

Minor in Robotics

Offered by: Sibley School of Mechanical and Aerospace Engineering, Electrical and Computer Engineering, Computer Science

Administered by: MAE undergraduate assistant, Ashley Blank, 125 Upson Hall, ab2224@cornell.edu

Eligibility: All undergraduates except those completing minors in ECE, MechE, or CS. Pre-approval of minor plan is required.

Educational Objectives:

The robotics minor covers the fundamentals of designing, building and programming robots, and in addition requires students to dive deeper in a specific area of robotics.

Requirements:

- 1) Six distinct courses including at least three from Group A and three from a single category within Group B, must be completed.
- 2) ME majors may not count MAE 3780/3783 if it is used to satisfy the ME circuits requirement

Academic Standards: A grade of C or better in each course.

Group A: Fundamentals – choose three

CS 4750/5750, ECE 4770, MAE 4760: Foundations of Robotics
MAE 4180/5180, CS 3758: Autonomous Mobile Robots
MAE 3780/3783: Mechatronics
ECE 3400: Intelligent Physical Systems
CS 4700: Foundations of Artificial Intelligence
INFO 4410/6420 / CS 4754: Human-Robot Interaction
MAE 4810/5810: Robot Perception
ECE 4960: Fast Robots

GROUP B: Specialization – choose three in one category

Intelligence

CS 4780/5780: Machine Learning for Intelligent Systems
CS 6751 / MAE 6730: Introduction to Robotic Mobile Manipulation
MAE 6770: Formal Methods for Robotics
MAE 6790: Intelligent Sensor and Planning Control
ECE 6970: Bio-Inspired Coordination of Multi-Agent Systems
CS 4700: Foundations of Artificial Intelligence
MAE 4180/5180, CS 3758: Autonomous Mobile Robots
MAE 6710: Human-Robot Interaction

Modelling, Dynamics, and Control

MAE 4730/5730: Intermediate Dynamics
MAE 4710/5710: Applied Dynamics
MAE 4780/5780: Feedback Control Systems
ECE 4960: Fast Robots
CS 6751 / MAE 6730: Introduction to Robotic Mobile Manipulation
MAE 6760: Model based estimation
MAE 6770: Formal Methods for Robotics
MAE 6780: Multivariable Control Theory

Perception

CS 4670 / 5670: Introduction to Computer Vision OR ECE 5470: Computer Vision

CS 6670: Computer Vision

MAE 4810/5810: Robot Perception

MAE 6790: Intelligent Sensor and Planning Control

MAE 4180/5180, CS 3758: Autonomous Mobile Robots

ECE 4320/MAE 4320: Integrated Micro Sensors and Actuators: Bridging the Physical and Digital Worlds

ECE 4960: Fast Robots

MAE 6760: Model based estimation

Systems and Design

MAE 3780/3783: Mechatronics

ECE 3400: Intelligent Physical Systems

ECE 4320/MAE 4320: Integrated Micro Sensors and Actuators: Bridging the Physical and Digital Worlds

ECE 4760: Designing with Microcontrollers

INFO 4410/6420 / CS 4754: Human-Robot Interaction

INFO 4320: Rapid Prototyping and Physical Computing

DEA 5210: Interaction Design Studio

INFO 4420: HCI Design Studio

ECE 4960: Fast Robots

ECE 5725: Design with Embedded Operating Systems

DEA 6210: Architectural Robotics

MAE 6710: Human-Robot Interaction