MECHATRONICS ENGINEERING - M.S.

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

Examples of Possible Careers*

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

Additional Careers

- Research

Contact Information

- Program Coordinator: **D. Blake Stringer | Stephanie Fussell** | caegraduatestudies@kent.edu
  330-672-2892
- Speak with an Admissions Counselor (gradadmissions@kent.edu)

Fully Offered

- Kent Campus

Admission Terms

- Fall
- Spring
- Summer

***Note**
Source of occupation titles and labor data is 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.

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.

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 for unconditional admission
- Minimum 3.000 GPA on a 4.000 point scale for unconditional admission
- 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 (paper-based version)
  - Minimum 79 TOEFL IBT score (internet-based version)
  - Minimum 77 MELAB score
  - Minimum 6.5 IELTS score
  - Minimum 58 PTE score
  - Minimum 110 Duolingo English test score

For more information about graduate admissions, please visit the Graduate Studies website. For more information on international admission, visit the Office of Global Education website.

Program Learning Outcomes

Graduates of this program will be able to:

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.

Program Requirements

Major Requirements

Code	Title	Credit Hours
Major Requirements		
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
Control Systems		
ENGR 58004	OPTIMAL CONTROL THEORY	

ENGR 58006	NONLINEAR SYSTEMS AND CONTROL	
ENGR 58007	DIGITAL CONTROL SYSTEMS	
ENGR 58008	INTRODUCTION TO ROBUST CONTROL	
Robotics and Automation		
CS 53301	SOFTWARE DEVELOPMENT FOR ROBOTICS	
CS 53334	HUMAN-ROBOT INTERACTION	
ENGR 52620	INDUSTRIAL AUTOMATION AND CONTROL	
ENGR 57300	MEDICAL ROBOTICS	
ENGR 57400	ROBOTICS: KINEMATICS AND DESIGN	
ENGR 58200	AUTONOMOUS UNMANNED AERIAL SYSTEMS	
Machine Intelligence		
CS 54201	ARTIFICIAL INTELLIGENCE	
CS 54202	MACHINE LEARNING AND DEEP LEARNING	
CS 64201	ADVANCED ARTIFICIAL INTELLIGENCE	
ENGR 58010	MACHINE VISION	
ENGR 58100	INTELLIGENT SENSING AND PLANNING OF UNMANNED AERIAL SYSTEMS	
Other courses with approval from advisor and/or college		
Graduate Elective, choose from the following:		3
AERN 65250	APPLIED HUMAN FACTORS ENGINEERING	
AERN 65280	HUMAN INFORMATION PROCESSING	
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 52620	INDUSTRIAL AUTOMATION AND CONTROL	
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 58100	INTELLIGENT SENSING AND PLANNING OF UNMANNED AERIAL SYSTEMS	
ENGR 58200	AUTONOMOUS UNMANNED AERIAL SYSTEMS	
ENGR 60030	QUANTITATIVE METHODS I	
Other courses with approval from advisor and/or college		
Culminating Requirements		
Choose from the following:		9
Thesis Option [1]		
ENGR 65098	RESEARCH	
ENGR 65199	THESIS I	
Non-Thesis Option [2]		
ENGR 65098	RESEARCH	
Graduate Electives (from courses listed above)		
Minimum Total Credit Hours:		31

[1] 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).

[2] 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.