

Mechatronics Engineering B.S.

Program Description

IEEE/ASME Transactions on Mechatronics was the first refereed journal published in the United States focused on Mechatronics. In the first issue (March 1996), mechatronics was defined as: "The synergistic integration of mechanical engineering with electronics and intelligent computer control in the design and manufacturing of industrial products and processes." Ten specific topics were identified under the general category of mechatronics:

- Modeling and Design
- Motion Control
- System Integration
- Vibration and Noise Control
- Actuators and Sensors
- Micro Devices & Optoelectronic Systems
- Intelligent Control
- Automotive Systems
- Robotics
- Manufacturing

Mechatronic systems can be a complete product or a sub-component of a product. Examples of mechatronic systems include aircraft flight control and navigation systems; automotive electronic fuel injection and anti-lock brake systems; automated manufacturing systems including robots, numerical control machining centers, packaging systems and plastic injection-molding systems; artificial organs; health monitoring and surgical systems; copy machines; and many more. Some common element of all these systems is the integration of analog and digital circuits, microprocessors and computers, mechanical devices, sensors, actuators, and controls.

Mechatronics Engineering graduates can select from a wide spectrum of industries for career choices and can also contribute in a variety of roles including design engineer, software engineer, project planner, product designer, and project manager. Mechatronics Engineering program graduates are able to select from jobs as Mechatronics specialists in a variety of industries. Opportunities are also available to graduates in smaller companies that need generalists who can perform both mechanical and electrical engineering functions.

Engineering Standing Requirements



This program is a part of the Southern Polytechnic College of Engineering and Engineering Technology.

Accreditation

The Bachelor of Science with a major in Mechatronics Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Admission, Enrollment, and Graduation Policies

Admission Requirements

This program does not have specific admission requirements and only admission to Kennesaw State University is required. For more information, please visit the Admissions section of the Catalog.

Graduation Requirements

Each student is expected to meet the requirements outlined in Academic Policies 5.0 PROGRAM REQUIREMENTS & GRADUATION.

Program Course Requirements

Core IMPACTS Curriculum (42 Credit Hours)

General Education Core IMPACTS Curriculum

Core IMPACTS Curriculum Requirements Specific to This Major

Engineering Majors: Must take MATH 1190 in Mathematics & Quantitative Skills, MATH 2202 in Applied Math, and PHYS 2211/2211L and PHYS 2212/2212L in Natural Sciences.

Note: Students cannot take both PHYS 1111/L and PHYS 2211/L nor PHYS 1112/L and PHYS 2212/L.

Core Field of Study (18 Credit Hours)

Students must earn a grade of "C" or better in these courses.

- MATH 2203: Calculus III
 - CHEM 1211: Principles of Chemistry I
 - CHEM 1211L: Principles of Chemistry Laboratory I
 - EDG 1211: Engineering Graphics I
 - CSE 1321: Programming and Problem Solving I
 - CSE 1321L: Programming and Problem Solving I Laboratory
- One (1) credit hour carried over from Mathematics & Quantitative Skills.

Two (2) credit hours carried over from Technology, Mathematics, and Sciences.

Major Requirements (58 Credit Hours)

Students must earn a grade of "C" or better in these courses.

- EE 2501: Digital Logic Design
- ENGR 1000: Introduction to Engineering
- ENGR 2214: Engineering Mechanics – Statics
- ENGR 3122: Engineering Mechanics – Dynamics
- ENGR 3131: Strength of Materials
- MATH 2306: Ordinary Differential Equations
- MATH 3260: Linear Algebra I
- MTRE 1001L: Introduction to Mechatronics Engineering Laboratory
- MTRE 2110: Electric Circuits and Machines
- MTRE 2110L: Electric Circuits and Machines Laboratory
- MTRE 2710: Intermediate Programming for Mechatronics
- MTRE 2710L: Intermediate Programming for Mechatronics Laboratory
- MTRE 3110: Fluid Power
- MTRE 3110L: Fluid Power Laboratory
- MTRE 3610: Modeling and Feedback Control of Dynamic Systems
- MTRE 3610L: Modeling and Feedback Control of Dynamic Systems Laboratory
- MTRE 3720: Introduction to PLCs and Microcontrollers
- MTRE 3720L: Introduction to PLCs and Microcontrollers Laboratory
- MTRE 3810: Device Control and Simulation of Mobile Robots
- MTRE 3810L: Device Control and Simulation of Mobile Robots Laboratory
- MTRE 4710: Instruments and Controls
- MTRE 4710L: Instruments and Controls Laboratory
- MTRE 4810: Robotics Analysis and Synthesis
- MTRE 4810L: Robotics Analysis and Synthesis Laboratory
- MTRE 4820: Machine Learning for Robot Perception
- MTRE 4820L: Machine Learning for Robot Perception Laboratory
- MTRE 4911: Design and Integration of Mechatronic Systems
- MTRE 4912: Mechatronic Prototype Development

Electives (9 Credit Hours)

Students must earn a grade of "C" or better in these courses.

Select 9 credit hours of 3000-4000 level MTRE coursework not previously taken as a requirement in the degree.

Program Total (127 Credit Hours)