

# Graduate Programs in SYSTEMS ENGINEERING

**UMBC**  
AN HONORS UNIVERSITY IN MARYLAND



**Master of Science:**  
Systems Engineering

**Post-Baccalaureate Certificate:**  
Systems Engineering

## Systems Engineering - a professionally-focused and relevant graduate degree

- » Discover how to develop systems that meet customer requirements while navigating the complexities of system design.
- » Explore the entire systems engineering life cycle, including requirements analysis, systems architecture and design, modeling, simulation and analysis, and system implementation and test.
- » Learn to lead systems engineering teams.

## When you choose UMBC Professional Programs, you can count on:

- » Courses developed and taught by industry experts and designed to address real-world problems encountered in designing systems.
- » Flexible evening class schedule that accommodates working professionals.
- » Wide-ranging resources offered at a top-notch public research university.

## Why UMBC?

- » UMBC provides a comprehensive and quality education at a manageable cost.
- » The 2017 *U.S. News & World Report Best Colleges* guide ranks UMBC in the top five on its closely-watched Most Innovative Schools list and has recognized UMBC as a global leader in higher education.
- » UMBC is classified by the Carnegie Foundation as a Research University (High Research Activity).
- » UMBC is uniquely positioned to provide education and training that respond to the state's need for qualified technical professionals in the engineering field.



[se.umbc.edu](http://se.umbc.edu)

### For Program Information:

Dr. Toby Gouker  
Program Director  
[tgouker@umbc.edu](mailto:tgouker@umbc.edu)

### For Application Information:

Kim Edmonds  
Program Coordinator  
[kedmonds@umbc.edu](mailto:kedmonds@umbc.edu) | 410-455-3445

## Admission Requirements

### M.S. and Graduate Certificate:

- » A bachelor's degree in Engineering, Computer Science or Information Systems
- » Minimum undergraduate GPA of 3.0 on a 4.0 scale
- » GRE scores are not required
- » Letters of recommendation are not required for applicants with a degree from accredited U.S. institution

### International Applicants:

Please visit [se.umbc.edu/international](http://se.umbc.edu/international) for detailed admissions requirements for international applicants.

- » Please pay special attention to English proficiency and testing requirements

## Admission Deadlines

**Fall:** August 1

**Spring:** December 1

For detailed application process please visit: [se.umbc.edu](http://se.umbc.edu)

## Master's Program

### Master of Science (M.S.): Systems Engineering 30 Credits (10 courses)

#### Systems Engineering Required Core Courses (18 Credits)

ENEE 660: Systems Engineering Principles
ENEE 661: System Architecture and Design
ENEE 662: System Modeling, Simulation, and Analysis
ENEE 663: System Implementation, Integration, and Test
ENEE 670: Systems Engineering Project
ENEE 672: Decision and Risk Analysis



#### Technical Breadth Courses (No More Than 9 Credits)

ENMG 668: Project and Systems Engineering Management	ENGM 659: Strategic Management
ENMG 652: Management, Leadership and Communication	CYBR 621: Cyber Warfare
ENMG 654: Leading Teams and Organizations	CYBR 622: Global Cyber Capabilities and Trends
	CYBR 623: Cybersecurity Law and Policy

#### Technical Depth Courses (At Least 3 Credits)

ENEE 664: Advanced System Architecture	CYBR 620: Introduction to Cybersecurity
ENEE 666: Architecting Security	CMPE 685: Introduction to Communications Networks
ENEE 667: Advanced Systems Engineering Processes (2 credits)	Other Engineering, Computer Engineering, Computer Science, Information Systems, and Health IT Courses
ENMG 664: Quality Engineering and Management	
ENEE 669: Mathematics and MATLAB fundamentals (1 credit)	

*Students are urged to confer with the Systems Engineering Program Director for selection of elective courses to ensure that graduation requirements are met.*

## Certificate Program

### Post-Baccalaureate Certificate: Systems Engineering 4 Required Courses (12 Credits)

#### OPTION A

ENEE 660: Systems Engineering Principles
ENEE 661: System Architecture and Design
ENEE 663: System Implementation Integration, and Test
ENEE 662: System Modeling, Simulation, and Analysis

#### OPTION B

ENEE 660: Systems Engineering Principles
ENEE 661: System Architecture and Design
ENEE 663: System Implementation, Integration, and Test
ENEE 672: Decision and Risk Analysis

Please consult [se.umbc.edu](http://se.umbc.edu) for schedule.

This academic program is a participant in the U.S. Department of Education Gainful Employment program. For more information, <https://gradschool.umbc.edu/resources/careers/gainfulemploy/>

## Office of Professional Programs

UMBC's Office of Professional Programs offers a broad array of professionally focused master's degree and certificate programs that address industry needs while anticipating future opportunities.

[professionalprograms.umbc.edu](http://professionalprograms.umbc.edu)