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## The Master of Engineering Management (MEM) with a Specialization in Project Management Course Description Sheet

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**Ralph Alan Dusseau, Ph.D., P.E., DRBA Professor, MEM Coordinator and Faculty Advisor, 856-256-5322, [dusseau@rowan.edu](mailto:dusseau@rowan.edu)**

### **Master of Engineering Management (MEM) Program**

The online MEM program At Rowan through CPCE requires 30 graduate credit hours (10 courses).

The goal of Engineering Management at Rowan University is to effectively prepare graduate students for management positions in the engineering profession by providing them with the necessary skill sets, knowledge, and training to succeed as engineering managers.

The Master of Engineering Management (MEM) Program is open to students with bachelor's degrees in engineering, engineering technology, biology, chemistry, physics, mathematics, or computer science, or a bachelor's degree in education with appropriate coursework in science and mathematics. Applicants with other bachelor's degrees will be considered for admission to the MEM Program on a case-by-case basis. The undergraduate foundation courses required for admission to the MEM Program are Chemistry I, Physics I, Calculus I, and Statistics I or the equivalent. (See the MEM Detail Sheet for information about satisfying foundation course requirements.)

### **MEM Course Descriptions**

#### **CEE 08.504: Engineering Estimating 3 s.h.**

The course deals with the development of engineering estimates for civil engineering projects and project components including labor, materials and equipment. Total project costs including direct and indirect costs, field and home-office costs, and contingency are covered. Also covered are the various types of civil engineering estimates including piles and cofferdams, wellpoints and earthdrilling, water and sewer systems, road and highway pavements, concrete buildings and bridges, and steel buildings and bridges. The course includes appropriate computer applications.

#### **EM 01.501: Engineering Economics 3 s.h.**

This course covers a variety of topics in engineering economics including the following: economic equivalence, inflation, return on investment, return on assets, asset management, capital planning, budgets, financial records and control, taxes and depreciation, replacement cost analysis, break-even analysis, cost-benefit ratios, and value engineering.

#### **EM 01.511: Strategic Risk Management 3 s.h.**

This course deals with the a range of topics related to risk management including the following: risk terminology, tools for quantitative analysis of environmental and technological risks, social risk issues, risk in modern life, statistical analyses, data presentation, dose-response models for carcinogens, model limitations, models of risk aversion, psychological and community perceptions of risk, risk communication, environmental and health risk issues in the media, and case studies of accidents and incidents.

#### **EM 01.512: Quality in Engineering Management 3 s.h.**

This course covers a range of topics related to quality management including the following: concepts and philosophy of quality management, leadership, data analysis, human resources, quality assurance and results, quality methods and tools, continuous improvement, total quality management, six-sigma, quality costs, employee participation, customer satisfaction, vendor quality, benchmarking, statistical process control, quality function development, and case studies of quality management.

#### **EM 01.531: Engineering Inventions & Creative Design 3 s.h.**

This course covers several topics including the innovation process, the theory of creative problem solving, patents, and bringing innovation to the bottom line. Discussions of the innovation process include: creating paradigm shifts, proven brainstorming techniques, and effective utilization of all resources. The theory of creative problem solving includes basic principles and applications in the real world. The discussion patents include the basics of the international patent system. The discussion of bringing innovation to the bottom line includes: Stage Gate Project Management techniques, project portfolio management, critical links between the business team and the customer, and managing multiple priorities- doing more with less. Case studies in invention and creative design are included.

#### **EM 01.541: Ethics & Law**

This course introduces students to law and ethics as it applies to engineering and engineering management. Topics covered in the area of law include the following: legal responsibilities of owners, designers, and contactors; risk management via insurance, surety bonds, and contracts; legal implications of the common activities of design professionals; liens, expert testimony; and patent law. Topics covered in the area of ethics include the following: ethical codes of professionals, derivation of ethical structures; and the role of the engineer in assuring public safety, health, and welfare. Case studies dealing with law and ethics are included.

## MEM Course Descriptions Continued

### **ENGR 01.501: Special Topics in Engineering: Strategic Decision Making 3 s.h.**

This course covers the following topics related to decision making: identifying and balancing risk associated with technology development, mathematical decision tree equations, psychological aspects of decision-making, mathematical programming for optimization, the theory behind methods and models, practical applications of decision methods and models, and case studies of decision making.

### **MIS 02.526: Project Management for Engineers 3 s.h.**

In this course, students will learn the Project Management Book of Knowledge (PMBOK) as put forward by the professional association, the Project Management Institute (PMI). Students will not only study the various phases and documents of project management, they will also have experience creating each of the documents for a given project.

### **MGT 06.666: Managing Engineering Teams 3 s.h.**

This course deals with topics in areas of human relations and team building. The topics covered in the area of human relations include the following: human resources, employment practices, labor relations, the history of collective bargaining, practices in union and non-union organizations, productivity, computerization, worker participation, expanding and declining labor markets, diversity, equal opportunity, harassment, and case studies in human relations. Topics in the area of team building include group dynamics, team building activities, conflict resolution, and case studies in team building.

### **MGT 06.677: Management Skills for Engineers 3 s.h.**

Technical skills are necessary but insufficient for success in engineering management. It is also necessary for engineering managers to be effective motivators and leaders. In this course, students will also learn optimal techniques of hiring and rewarding engineers.

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### **Helpful Rowan Contact Information**

#### **Tiffany Fortunato**

CPCE Administrative Advisor

(Provides assistance from initial inquiry to initial matriculation)

Phone: 856-256-4742

Email: [fortunato@rowan.edu](mailto:fortunato@rowan.edu)

#### **Dr. Ralph Dusseau**

MEM Coordinator and Faculty Advisor

(Provides academic assistance after initial registration to graduation clearance) Phone: 856-256-5322

Email: [dusseau@rowan.edu](mailto:dusseau@rowan.edu)

*\*Excerpted from the Rowan University Graduate Catalog, 2007-2008, with updates provided by CPCE*

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