

# ENGINEERING MANAGEMENT (EMGT)

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## **EMGT 500 Management for Engineers 3 Credit Hours**

This course provides the knowledge, skills, and attitude required to manage an efficient and productive engineering organization within the company, and manage effectively at upper cooperate levels. Topics include: integrating and coordinating people, functions and projects; managing technical resources; leadership and management; strategic planning for integrating and transferring technologies into products and processes; managing innovation, ethical behavior and legal compliance.

### **Restriction(s):**

Can enroll if Level is Rackham or Graduate

## **EMGT 505 Systems Engineering 3 Credit Hours**

Introduction to systems and systems engineering, tools in systems analysis, the system design process, design for operational feasibility and systems engineering management. (College of Engineering and Computer Science).

**Prerequisite(s):** IMSE 510

### **Restriction(s):**

Can enroll if Level is Rackham or Graduate

## **EMGT 510 Managerial Finance and Econ 2 Credit Hours**

This course covers foundation concepts in Financial Management, with emphasis on project evaluation. Topics include financial statement use and analysis, time value of money, valuation of stocks and bonds, capital budgeting and risk/return analysis. (College of Business).

**Prerequisite(s):** EMGT 540 or EMGT 541

### **Restriction(s):**

Can enroll if Level is Rackham or Graduate

## **EMGT 515 Corporate Strategy 2 Credit Hours**

This course seeks to develop an understanding of the management of technology as a strategic organization resource. Implementation policies are discussed within the context of personal, technological and social frames of values. Strategy topics include: the process of strategy development and integration of technological, functional, and corporate strategies. Implementation policies include organization design, and planning and control at the short-term and longer-term levels. (College of Business).

**Prerequisite(s):** EMGT 510 and EMGT 535 and (EMGT 541 or EMGT 540)

### **Restriction(s):**

Can enroll if Level is Rackham or Graduate

## **EMGT 520 Prod & Oper Engineering I 3 Credit Hours**

Production and operations management techniques including forecasting, inventory control, MRP, detailed scheduling, aggregate planning, process variability and its effects on throughput and inventory, factory physics principles, and lean methods.

**Prerequisite(s):** EMGT 505

### **Restriction(s):**

Can enroll if Level is Rackham or Graduate

## **EMGT 525 Tot Qua Mgmt and Six Sigma 3 Credit Hours**

This course covers implementing Total Quality Management (TQM), undertaking Six Sigma Projects, and applying Baldrige National Quality Award criteria and ISO 9000 principles to improve quality performances in an organization. Topics include Definitions and Importance of Quality, Quality Costs, Quality Function Deployment (QFD), Product Specification and Critical-to-quality Measures (CQM), Statistical Quality Control (SQC), Robustness Concepts, Quality System Design and Evaluation. Six Sigma and DMAIC Methodologies, Design for Six Sigma (DFSS) process, IDOV (Identity requirements, Deign alternatives, Optimize the design and Verify process capability) Methodology, and several other concepts and tools related to quality are also covered.

**Prerequisite(s):** IMSE 510

### **Restriction(s):**

Can enroll if Level is Rackham or Graduate

## **EMGT 530 Info Sys for Engin Management 3 Credit Hours**

This course covers the organizational foundations of information systems, their emerging strategic role, and the technical foundation for understanding computers and information systems. Topics include: introduction to management information systems; decision support systems; artificial intelligence and expert systems; end-user computing; data vs. information; data communication and connectivity; data management. (College of Engineering and Computer Science).

### **Restriction(s):**

Can enroll if Level is Rackham or Graduate

## **EMGT 535 Marketing Mgt and Policy 2 Credit Hours**

This course studies the salient features of technology-driven marketing and distinguishes technology-push from market-pull marketing. Highlights the technology-marketing interface in the context of strategy planning, market segmentation, product innovation, channels of distribution, promotional and pricing decisions. Particular attention will be paid to technology inventor-user interactions, process of adoption, and technological innovation. (College of Business).

**Prerequisite(s):** EMGT 510\*

### **Restriction(s):**

Can enroll if Class is Graduate

Can enroll if Level is Rackham or Graduate

## **EMGT 541 Acct Fund for Decision Making 3 Credit Hours**

This course introduces fundamental accounting concepts and applications that are useful in the evaluation of financial information and decision tools relevant to project planning. Students will achieve an understanding of basic accounting and cost management tools that are essential to decision making. Emphasis will be placed on assessing financial statement information through an understanding of accounting practice, the relationship between business activities and an organization's cash flows.

## **EMGT 545 Org Beh and Hum Res Mgt 2 Credit Hours**

This course encompasses key areas of human resources management and organization behavior as they relate to technical work environments. Organization design and theory will be discussed, along with motivation, leadership, employee selection skills, group and team processes, and managing diversity. Techniques for devising a personal career development plan are covered. (College of Business).

**Prerequisite(s):** EMGT 500

### **Restriction(s):**

Can enroll if Level is Rackham or Graduate

**EMGT 550 Business Ethics/Law 2 Credit Hours**

This course provides students with an overview of the legal environment of business. Concepts including product liability, intellectual property, and contracts are introduced within the context of the legal system. Ethical consideration in personal, professional, and organizational decision making are integrated throughout this course. (College of Business).

**Restriction(s):**

Can enroll if Level is Rackham or Graduate

**EMGT 560 Engin Mgt at Upper Levels 1 Credit Hour**

This course provides the knowledge and skills in leadership and management required to build and manage the company's technical resources toward the attainment of corporate objectives. Topics covered include: technological forecasts; corporate strategic planning; corporate portfolios of technical programs; group and strategic planning; project collection; management of institutional time; corporate computer facilities; proposals; introducing new products and processes; inventorying and upgrading; engineering audits; and the role of engineering in joint ventures. (College of Engineering and Computer Science).

**Prerequisite(s):** EMGT 520 and EMGT 530 and EMGT 545

**Restriction(s):**

Can enroll if Level is Rackham or Graduate

**EMGT 570 Enterprise Information Systems 3 Credit Hours**

The purpose of this course is to provide a foundation for the analysis, design and implementation of enterprise information systems. Topics include systems and organization theories, and information systems planning and evaluation. Students will be also introduced to various systems development life cycle phases of an enterprise information system. Students will acquire an understanding of the flow of information (forecasts, financial, accounting and operational data) within an enterprise and the factors that should be considered in designing an integrated enterprise information system. This includes all systems in the business cycle from revenue forecasts, production planning, inventory management, logistics, manufacturing, accounts payable, sales, accounts receivable, payroll, general ledger and report generation. Specifications for some of these systems will be developed utilizing ERP software such as SAP R/3 application development software suite. (F,W)

**EMGT 580 Mgt of Prod and Proc Design 3 Credit Hours**

This course provides the knowledge and skills needed to manage the design of a product or process. Topics covered include: creativity, types of products, types of processes, generalized design process, identification and translation of customer needs into engineering specifications, designing for function and quality factors, design for manufacturability, life-testing, cost estimating, reporting on design projects, and concurrent engineering. (College of Engineering and Computer Science).

**Prerequisite(s):** EMGT 520 and EMGT 525 and ACC 505

**Restriction(s):**

Can enroll if Level is Doctorate or Rackham or Graduate or

**EMGT 590 Capstone Project 3 Credit Hours**

Students will receive the opportunity and training to integrate and apply both the technical and program management aspects acquired in various courses to an engineering project or problem.

**Prerequisite(s):** IMSE 5215 and IMSE 5205 and IMSE 517

**Restriction(s):**

Can enroll if Level is Rackham or Graduate

Can enroll if Major is Program & Project Management

**EMGT 591 Capstone Project in EMGT 2 Credit Hours**

Students will receive the opportunity and training to integrate and apply both technical and managerial aspects acquired in various courses to an engineering project or problem.

**Prerequisite(s):** EMGT 580 and EMGT 500 and EMGT 570

**Restriction(s):**

Can enroll if Class is Graduate

Can enroll if College is Engineering and Computer Science

Can enroll if Program is

**EMGT 699 Master's Thesis 1 to 6 Credit Hours**

Graduate students electing this course, while working under the general supervision of a member of the program faculty, are expected to plan and conduct the work themselves, to submit a thesis for review and approval, and to present an oral defense of the thesis.

**Restriction(s):**

Can enroll if Level is Rackham or Graduate

\*An asterisk denotes that a course may be taken concurrently.

## Frequency of Offering

The following abbreviations are used to denote the frequency of offering: (F) fall term; (W) winter term; (S) summer term; (F, W) fall and winter terms; (YR) once a year; (AY) alternating years; (OC) offered occasionally