

# GRADUATE PROGRAMS

## in ENGINEERING MANAGEMENT



## at UMBC

# ENGINEERING MANAGEMENT

The **Engineering Management Program** at UMBC combines a practical business approach with an in-depth technical concentration and emphasizes how to manage people and complex projects. Courses are developed and taught by industry experts, and are designed to address real-world problems in the workplace.

### PROGRAMS OFFERED

- Master's of Science in Engineering Management
- Graduate Certificate in Engineering Management

### ADMISSION REQUIREMENTS

- B.S. degree in Engineering, Computer Science, Mathematics, Physics, Chemistry, or other physical sciences
- Minimum undergraduate G.P.A. of 3.0 in a 4.0 scale.
- Graduate Record Examination (GRE) scores are **not** required if you earned an undergraduate degree from an accredited U.S. university
- Official transcripts (M.S.)
- Unofficial transcripts (Certificate)

### INTERNATIONAL STUDENT REQUIREMENTS

- TOEFL score of at least 94 with management or supervisory experience, or 99 without supervisory experience. The minimum component scores are: Writing: (23), Listening: (23), Reading: (25), Speaking: (23 to 28 depending on experience) or IELTS 7.5
- GRE scores are **not** required if your undergraduate degree was completed at an accredited U.S. university. GRE combined score of at least 1230. The Verbal Reasoning score should be at least 500 and the Analytical Writing score should be at least 4.5

### APPLICATION INFORMATION

Applications for admission are accepted year round. Students may begin the master's and graduate certificate in either the fall, spring semester or summer session. International applicants can only apply for the fall or spring semester to accommodate the need for full-time enrollment.

Students may enter the program as a master's degree student, a certificate student, or as someone who simply wants to take a course for their own professional development (non-degree student).

### COSTS AND FINANCIAL AID

#### Maryland Resident

Tuition per credit: \$486 (plus mandatory fees)\*

#### Non-Resident

Tuition per credit: \$804 (plus mandatory fees)\*

*This program does not offer merit-based financial aid. For more information on tuition and fees, please visit:*

[www.umbc.edu/bursar/tuition](http://www.umbc.edu/bursar/tuition).

*\*For Academic Year 2011/2012*

### ACCELERATED BACHELOR'S/MASTER'S

The accelerated degree program is designed to let students start taking courses toward a master's degree at UMBC while still an undergraduate. Once admitted to a participating UMBC master's program, students can apply these graduate-level courses toward a master's degree.

Learn more:

[umbc.edu/gradschool/gradcatalog/admissions.html](http://umbc.edu/gradschool/gradcatalog/admissions.html)

### FOR MORE DETAILS [umbc.edu/engm](http://umbc.edu/engm)

#### For application information:

Nancy Clements, Program Specialist, 410-455-5536  
[nancyc@umbc.edu](mailto:nancyc@umbc.edu)

#### For program information:

Dr. Ted Foster, Program Director, 410-455-1564  
[tfoster@umbc.edu](mailto:tfoster@umbc.edu)

**UMBC**

AN HONORS UNIVERSITY IN MARYLAND

## MASTER'S OF SCIENCE IN ENGINEERING MANAGEMENT (30 CREDITS)

The Engineering Management Program combines a practical business approach with an in-depth technical track and emphasizes how to manage people and complex projects. The aim of the program is to provide students with a basic and focused set of advanced business and management skills coupled with advanced skills in a specific technical area commensurate with students' interests and likely technical employment. The combination of these advanced skills and knowledge will help students assimilate and integrate practical technical experience for the management of technology-based enterprises or government functions. Although not required for participating in this program, it is expected that students are, or intend to be, employed in a technology-oriented enterprise or government program.

### **Degree Requirements**

- Core Management Courses (12 credits)
- Elective Management Courses (6 credits)
- Technological Track (12 credits)

### ***Required Core Management Courses (12 credits)***

#### **ENMG 650: Project Management Fundamentals**

Students learn the fundamentals of managing projects in a systematic way. These fundamentals can be applied within any industry and work environment and will serve as the foundation for more specialized project management study. **OR**

#### **ENMG 668: Project and Systems Engineering Management**

This course will cover fundamental project control and systems engineering management concepts, including how to plan, set up cost accounts, bid, staff and execute a project from a project control perspective. It provides an understanding of the critical relations and interconnections between project management and systems engineering management.

#### **ENMG 652: Management, Leadership, and Communication**

Students learn effective management and communication skills through case study-analysis, reading, class discussion and role-playing.

#### **ENMG 656: Engineering Law and Ethics**

This course provides a comprehensive overview of important legal principles affecting engineers, engineering sciences and corporate management, with a focus on the intersection of these legal principles with business ethics.

#### **ENMG 658: Financial Management**

This course is focused on financial decision making and the common financial management practices of science-based organizations. The course covers the development and analysis of financial statements/reports in science-based businesses, project budgeting, profit planning, return on investment, risk and return, strategy and options. **OR**

## ENMG 662: Financial Decision-Making for Engineering

This course examines decision-making in engineering organizations based on comparisons of the investment worth of alternative courses of action with respect to their costs and/or incomes. The course presents the overlapping aspects of accounting, finance, and investment analysis.

### ***Elective Management Courses (6 credits)*** ***Choose two***

- CYBR 620: Introduction to Cybersecurity
- CYBR 621: Cyber Warfare
- CYBR 622: Global Cyber Capabilities and Trends
- CYBR 623: Cybersecurity Law & Policy
- ENMG 654: Leading Teams & Organizations
- ENMG 659: Strategic Management
- ENMG 660: System Engineering Principles
- ENMG 661: Leading Global/Virtual Teams
- ENMG 662: Financial Decision Making in Engineering
- ENMG 672: Decision and Risk Analysis
- ENMG 690: Innovation and Technology Entrepreneurship

### ***Courses for Engineering and Information Technology Tracks (12 credits):*** ***Choose four***

- Chemical/Biochemical Regulatory Engineering
- Chemical Engineering
- Computer Engineering
- Computer Science
- Cybersecurity
- Electrical Engineering
- Environmental Engineering
- Information Systems
- Mechanical Engineering
- Systems Engineering

*\* Students may take courses from multiple tracks.*

## GRADUATE CERTIFICATE IN ENGINEERING MANAGEMENT (12 CREDITS)

The perfect solution for experienced engineers with a specific need for management training.

The Graduate Certificate in Engineering Management is designed to help you complement your existing disciplinary expertise with new business skills. This program is designed for engineers employed in technology-oriented enterprises or government programs. All of the courses in the Certificate program can be applied to the Master of Science in Engineering Management.

### ***Four Required Courses (12 credits)***

ENMG 650: Project Management Fundamentals **OR**  
 ENMG 668: Project and Systems Engineering Management  
 ENMG 652: Management, Leadership & Communications  
 ENMG 656: Engineering Law & Ethics  
 ENMG 658: Financial Management **OR**  
 ENMG 662: Financial Decision-Making in Engineering

