MECHATRONICS ENGINEERING - M.S.

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

About This Program

The Master of Science degree in Mechatronics Engineering provides an advanced theoretical and/or research-oriented curriculum with significant depth in a 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. U.S. Student | International Student

Program Delivery

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

Examples of Possible Careers and Salaries*

Mechanical engineers

- · 3.9% about as fast as the average
- 316,300 number of jobs
- \$90,160 potential earnings

Electrical engineers

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

Engineering teachers, postsecondary

- 8.6% much faster than the average
- 44,600 number of jobs
- \$103,600 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 a closely related area (e.g., electrical engineering or mechanical engineering) from an accredited college or university¹
- · Minimum 2.750 undergraduate GPA on a 4.000-point scale
- Official transcript(s) from each institution in which 8+ semester credit
 hours were attempted
- Goal statement²
- Three letters of recommendation²
- 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:³
 - Minimum 79 TOEFL iBT score
 - Minimum 6.5 IELTS score
 - Minimum 58 PTE score
 - Minimum 110 DET score
- ¹ Applicants with a bachelor's degree in engineering technology or a nonengineering STEM discipline may be considered for admission before or after completing additional coursework as determined on a case-bycase basis. Applicants should reach out to the College of Aeronautics and Engineering via email (caegraduatestudies@kent.edu) for more information.
- ² Current Kent State undergraduate students who want to apply to the combined B.S./M.S. degree program should contact the College of Aeronautics and Engineering via email (caegraduatestudies@kent.edu) to discuss the process and request waivers for certain admission requirements.
- ³ 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.
- Spring Semester
 - Rolling admissions

Program Requirements

Major Requirements

Code	Title	Credit Hours
Major Requirements		
ENGR 52410	ENGINEERING OPTIMIZATION ¹	3
or ENGR 57200	SYSTEMS ENGINEERING	
ENGR 53030	MECHATRONICS ²	3
ENGR 61091	GRADUATE SEMINAR	1
ENGR 68005	LINEAR SYSTEM ANALYSIS AND CONTROL	3
Focus Areas, choose one course from two areas:		
Control Systems		
ENGR 68004	OPTIMAL CONTROL THEORY	
ENGR 68006	NONLINEAR SYSTEMS AND CONTROL	
ENGR 68007	DIGITAL CONTROL SYSTEMS	
ENGR 68008	INTRODUCTION TO ROBUST CONTROL	

Machine Intellige	nce	MATH 52202	NUMERICAL APPROXIMATION AND		
CS 54201	ARTIFICIAL INTELLIGENCE ¹		OPTIMIZATION		
CS 54202	MACHINE LEARNING AND DEEP LEARNING ¹	Culminating Requirer	nent		
CS 64201	ADVANCED ARTIFICIAL INTELLIGENCE	Choose from the following: 9			
ENGR 58010	MACHINE VISION ¹	Thesis Option ⁴			
ENGR 68102	INTELLIGENT SENSING AND PLANNING OF	ENGR 65098	RESEARCH		
	UNMANNED AERIAL SYSTEMS	ENGR 65199	THESIS I		
Robotics and Aut	omation	Non-Thesis Optic	on ⁵		
CS 53301	SOFTWARE DEVELOPMENT FOR ROBOTICS ¹	ENGR 65098	RESEARCH		
CS 53334	HUMAN-ROBOT INTERACTION ¹	Graduate Elective	es (from courses listed above)		
ENGR 62620 & ENGR 62621	INDUSTRIAL AUTOMATION AND CONTROL and INDUSTRIAL AUTOMATION AND CONTROL LABORATORY	Minimum Total Credit Hours: 31			
ENGR 67300	MEDICAL ROBOTICS	the graduate course may not take the graduate course toward the			
ENGR 67400	ROBOTICS: KINEMATICS AND DESIGN	degree. Example, students who completed ENGR 42410 may not take			
ENGR 68101	AUTONOMOUS UNMANNED AERIAL SYSTEMS	ENGR 52410.			
Other courses wit	h approval from advisor and graduate program	² Students who completed ENGR 43030 may not take ENGR 53030			
representative		toward the degr	ree. Instead, they must discuss an appropriate		
Graduate Elective, ch	noose from the following: 3	alternative with	their advisor, to be approved by the graduate program		
CS 53301 SOFTWARE DEVELOPMENT FOR ROBOTICS ¹		representative.			
CS 53334	HUMAN-ROBOT INTERACTION ¹	³ Before registeri	³ Before registering for a mathematics (MATH) course, students must		
CS 54201	ARTIFICIAL INTELLIGENCE ¹	contact the Department of Mathematical Sciences to request a			
CS 54202	MACHINE LEARNING AND DEEP LEARNING ¹	 ⁴ Students selecting the thesis option complete 3 credit hours of ⁵ NOD CEOO and must particular the for ENOD CEOO for 			
CS 64201	ADVANCED ARTIFICIAL INTELLIGENCE				
ENGR 52410	ENGINEERING OPTIMIZATION ¹	ENGR 65098 and must continually register for ENGR 65199 for			
ENGR 52710 & ENGB 52711	ADDITIVE MANUFACTURING AND 3D PRINTING	register for ENGR 65299 to complete the thesis requirement; however, those credit hours do not, under any circumstances, count toward the degree).			
	and ADDITIVE MANUFACTURING AND 3D PRINTING LABORATORY ¹				
ENGR 58010	MACHINE VISION ¹	of ENGR 65098 and 6 credit hours from the elective options in the			
ENGR 60030	QUANTITATIVE METHODS I				
ENGR 61096	INDIVIDUAL INVESTIGATION IN ENGINEERING	presentation and/or demonstration.			
ENGR 62620 & ENGR 62621	INDUSTRIAL AUTOMATION AND CONTROL and INDUSTRIAL AUTOMATION AND CONTROL				
ENGB 65270	HUMAN FACTORS ENGINEERING	oraduation	in nequirements		
ENGB 65400		Minimum Major GPA	A Minimum Overall GPA		
ENGR 65401	VIBRATIONS	-	3.000		
ENGB 65501		• No more than	one-half of a graduate student's coursework may be		
ENGB 65502		 taken in 50000-level courses. Grades below C are not counted toward completion of requirements for the degree. 			
ENGB 67300					
ENGB 67400	BOBOTICS: KINEMATICS AND DESIGN				
ENGB 68004					
ENGB 68006		Program L	earning Outcomes		
ENGB 68007		Graduates of this	program will be able to:		
ENGB 68008		Gradudates of this	program will be able to.		
ENGB 68101		1. Conduct litera	ture searches, comprehend advanced research		
ENGB 68102		materials and uncover connections between related work.			
	UNMANNED AERIAL SYSTEMS	2. Perform research, discovery and integration by applying advanced			
Other courses wit representative	n approval from advisor and graduate program	3. Communicate	problems and solutions in mechatronics engineering		
Mathematics Elective	e, choose from the following: ^{1,3} 3	clearly, both v	erbally and in writing.		
MATH 50015	APPLIED STATISTICS				
MATH 52011	MATHEMATICAL OPTIMIZATION				
MATH 52031	MATHEMATICAL MODELS AND DYNAMICAL SYSTEMS				
MATH 52045	PARTIAL DIFFERENTIAL EQUATIONS				
MATH 52201	NUMERICAL LINEAR ALGEBRA				