# ENGINEERING MANAGEMENT (EMGT)

**EMGT 803 Management of Engineering and Technology**  
**Prerequisites:** Graduate Standing  
**Description:** Covers the evolution of technical management and the transition from engineering and technical work to engineering and technology management. Emphasizes developing a broad understanding of the management functions of planning, organizing, leading and controlling in a technological environment. Engineering ethics and managing technology are also covered.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 804 Human Relations in Engineering and Sciences**  
**Prerequisites:** Graduate Standing or Permission from Program Director  
**Notes:** Engineering work experience is required.  
**Description:** Provides a framework for the student to become proficient in recognizing, understanding, and predicting morale and discipline when managing in the technology industry. Includes case studies related to engineering, technology, and sciences, emphasizing the prevention of and solutions to problems unique to technical employees by means of appropriate policies, techniques, practices, and procedures. Group dynamics from the psychological and sociological perspectives of varying corporate situations related to engineering and science will also be examined.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 805 Teamwork for Organizational Commitment and Collaboration**  
**Prerequisites:** Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.  
**Notes:** Designed for Engineers working in the field.  
**Description:** Provides an overview of the role that groups and teams play in achieving organizational success. Essential theories and concepts provide a framework for understanding and analyzing how teams are formed and function, including socioemotional and sociotechnical considerations. Critical issues in leading teams and managing team effectiveness are examined, including but not limited to power, influence, and conflict.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded  
**Offered:** FALL

**EMGT 806 Decision and Risk Analysis**  
**Prerequisites:** BSEN 206; MECH 321 or STAT 380/MATH 380/STAT 880. Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.  
**Notes:** Designed for Engineers working in the field.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded  
**Offered:** FALL

**EMGT 807 Project Management**  
**Prerequisites:** Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.  
**Notes:** Designed for Engineers working in the field.  
**Description:** Covers the fundamentals of successful project management. Topics include project selection, planning and control, budgeting and cost estimation, scheduling and resource allocation, project termination, and performance measurement using key indicators.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded  
**Offered:** SUMMER

**EMGT 808 Engineering Leadership**  
**Prerequisites:** Graduate Standing. Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.  
**Notes:** Engineering work experience is required, but may be waived at the discretion of MEM program director or the faculty teaching the course.  
**Description:** Provides a framework to become more proficient in recognizing, understanding, predicting, and controlling the dynamics and outcomes of organizational behavior. Introduction to a variety of contemporary leadership theories and provide some suggested methods for developing leadership capacity at the individual and organizational levels.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded  
**Offered:** FALL
**EMGT 809 Engineering Economy for Decision Making**  
**Prerequisites:** Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.  
**Description:** Introduces optimization methods for decision making and planning. Several management science models and their application to engineering and operations management are covered. Emphasis is on problem formulation, software solution, and interpretation for application and decision-making. Topics include: linear programming and its applications such as product mix, blending, multi-period scheduling; data envelopment analysis; distribution models (transportation, transshipment, assignment); network flow models (shortest route, minimal spanning tree, maximal flow); integer programming and nonlinear programming.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 810 Managerial Communication**  
**Prerequisites:** Graduate Standing.  
**Description:** Introduces concepts of business communication and the skills necessary to function in a business environment. Students are introduced to the fundamentals of oral and written communication, including small group communication and media management.  
**Notes:** Engineering work experience is required, but may be waived at the discretion of the MEM program director or the faculty teaching the course.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 811 Legal Considerations for Engineering Managers**  
**Prerequisites:** Graduate Standing. Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.  
**Notes:** Engineering work experience is required, but may be waived at the discretion of the MEM program director or the faculty teaching the course.  
**Description:** Covers legal issues and considerations that engineering firms face. Provides a general understanding of the basic legal principles applicable to the practice of engineering and the performance of engineering services. Topics include an overview of the U.S. legal system; business entity choices and licensing; tort and statutory liability; contract negotiation and terms; project delivery, management, and insurance; and dispute resolution.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 812 Business Strategies and Operations**  
**Prerequisites:** Graduate standing, and MECH 321 or MATH 380 or equivalent course in probability & statistics. Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.  
**Notes:** Engineering work experience is required, but may be waived at the discretion of the MEM program director or the faculty teaching the course.  
**Description:** Focuses on the role of business strategies and operations in engineering management and closely related areas not covered in other courses within the MEM curriculum. Topics, activities, and delivery methods vary.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 813 Negotiation and Project Management**  
**Prerequisites:** Graduate standing.  
**Description:** Introduces negotiation concepts, principles, and techniques including power, interest, and solutions. Students will be introduced to a variety of issues surrounding the construction of and negotiation process.  
**Notes:** Engineering work experience is required, but may be waived at the discretion of the MEM program director or the faculty teaching the course.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 814 Engineering Change Management**  
**Prerequisites:** Graduate standing.  
**Description:** Focuses on the impact of change on organizations, the importance of effective change management, and the role of the engineer in managing change.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 815 Engineering Work in Local, State, and Federal Government**  
**Prerequisites:** Graduate standing.  
**Description:** Introduces the role of engineers in local, state, and federal government agencies. Topics include the role of professional organizations, professional and ethical codes, and current trends.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 816 Engineering Management**  
**Prerequisites:** Graduate standing.  
**Description:** Introduces the role of the engineer in a business environment. Topics include the role of professional organizations, professional and ethical codes, and current trends.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 817 Engineering Ethics**  
**Prerequisites:** Graduate standing.  
**Description:** Introduces the role of the engineer in a business environment. Topics include the role of professional organizations, professional and ethical codes, and current trends.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 818 Engineering Sector Economics**  
**Prerequisites:** Graduate standing.  
**Description:** Introduces the role of the engineer in a business environment. Topics include the role of professional organizations, professional and ethical codes, and current trends.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 819 Applied Management Science for Engineering and Operations**  
**Prerequisites:** Graduate standing, and MECH 321 or MATH 380 or equivalent course in probability & statistics. Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.  
**Notes:** Engineering work experience is required, but may be waived at the discretion of the MEM program director or the faculty teaching the course.  
**Description:** Introduces optimization methods for decision making and planning. Several management science models and their application to engineering and operations management are covered. Emphasis is on problem formulation, software solution, and interpretation for application and decision-making. Topics include: linear programming and its applications such as product mix, blending, multi-period scheduling; data envelopment analysis; distribution models (transportation, transshipment, assignment); network flow models (shortest route, minimal spanning tree, maximal flow); integer programming and nonlinear programming.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 820 Quantitative Analysis for Engineering Management Decisions**  
**Prerequisites:** Graduate standing, and MECH 321 or MATH 380 or equivalent course in probability & statistics. Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.  
**Notes:** Engineering work experience is required, but may be waived at the discretion of the MEM program director or the faculty teaching the course.  
**Description:** A working knowledge of the topics is essential for an engineering manager to effectively conduct business and communicate with internal and external members of work unit and organization. Emphasis is on problem formulation, software solution, and interpretation for application and decision-making. Topics are: decision analysis, multi-criteria decision making, queuing theory, project management, simulation, forecasting, and inventory management.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 821 Engineering Work in Private Practice**  
**Prerequisites:** Graduate standing.  
**Description:** Introduces the role of the engineer in private practice. Topics include the role of professional organizations, professional and ethical codes, and current trends.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 822 Production and Operations Management**  
**Prerequisites:** Graduate Standing  
**Description:** Covers principles and issues regarding production and technical operations for the engineering manager. Topics and techniques for the management of manufacturing and services in engineering and technology environments are emphasized including a focus on manufacturing and business processes, lean systems, factory physics, and constraints management. Case studies and spreadsheet modeling are used to relate concepts to real-world technical operations applications.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 823 Engineering Work in Local, State, and Federal Government**  
**Prerequisites:** Graduate Standing  
**Description:** Introduces the role of engineers in local, state, and federal government agencies. Topics include the role of professional organizations, professional and ethical codes, and current trends.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 824 Engineering Sector Economics**  
**Prerequisites:** Graduate Standing  
**Description:** Introduces the role of the engineer in a business environment. Topics include the role of professional organizations, professional and ethical codes, and current trends.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 825 Engineering Work in Private Practice**  
**Prerequisites:** Graduate Standing  
**Description:** Introduces the role of the engineer in private practice. Topics include the role of professional organizations, professional and ethical codes, and current trends.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 891 Special Topics in Engineering Management**  
**Prerequisites:** Graduate Standing. Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.  
**Description:** Subject matter in emerging areas of engineering management and closely related areas not covered in other courses within the MEM curriculum. Topics, activities, and delivery methods vary.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded

**EMGT 892 Special Topics in Engineering Management**  
**Prerequisites:** Graduate Standing. Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.  
**Description:** Subject matter in emerging areas of engineering management and closely related areas not covered in other courses within the MEM curriculum. Topics, activities, and delivery methods vary.  
**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded
EMGT 901 Total Quality Management Using Six Sigma Techniques

**Prerequisites:** MECH 321 or equivalent. Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.

**Notes:** Designed for Engineers working in the field.

**Description:** Statistical quality control and improvement is more than an engineering concern. Quality management is a major business strategy for increasing productivity and gaining competitive advantage in all industries and types of organizations. Covers differing perspectives and definitions of quality, tools and techniques for managing quality and continuous improvement; statistical methods; creation and interpretation of variable and attribute control charts; and Six Sigma tools for detection and isolation of sources of variation, process control, and capability analysis. The goal is to develop an operational use and familiarity with contemporary methods that are effective in managing quality, including Six Sigma.

**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded  
**Offered:** SPRING

EMGT 905 Strategic Management and Planning

**Prerequisites:** Students admitted into the MEM degree program or the Graduate Certificate in Engineering Management get priority enrollment. Other students require permission.

**Notes:** Designed for Engineers working in the field.

**Description:** Creating new and innovative business and corporate entrepreneurship requires a strategic vision to inform and align decision making at all organizational levels. Focuses on strategies that a firm could apply to design a structure for becoming a learning and ethical organization, to create value, and to develop and sustain competencies to gain competitive advantage in the market.

**Credit Hours:** 3  
**Max credits per semester:** 3  
**Max credits per degree:** 3  
**Grading Option:** Graded