ROBOTICS, MINOR

The field of robotics integrates sensing, information processing, and movement to accomplish specific tasks in the physical world. As such, it encompasses several topics, including mechanics and dynamics, kinematics, sensing, signal processing, control systems, planning, and artificial intelligence. Applications of these concepts appear in many areas including medicine, manufacturing, space exploration, disaster recovery, ordinance disposal, deep-sea navigation, home care, and home automation.

The faculty of the Laboratory for Computational Sensing and Robotics (LCSR), in collaboration with the academic departments and centers of the Whiting School of Engineering, offers a robotics minor in order to provide a structure in which undergraduate students at Johns Hopkins University can advance their knowledge in robotics while receiving recognition on their transcript for this pursuit. The minor is not "owned" by any one department, but rather it is managed by the LCSR itself. Any student from any department within the university can work toward the minor.

Robotics is fundamentally integrative and multidisciplinary. Therefore, any candidate for the robotics minor must develop a set of core skills that cut across these disciplines, as well as obtain advanced supplementary skills. The required Core Skills include:

- · Robot kinematics and dynamics (R)
- Systems theory, signal processing, and control (S)
- Computation and sensing (C)

Supplementary advanced skills may be obtained in specialized applications, such as space, medicine, or marine systems; or in one of the three core skills listed above.

Please visit the program's website (https://lcsr.jhu.edu/roboticsminor/)for current course listings and full minor policies. The Full Minor Course Listing section of the program's website outlines which courses fulfill each requirement. **Please always check the website for the most upto-date listing of courses.** Note that **all** core areas must be covered, but that **any** advanced/supplementary courses can be chosen from the list, allowing students to balance breadth and depth in their studies.

Declaring the Minor

Students interested in the minor should visit the Laboratory for Computational Sensing and Robotics (https://lcsr.jhu.edu/roboticsminor/) website for instructions on how to declare the minor.

The information below describes the academic requirements for students entering JHU as degree-seeking students in Fall 2025. Students who entered JHU as degree-seeking students prior to Fall 2025 should view the appropriate archived catalogue (https://e-catalogue.jhu.edu/archive/).

MINOR REQUIREMENTS

The minor in Robotics requires 6 courses and 18 credits. At least 6 credits of the 18 must be outside the student's primary major (courses cross-listed with the student's home department are acceptable). At most 3 credits of the 18 can be an independent research or individual study with a faculty member on the list of approved faculty advisors.

Grades C- or higher are required for all courses. No Satisfactory/ Unsatisfactory (S/U) grade is accepted. Details of these requirements are as follows:

CORE SKILLS

Courses from the Robot Kinematics and Dynamics (R), Systems Theory, Signal Processing, and Control (S), Computation and Sensing (C), Laboratory (Lab), and Advanced Supplementary (Sup) may overlap. Graduate levels of the same course may be substituted for the undergraduate levels listed below without additional permission.

The program's website (https://lcsr.jhu.edu/robotics-minor/)contains the current course listings. Students can identify the required courses in SIS (https://sis.jhu.edu/sswf/) by searching for the specific tag listed below:

Code	Title	Credits
At least one	e course with POS Tag ROBO-RMRR	3
At least one	e course with POS Tag ROBO-RMSS	3
At least one	e course with POS Tag ROBO-RMCC	3
At least one	e course with POS Tag ROBO-RMLB	3
Total Credits	3	12

ADVANCED SUPPLEMENTARY SKILLS

Advanced Supplementary Skill (Sup) courses may overlap with courses from the Robot Kinematics and Dynamics (R), Systems Theory, Signal Processing, and Control (S), Computation and Sensing (C), and Laboratory (Lab). See below for the course listings.

The program's website (https://lcsr.jhu.edu/robotics-minor/)contains the current course listings. Students can identify the required courses in SIS (https://sis.jhu.edu/sswf/) by searching for the specific tag listed below:

Code	Title	Credits
At least two	o courses with POS Tag ROBO-RMSU	6
Total Credit	S	6