

Robotics, Minor

Minor in Robotics

The Minor in Robotics provides an opportunity for undergraduate students at Carnegie Mellon to learn the principles and practices of robotics through theoretical studies and hands-on experience with robots. The Minor is open to students in any major of any college at Carnegie Mellon. Students initially learn the basics of robotics in an introductory robotics overview course. Additional required courses teach control systems and robotic manipulation. Students also choose from a wide selection of electives in robotics, perception, computer vision, cognition and cognitive science, or computer graphics. Students have a unique opportunity to undertake independent research projects, working under the guidance of Robotics Institute faculty members; this provides an excellent introduction to robotics research for those considering graduate studies. Please use this link (<https://www.ri.cmu.edu/education/academic-programs/minor-in-robotics/>) if you're interested in applying or learning more.

Education requirements) towards the Minor in Robotics. Free electives are not subject to the double counting policy.

A 2.5 QPA in the Minor curriculum is required for graduation. Courses that are taken Pass/Fail or audited cannot be counted for the Minor.

Curriculum

Prerequisite

To be eligible for the Robotics Minor, students must complete 15-112: Fundamentals of Programming and Computer Science. We also strongly recommend taking 15-122: Principles of Imperative Computation, as it builds skills in C programming and algorithms and is a prerequisite for several Robotics Institute courses.

Required Courses

Overview (one of the following):		Units
16-280	Intelligent Robot Systems	12
16-281	General Robotics (formerly 16-311)	12
Controls (choose one of the following):		Units
06-464	Chemical Engineering Process Control	9
16-299	Introduction to Feedback Control Systems	12
18-370	Fundamentals of Control	12
24-451	Feedback Control Systems	12
24-773	Multivariable Linear Control	12
16-xxx	Upper-level RI course with instructor and Program Director's permission	9-12
Mechanisms and Manipulation (one of the following options)		Units
16-384	Robot Kinematics and Dynamics	12
OR take both of the following courses		
15-362	Computer Graphics	12
33-141	Physics I for Engineering Students	12
Robot Building Practices (choose one of the following)		Units
16-220	Robot Building Practices	12
16-362	Mobile Robot Algorithms Laboratory	12
18-349	Introduction to Embedded Systems	12
18-500	ECE Design Experience	12
18-578	Mechatronic Design	12
24-671	Electromechanical Systems Design	12

Electives

Two general robotics electives

16-3xx and 16-4xx are pre-approved. Students may count up to 12 units of either 16-597 Undergraduate Reading and Research or 99-270 Summer Undergraduate Research Apprenticeship towards the major requirements. Graduate-level Robotics courses and electives outside the Robotics Institute may be used to fulfill elective requirements with prior approval from the RI Undergraduate Program Director.

Double-Counting Restriction

Courses being used to satisfy the requirements for the Robotics Minor may not be counted towards another minor. Students are permitted to double count a maximum of two courses from their Major (excluding General