MECHATRONICS ENGINEERING - PH.D.

College of Aeronautics and 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
• 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*
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

Aerospace engineers
• 2.8% slower than the average
• 66,400 number of jobs
• $118,610 potential earnings

Operations research analysts
• 24.8% much faster than the average
• 105,100 number of jobs
• $86,200 potential earnings

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 2.750 GPA on a 4.000-point scale (starting with fall 2025 admission term, a minimum 3.000 GPA will be required)
• 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: 1
  • Minimum 79 TOEFL iBT score
  • Minimum 6.5 IELTS score
  • Minimum 58 PTE score
  • Minimum 110 DET score

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

Application Deadlines
• Fall Semester
  • Application deadline: March 1

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

Program Requirements

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGR 81091</td>
<td>GRADUATE SEMINAR (repeated for 3 credit hours total)</td>
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<td>Major Electives, choose from the following:</td>
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Engineering
• ENGR 72410 ENGINEERING OPTIMIZATION
• ENGR 73030 MECHATRONICS
• ENGR 78005 LINEAR SYSTEM ANALYSIS AND CONTROL

Control Systems
• ENGR 78004 OPTIMAL CONTROL THEORY
• ENGR 78006 NONLINEAR SYSTEMS AND CONTROL
• ENGR 78007 DIGITAL CONTROL SYSTEMS
• ENGR 78008 INTRODUCTION TO ROBUST CONTROL

Robotics and Automation
• CS 73334 HUMAN-ROBOT INTERACTION

* 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.
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/or college

Advisor-approved courses in or outside the College of Aeronautics and Engineering 1 0-30

Culminating Requirements
ENGR 85098       RESEARCH (repeated for 9 credit hours total) 9
ENGR 85199       DISSERTATION I 2 30

Minimum Total Credit Hours for Post-Baccalaureate Students: 90
Minimum Total Credit Hours for Post-Master's Students: 60

1 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).

2 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 3.000
Minimum Overall GPA

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.