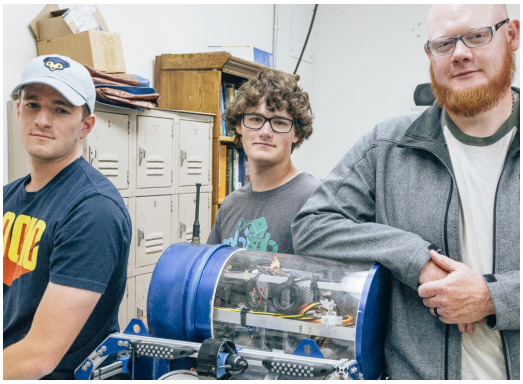
MONTANA STATE UNIVERSITY | Career Counseling



BUILDING YOUR CAREER IN ROBOTICS AND CONTROLS

Did you do FIRST Robotics in high school? Are you interested in automated manufacturing or autonomous vehicles? Taking courses with a robotics focus might be for you. Students interested in robotics are encouraged to consult the requirements for a Mechatronics Minor.

WHAT IS THE FOCUS OF ROBOTICS AND CONTROLS?

The goal of robotics is to design machines that assist humans. Many robots are designed to do tasks that are either hazardous for humans, boring and repetitive or with precision beyond human capabilities. An engineer in this field needs an understanding of how electric motors operate, how feedback control works, and a good understanding of sensor electronics and computer vision.

WHICH INDUSTRIES USE ROBOTICS AND CONTROLS?

Automobiles are constantly getting smarter and smarter, so all the automotive giants are playing in this field, not only for autonomous vehicles but also for automated manufacturing. Semiconductor industry tool manufacturers also move and manipulate silicon wafers through their fabrication process using robotics.

HERE ARE A FEW COMPANIES THAT FREQUENTLY HIRE MSU GRADUATES WITH ROBOTICS AND CONTROLS EXPERTISE

- Amazon
- Boston Dynamics
- John Deere
- Ford
- General Motors
- Hyundai (MT)
- Medtronic
- Tesla

ADVISERS FOR CAREERS IN ROBOTICS AND CONTROLS

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EE ADVISING GUIDE: ROBOTICS & CONTROLS

LAUNCH-PAD COURSES FOR CAREERS IN ROBOTICS & CONTROLS

ROBOTICS & CONTROLS

EELE 308	Signals and Systems Analysis	Fall/Spring	☐
EELE 321	Introduction to Feedback Controls (3 credits)	Fall/Spring	☐
EELE 355	Energy Conversion	Spring	☐
EELE 422	Introduction to Modern Control (3 credits)	Fall	☐
EELE 468	FPGA 2 (4 credits)	Spring	☐
EELE 477	Digital Signal Processing (4 credits)	Spring	☐

Students interested in robotics are encouraged to consult the requirements for an official mechatronics minor.

RELEVANT NON-ECE ELECTIVES

CSCI 232	Data Structures and Algorithms (4 credits)	Fall/Spring/Summer	☐
CSCI 442	Computer Vision: Robotic Vision (3 credits, alt. odd years)	Spring	☐
CSCI 446	Artificial Intelligence (3 credits, alternating odd years)	Fall	☐
CSCI 455	Embedded Systems: Robotics (3 credits, alt. even years)	Spring	☐
EMEC 360	Measurement and Instrumentation (3 credits)	Fall/Spring	☐
EGEN 365	Mechatronics (3 credits)	Spring	☐
EMEC 467	Micro-Electromechanical Systems (3 credits)	Spring	☐

DID YOU KNOW?

Precision Agriculture courses are taught at MSU, which are investigating the use of robots for seed planting, watering and fertilizing in the agricultural industry. For more information contact Paul Nugent, paul.nugent@montana.edu