

# MECHATRONICS ENGINEERING - M.S.

College of Aeronautics and Engineering  
www.kent.edu/cae

## About This Program

Looking to advance your career in the field of mechatronics engineering? The M.S. degree in Mechatronics Engineering is the perfect choice. Our program provides students with the skills and knowledge needed to design and develop advanced systems that integrate mechanical, electrical and computer systems. With a focus on real-world applications and hands-on learning, graduates are prepared for careers in industries such as automotive, aerospace and robotics. Read more...

## Contact Information

- Program Coordinator: **Ali Abdul-Aziz, Ph.D., P.E.** | CAEgraduatestudies@kent.edu | 330-672-1032
- Connect with an Admissions Counselor: U.S. Student | International Student

## Program Delivery

- **Delivery:**
  - In person
- **Location:**
  - Kent Campus

## Examples of Possible Careers and Salaries\*

### Architectural and engineering managers

- 2.6% slower than the average
- 198,100 number of jobs
- \$149,530 potential earnings

### Engineering teachers, postsecondary

- 8.6% much faster than the average
- 44,600 number of jobs
- \$103,600 potential earnings

### Engineers, all other

- 1.3% slower than the average
- 170,100 number of jobs
- \$103,380 potential earnings

\* Source of occupation titles and labor data comes from the U.S. Bureau of Labor Statistics' Occupational Outlook Handbook. Data comprises projected percent change in employment over the next 10 years; nation-wide employment numbers; and the yearly median wage at which half of the workers in the occupation earned more than that amount and half earned less.

For more information about graduate admissions, visit the graduate admission website. For more information on international admissions, visit the international admission website.

## Admission Requirements

- Bachelor's degree in mechatronics engineering or closely related area (e.g., electrical engineering or mechanical engineering) from an accredited college or university
- Minimum 2.750 GPA on a 4.000 point scale
- Official transcript(s) from each institution in which eight or more semester credit hours were attempted
- Goal Statement
- Three letters of recommendation
- English language proficiency - all international students must provide proof of English language proficiency (unless they meet specific exceptions) by earning one of the following:
  - Minimum 550 TOEFL PBT score
  - Minimum 79 TOEFL IBT score
  - Minimum 77 MELAB score
  - Minimum 6.5 IELTS score
  - Minimum 58 PTE score
  - Minimum 110 Duolingo English score

## Application Deadlines

- **Fall Semester**
  - Application deadline: November 1

*Applications submitted after this deadline will be considered on a space-available basis.*

## Program Requirements

### Major Requirements

Code	Title	Credit Hours
<b>Major Requirements</b>		
ENGR 53030	MECHATRONICS	3
ENGR 57200	SYSTEMS ENGINEERING	3
ENGR 58005	LINEAR SYSTEM ANALYSIS AND CONTROL	3
ENGR 61091	GRADUATE SEMINAR	1
Mathematics Elective, choose from the following:		3
MATH 50015	APPLIED STATISTICS	
MATH 52011	MATHEMATICAL OPTIMIZATION	
MATH 52031	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS	
MATH 52045	PARTIAL DIFFERENTIAL EQUATIONS	
MATH 52201	NUMERICAL COMPUTING I	
MATH 52202	NUMERICAL COMPUTING II	
Focus Areas, choose one course from two areas:		6
<b>Control Systems</b>		
ENGR 58004	OPTIMAL CONTROL THEORY	
ENGR 58006	NONLINEAR SYSTEMS AND CONTROL	
ENGR 58007	DIGITAL CONTROL SYSTEMS	
ENGR 58008	INTRODUCTION TO ROBUST CONTROL	
<b>Robotics and Automation</b>		
CS 53301	SOFTWARE DEVELOPMENT FOR ROBOTICS	
CS 53334	HUMAN-ROBOT INTERACTION	

ENGR 57300	MEDICAL ROBOTICS
ENGR 57400	ROBOTICS: KINEMATICS AND DESIGN
ENGR 58101	AUTONOMOUS UNMANNED AERIAL SYSTEMS
ENGR 62620	INDUSTRIAL AUTOMATION AND CONTROL
Machine Intelligence	
CS 54201	ARTIFICIAL INTELLIGENCE
CS 54202	MACHINE LEARNING AND DEEP LEARNING
CS 64201	ADVANCED ARTIFICIAL INTELLIGENCE
ENGR 58010	MACHINE VISION
ENGR 58102	INTELLIGENT SENSING AND PLANNING OF UNMANNED AERIAL SYSTEMS
Other courses with approval from advisor and/or college	
Graduate Elective, choose from the following:	
3	
CS 53301	SOFTWARE DEVELOPMENT FOR ROBOTICS
CS 53334	HUMAN-ROBOT INTERACTION
CS 54201	ARTIFICIAL INTELLIGENCE
CS 54202	MACHINE LEARNING AND DEEP LEARNING
CS 57201	HUMAN COMPUTER INTERACTION
CS 64201	ADVANCED ARTIFICIAL INTELLIGENCE
ENGR 52410	ENGINEERING OPTIMIZATION
ENGR 57300	MEDICAL ROBOTICS
ENGR 57400	ROBOTICS: KINEMATICS AND DESIGN
ENGR 58004	OPTIMAL CONTROL THEORY
ENGR 58006	NONLINEAR SYSTEMS AND CONTROL
ENGR 58007	DIGITAL CONTROL SYSTEMS
ENGR 58008	INTRODUCTION TO ROBUST CONTROL
ENGR 58010	MACHINE VISION
ENGR 58102	INTELLIGENT SENSING AND PLANNING OF UNMANNED AERIAL SYSTEMS
ENGR 58101	AUTONOMOUS UNMANNED AERIAL SYSTEMS
ENGR 60030	QUANTITATIVE METHODS I
ENGR 61096	INDIVIDUAL INVESTIGATION IN ENGINEERING
ENGR 62620	INDUSTRIAL AUTOMATION AND CONTROL
Other courses with approval from advisor and/or college	
Culminating Requirements	
Choose from the following:	
9	
Thesis Option <sup>1</sup>	
ENGR 65098	RESEARCH
ENGR 65199	THESIS I
Non-Thesis Option <sup>2</sup>	
ENGR 65098	RESEARCH
Graduate Electives (from courses listed above)	
Minimum Total Credit Hours:	
31	

1. Conduct literature searches, comprehend advanced research materials and uncover connections between related work.
2. Perform research, discovery and integration by applying advanced knowledge of mechatronics engineering.
3. Communicate problems and solutions in mechatronics engineering clearly, both verbally and in writing.

## Full Description

The Master of Science degree in Mechatronics Engineering provides an advanced theoretical and/or research-oriented curriculum with significant depth in mechatronics-related discipline, beyond the general fundamentals of the engineering bachelor's degree.

<sup>1</sup> Students selecting the thesis option complete 3 credit hours of ENGR 65098 and must continually register for ENGR 65199 for maximum 6 credit hours toward the degree (students may need to register for ENGR 65299 to complete the thesis requirement; however, those credit hours do not, whatsoever, count toward the degree).

<sup>2</sup> Students selecting the non-thesis option complete 3 credit hours of ENGR 65098 and 6 credit hours from the elective options in the program. At minimum, the non-thesis activity requires a report and a presentation and/or demonstration.

## Program Learning Outcomes

Graduates of this program will be able to: