

Robotics & Mechatronics Track



Track Description:

Mechatronics is the synergistic integration of mechanical engineering with electronics and intelligent computer control in design and manufacturing of industrial products and processes. Also, **Robotics** is emerging to be a prime technology that can greatly advance a wide variety of industries that include healthcare (e.g. surgery and rehabilitation), defense, manufacturing, transportation (e.g. autonomous driving), energy (e.g. drilling and wind turbines), smart homes, space exploration, and hazardous material handling. Due to fundamental advances across multiple disciplines, robotics will be a huge growth area over the coming years, both academically and economically.

Students completing the program will be equipped with broad fundamental knowledge and practical skills important for careers in industry and for graduate studies.

Faculty Advisor: [Dr. Farshid Alambeigi](mailto:Farshid.Alambeigi@Austin.UTexas.edu) (Farshid.Alambeigi@Austin.UTexas.edu)

Course Requirements: For this track, students must take four courses from the following list of courses with *two courses* from the list of *required courses*. Please consult with Dr. Alambeigi.

Required Courses (Choose at least 2 courses):

➤ Robotics-related (at least 1)

1. **M E 350R:** Robot Mechanism Design
2. **M E 397^:** Introduction to Robot Modeling and Control
3. **M E 397^:** Algorithms for Sensor-Based Robotics
4. **CS 376*:** Computer Vision
5. **M E 364D:** Intermediate Dynamics

➤ Mechatronics-related (at least 1)

1. **M E 348E:** Advanced Mechatronics I
2. **M E 348F:** Advanced Mechatronics II
3. **M E 360:** Vehicle System Dynamics and Controls
4. **M E 360C:** Cyber Vehicle Systems

*This course is offered by another department. Students need to check the pre-requisites of the courses and plan accordingly. Students will also need permission from the offering department to register for the course.

^This is a graduate course. To register for a graduate course, students need permission from the instructor, an undergraduate advisor, and the graduate coordinator. They also need to complete an ESS form (available online).

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Elective Courses

➤ Control-related

1. **M E 364L:** Automatic Control System Design
2. **M E 379M:** Real-Time Control System Lab
3. **EE 362K*:** Intro to Automatic Control
4. **ASE 370C*:** Feedback Control Systems
5. **M E 379M:** Theory and Design for Mechanical Measurements
6. **M E 355K:** Engineering Vibrations
7. **EE 445L*:** Embedded Systems Design Lab

➤ Math-related

1. **M E 366R:** Stochastic Methods for Operations Research
2. **ASE 330M*:** Linear System Analysis
3. **M 340L*:** Matrices and Matrix Calculations
4. **M E 379M:** Data Science for Engineers

➤ Programming

1. **M E 369P:** Application Programming for Engineers
2. **SDS 322*:** Introduction to Scientific Programming

➤ Project-based (need a project advisor)

ME 377K/ ME 397P: Projects in Mechanical Engineering

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