

# MECHATRONICS ENGINEERING - PH.D.

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

## About This Program

The Ph.D. 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.

## Contact Information

- CAEgraduatestudies@kent.edu | 330-672-2892
- Connect with an Admissions Counselor

## Program Delivery

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

## Examples of Possible Careers and Salaries\*

### 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

### Electronics engineers, except computer

- 1.4% slower than the average
- 134,900 number of jobs
- \$107,540 potential earnings

### Electrical engineers

- 4.6% about as fast as the average
- 193,100 number of jobs
- \$100,830 potential earnings

### Mechanical engineers

- 3.9% about as fast as the average
- 316,300 number of jobs
- \$90,160 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 or master's degree in mechatronics engineering or closely related area (e.g., electrical engineering or mechanical engineering) from an accredited college or university
- Minimum 3.000 GPA on a 4.000-point scale
- Official transcript(s) from each institution in which 8+ 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 to waive) by earning one of the following:<sup>1</sup>
  - Minimum 79 TOEFL iBT score
  - Minimum 6.5 IELTS score
  - Minimum 58 PTE score
  - Minimum 110 DET score

<sup>1</sup> International applicants who do not meet the above test scores may be considered for conditional admission.

## Application Deadlines

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

All application materials (including applicable fee, transcripts, recommendation letters, etc.) 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 81091	GRADUATE SEMINAR (taken for 3 credit hours total)	3
Advisor-approved courses in or outside the College of Aeronautics and Engineering <sup>1</sup>		0-30
Major Electives, choose from the following:		18
Engineering		
ENGR 72410	ENGINEERING OPTIMIZATION	
ENGR 73030	MECHATRONICS	
ENGR 75270	HUMAN FACTORS ENGINEERING	
ENGR 75400	ADVANCED DYNAMICS	
ENGR 75401	VIBRATIONS	
ENGR 78005	LINEAR SYSTEM ANALYSIS AND CONTROL	
Control Systems		
ENGR 78006	NONLINEAR SYSTEMS AND CONTROL	

ENGR 78007	DIGITAL CONTROL SYSTEMS	
ENGR 78008	INTRODUCTION TO ROBUST CONTROL	
ENGR 88004	OPTIMAL CONTROL THEORY	
Robotics and Automation		
CS 73334	HUMAN-ROBOT INTERACTION	
ENGR 72620	INDUSTRIAL AUTOMATION AND CONTROL	
ENGR 77300	MEDICAL ROBOTICS	
ENGR 77400	ROBOTICS: KINEMATICS AND DESIGN	
ENGR 78101	AUTONOMOUS UNMANNED AERIAL SYSTEMS	
Machine Intelligence		
CS 74201	ADVANCED ARTIFICIAL INTELLIGENCE	
ENGR 78010	MACHINE VISION	
ENGR 78102	INTELLIGENT SENSING AND PLANNING OF UNMANNED AERIAL SYSTEMS	
Other courses with approval from advisor and graduate program representative		
<i>Culminating Requirements</i>		
ENGR 85098	RESEARCH (taken for 9 credit hours total)	9
ENGR 85199	DISSERTATION I <sup>2</sup>	30
<b>Minimum Total Credit Hours for Post-Baccalaureate Students:</b>		<b>90</b>
<b>Minimum Total Credit Hours for Post-Master's Students:</b>		<b>60</b>

<sup>1</sup> Post-baccalaureate students may apply toward the 30 credit hours a maximum 15 credit hours of coursework outside the College of Aeronautics and Engineering and 9 credit hours of research (maximum 18 credit hours total of research toward the degree).

<sup>2</sup> Each doctoral candidate, upon admission to candidacy, must register for ENGR 85199 for a total of 30 credit hours. It is expected that a doctoral candidate will continuously register for ENGR 85199, and thereafter ENGR 85299, each semester, until all requirements for the degree have been met. The dissertation is specialized research, leading to a definitive contribution to the candidate's research focus-area. This contribution should be of sufficient importance to warrant publication in a recognized journal. The candidate must successfully propose and defend their research dissertation in a public setting.

## Graduation Requirements

Minimum Major GPA	Minimum Overall GPA
-	3.000

## 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.