The Ohio State University
College of Engineering

Robotics and Autonomous Systems

Department of Mechanical and Aerospace Engineering
Scott Lab, 201 W. 19th Ave.,
Columbus, OH 43210

Robotics and Autonomous Systems (RAS) is believed to be one of the transformative technologies for several key fields including healthcare, manufacturing and public safety in the United States. As we know, restructuring of U.S. manufacturing is essential to the future of economic growth and the creation of new jobs and ensuring competitiveness of U.S. industries. Resurgence of RAS has been fueled by recent advances in fast, mobile, computing, artificial intelligence, and machine learning. However, due to a shortfall of investment of robotics research in the past decades, the US is losing leadership in this area. As a result, industry has found difficulty in hiring high quality employees in the robotics and automation field.
The main objectives of the RAS minor program are: (1) exposing students to RAS engineering subjects ranging from design, analysis, control, interaction and operation; (2) equipping students with an understanding of the RAS engineering fundamentals and basic research skills needed to succeed in R&D for the automation, healthcare and manufacturing industries; (3) promoting student interest in a career path in automation, manufacturing and healthcare in which RAS technologies play a central role; (4) producing a high quality work force that is essential to revitalize manufacturing in the United States.

Required course (3 credit hours)
ME/ECE 5463 Introduction to Real Time Robotics Systems

Elective courses (at least 3 credit hours)
AEROENG 5620 - Stability and Control of Flight Vehicles
AEROENG 5621 - Guidance, Navigation and Control of Aerospace Vehicles
CSE 3521: Survey of Artificial Intelligence I: Basic Techniques
CSE 5052: Survey of Artificial Intelligence for Non-Majors
CSE 5524: Computer Vision for Human-Computer Interaction
ECE 3551 - Introduction to Feedback Control Systems
ECE 4194.02 - Group study in machine learning
ECE 5200 - Introduction to Digital Signal Processing
ECE 5553 - Autonomy in Vehicles
ISE 5520 - Industrial Automation
ISE 5525 - Industrial Robotics
ISE 5740 - Cognitive Engineering Systems: Human-Centered Automation
ISE 5760 - Visual Analytics for Sensemaking
MECHENG 5194* - Machine learning for engineers
MECHENG 5194* - Smart product design
MECHENG 5372 - Design and control of mechatronics systems
MECHENG 5751 – Design and manufacturing of compliant mechanisms and robots
(* temporary; will be converted to permanent course)

Elective research credits
MECHENG 4998 - Undergraduate Research in ME
MECHENG 4998H – Honor Undergraduate Research in ME
MECHENG 4999 – ME Undergraduate Research for Thesis
MECHENG 4999H – ME Undergraduate Research for Honors Thesis
AEROENG 4998 – Aerospace Engineering Research
AEROENG 4999 – AE Thesis Research
AEROENG 4999H – AE Honors Thesis Research
ECE 4998.01 - Undergraduate Research in ECE
ECE 4998.01H - Undergraduate Honors Research in ECE
ECE 4999.01 - Undergraduate Thesis Research in ECE
ECE 4999.01H - Undergraduate Honors Thesis Research in ECE
ISE 4998 - Undergraduate Research in ISE
ISE 4998H - Honors Undergraduate Research in ISE
ISE 4999 - Undergraduate Research for Thesis in ISE
ISE 4999H - Honors Undergraduate Research for Thesis in ISE
CSE 4998 - Undergraduate Research in CSE
CSE 4998H - Honors Undergraduate Research in CSE
CSE 4999 - CSE Research for Thesis
CSE 4999H - CSE Research for Honors Thesis

Robotics and Autonomous Systems minor program guidelines
Required for Graduation No

Credit Hours Required A minimum of 12 credit hrs.

Transfer and EM Credit Hours Allowed A student is permitted to count up to 6 total hours of transfer credit and/or credit by examination toward the minor.

Overlap with the GE A student is permitted to overlap up to 6 cr hrs between the GE and the minor

Overlap with the Major and Additional Minor(s)
•The minor must be in a different subject than the major.
•The minor must contain a minimum of 12 hours distinct from the major and/or additional minors.

Grades Required
•Minimum C- for a course to be listed on the minor.
•Minimum 2.00 cumulative point-hour ratio required for the minor.
•Course work graded Pass/Non-Pass cannot count on the minor.
•No more than 3 cr. Hrs. of course work graded Satisfactory/Unsatisfactory may count towards the minor.

Minor Approval The minor course work must be approved by the faculty advisor of the academic unit offering the minor.

Filing the minor program form The minor program form must be filed at least by the time the graduation application is submitted to a college/school counselor.

Changing the minor Once the minor program is filed in the college office, any changes must be approved by the faculty advisor of the academic unit offering the minor.

College of Arts and Sciences
Curriculum and Assessment Services
154 Denney Hall, 164 Annie & John Glenn Ave..
http://artsandsciences.osu.edu

Approved CAA 3-4-2020