MECHATRONICS, MINOR

Requirements for a minor may be completed at any campus location offering the specified courses for the minor. Students may not change from a campus that offers their major to a campus that does not offer their major for the purpose of completing a minor.

Program Description

Mechatronics is an interdisciplinary engineering field that combines mechanical, electrical, electronics, control and computer engineering. The field deals with the design, development, control, and application of advanced electro-mechanical systems. Such systems will include sensors, actuators, microprocessors, controllers, software, computer, and mechanical hardware components. The purpose of the minor is to provide undergraduate students an opportunity to take relevant courses that will sequentially build on their knowledge and understanding of mechatronic systems and to provide recognition to those who do so.

What is Mechatronics?

Mechatronics is a multidisciplinary field of engineering that combines mechanical, electrical, electronics, computer, systems and controls engineering, and focuses on theory and applications of these areas. The field deals with the design, development, control, and application of advanced electro-mechanical systems. Such systems will include sensors, actuators, microprocessors, controllers, software, computer, and mechanical hardware components. The applications of mechatronics engineering include medical, defense, manufacturing, robotics, automotive, and distributed systems and smart consumer products. Mechatronics engineers theorize and develop new solutions to industrial problems using mechanical, electrical and electronic systems and computer technology in addition to designing and building completely new products by integrating various technologies. They may also design and develop newer automated systems by integrating to improve existing process. Recent advances in artificial intelligence and machine learning also provide interesting opportunities for mechatronics engineers to solve many complex real world problems.

You Might Like This Program If...

- You like creative problem-solving and analysis.
- You like understanding how robotics or automation work.
- You like the idea of using mathematics to model and analyze complex systems
- You work well within collaborative, multidisciplinary teams.

Program Requirements

Requirement	Credits
Requirements for the Minor	19-22

Requirements for the Minor

A grade of C or better is required for all courses in the minor, as specified by Senate Policy 59-10 (https://senate.psu.edu/students/policies-and-rules-for-undergraduate-students/59-00-minors-and-certificates/). In addition, at least six credits of the minor must be unique from the prescribed courses required by a student's major(s).

Code	Title	Credits
Prescribed Courses		
Prescribed Courses: Require a grade of C or better		
EE 210	Circuits and Devices	4
Additional Courses		
Additional Courses: Require a grade of C or better		
Select one of the following:		3
CMPSC 121	Introduction to Programming Techniques	
CMPSC 200	Programming for Engineers with MATLAB	
CMPSC 201	Programming for Engineers with C++	
Select 6-8 credits of the following: [1]		6-8
Group A		
CMPEN 270	Digital Design: Theory and Practice	
or CMPEN 271 & CMPEN 27	Introduction to Digital Systems and Digital Design Laboratory	
CMPEN 331	Computer Organization And Design	
or EE 310	Electronic Circuit Design I	
or EE 387	Energy Conversion	
Group B		
ME 345	Instrumentation, Measurements, and Statistics	
or ME 345W	Instrumentation, Measurements, and Statistics	
ME 357	System Dynamics	
Select 6-7 credits of the following (one course each from Category I and II):		6-7
Category I		
CMPEH 472	Microcontrollers	
CMPEN 472	Microprocessors and Embedded Systems	
EE 485	Energy Systems and Conversion	
EE 487	Electric Machinery and Drives	
ME 445	Microcomputer Interfacing for Mechanical Engineers	
Category II		
EE 483	Introduction to Automation and Robotics Systems	
ME 455	Automatic Control Systems	
ME 456	Introduction to Robotics	

[1] Students graduating with a M E major should take 7-8 credits from Group A; students graduating with an EE major should take 7 credits from group B; all other students should take 6-8 credits from both A and B.

Academic Advising

The objectives of the university's academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee's unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (https://senate.psu.edu/students/policies-and-rules-for-undergraduate-students/32-00-advising-policy/)

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