applicants. IELTS will be accepted as a substitute to TOEFL if no individual section score is less than 6.
- Although there is no prerequisite coursework, students who performed reasonably well in math and statistics courses are more likely to succeed in this program. As a reference point, scores at the 60th percentile or higher on the quantitative section of the GMAT or GRE will be considered as satisfactory.

University Graduation Requirements

Applicants who are admitted to the program will be subject to the university's Graduation Writing Assessment Requirement (GWAR). All entering students are required to take the GWAR Placement Exam (GPE), except students who have previously (1) received degrees from accredited colleges and universities in the United States; or (2) received degrees from an accredited non-US institution located in a country where English is a primary language of communication; or (3) achieved a score of 4.0 or higher on the writing portion of the GMAT or GRE.

- Completion of 30 units of approved graduate courses with a 3.0 GPA or better
- Achieve a passing score on the breadth and specific sections of the comprehensive exam.
- Satisfaction of all university graduation requirements.

Degree Requirements

The degree requirements comprise a 30-unit, lock-step sequence of courses covering three core components: (i) developing a broad understanding of business administration principles (ii) acquiring advanced engineering skills related to the management of projects and (iii) acquiring advanced engineering skills in the areas of either Civil, Mechanical or Computer Engineering & Computer Science.

Course Requirements

ACCT 500 Financial Accounting

Prerequisite: Graduate business standing.

Objective is to develop skills required to interpret and analyze the information contained in the financial statements, with emphasis on the use of accounting information as an aid to business decisions.

FIN 501 Financial Management Concepts

Prerequisite: Graduate business standing.

Integration of computers, management information systems and cases to: (1) time value of money, risk, valuation, cost of capital, capital structure; (2) capital budgeting; (3) long-term financing decisions; (4) working capital policy and management; (5) financial analysis and planning.

MGMT 500 Business Policies, Operations and Organizations

Prerequisite: Graduate business standing.

Recommended Preparation: IS 310.

Theory and philosophies of administrative organizations systems, information systems, management functions, decision making, strategy and policy formulation, operations planning, and control systems.

MKTG 500 Marketing Concepts

Prerequisite: Graduate business standing.

Overview of the decision process in marketing. Consideration of functional areas and their interaction with the total operations of the firm. Introduction to the development of marketing strategy and planning.

MSEM 506B Management of Engineering Technology and Innovation

Prerequisite: Graduate engineering standing.

Analysis of the principles and theory of engineering administrative organizations, information systems, management functions, decision making tools, strategies and administrative policy formulations.

MSEM 507B Engineering Project Management

Prerequisite: Graduate engineering standing.

Theory and philosophies of project management, principles of internal and industrial organization planning and control systems, motion in time study, industrial statistics, industrial research as aid to decision making.

MSEM 570B Engineering Management Principles and Applications

Prerequisite: Graduate standing, or consent of instructor.

Engineering management principles/applications. Relationships of management functions -modern products or service based companies. Technical organization in global market place. Reengineering, empowerment, concurrent engineering, and systemic thinking. Evolutionary theories of management. Strategic planning, goal setting, communication, resource distribution, etc. Team projects.

MSEM 596B Special Projects in Engineering Management (3)

Prerequisites: Eligible for advancement to candidacy and consent of instructor.

Under faculty supervision students will pursue synthesis work, as a culminating experience, on the topics learned for the interdisciplinary MSEM degree. In consultation with the Program Advisor, an Independent Study form must be completed. An acceptable project report must be submitted.

CE/MAE/CECS Engineering-Specific Electives

CE 536, CE 542, MAE 505, MAE 508, CECS 543, CECS 643

Culminating Experience

The MSEM's culminating requirement will be a two-day comprehensive exam. The exam will have three sections. One section will be devoted to an understanding of the business administration principles. One section will be devoted to the broad engineering concepts learned. The final section will concentrate on the specific engineering field of study chosen by the student: Civil, Mechanical or Computer Engineering & Computer Science.

EFFECTIVE: Fall 2017

Campus Code: COE_MS03E1

College: 65

Career: GD

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