Michigan Technological University
Interdisciplinary Minor in Robotics
Program Code IRBM, Academic Year 2026-2027
Minimum Credits Required: 27

This minor is not open to students majoring in Robotics Engineering or Mechatronics.

1. Fundamental Courses (18 credits, minimum)

Select at least one course from each list (A-D).

- Minimum 6 credits in ME/MET
- Minimum 6 credits in EE/EET
- Minimum 6 credits in CS/DATA/SAT

A. Fundamentals of Mechanical Engineering or Mechanical Engineering Technology

- ME 2110 Statics (3) *Prereqs: MA2160*
  - **or** MET 2110 Applied Statics (3) *Prereqs: PH1110 or PH1140 or PH2100) and (MA1160(C) or MA1161(C) or MA1121(C))*
- ME 2150 Mechanics of Materials (3) *Prereqs: ME/MEEM 2110*
  - **or** MET 2150 Applied Strength of Materials (4) *Prereqs: ME/MEEM 2110 or MET2110*
- ME 2700 Dynamics (3) *Prereqs: PH2100 and (ME/MEEM 2110 or ENG2120)*
  - **or** MET 2130 Applied Dynamics (4) *Prereqs: MA2160 and (ENG2120 or ME/MEEM 2110 or MET2110)*

B. Fundamentals of Electrical Engineering or Electrical Engineering Technology

- EE 2112 Electric Circuits and Lab (4) *Prereqs: MA3520(C) or MA3521(C) or MA3530(C) or MA3560(C)*
  - **or** EE 3010 Circuits and Instrumentation for Cyber Physical Systems (3) *Prereqs: MA1121 or MA1160 or MA1161*
  - **or** EET 1121 & 1122 Circuits I and Lab (4) *Prereqs: MA1031 or MA1032 or MA1120 or MA1121 or MA1135(C) or MA1160(C) or MA1161(C)*
  - **or** EET 1411 Basic Electronics (3) *Prereqs: MA1031 or MA1032 or MA1120 or MA1121(C) or MA1135(C) or MA1160(C) or MA1161(C)*
- EE 2174 Digital Logic and Lab (4) *Prereqs: CS1111 or CS1121 or CS1131*
  - **or** EET 2411 Digital Electronics (3) *Prereqs: (EET1121 or EET1411) and (MA1031(C) or MA1032(C) or MA1120(C) or MA1121(C) or MA1135(C) or MA1160(C) or MA1161(C))*
- EE 3131 Electronics (4) *Prereqs: EE2112 or EE3010*
  - **or** EET 3131 Sensors and Instrumentation (3) *Prereqs: EET1411 or EET2121 or PH2230 or EE2111 or EE3010*
  - **or** EET 2121 & 2122 Circuits II and Lab (4) *Prereqs: (EET1121 and EET1122) and (MA1160 or MA1161)*

C. Fundamentals of Computer Science or Information Technology

If chosen, you may take (CS 1131 or (CS 1121 and/or CS 1122))

- CS 1121 Introduction to Programming I (3) *Prereqs: MA1031(C) or MA1032(C) or MA1120(C)*
- CS 1122 Introduction to Programming II (3) *Prereqs: CS1121*
- CS 1131 Accelerated Introduction to Programming (5) *Prereqs: MA1031(C) or MA1032(C) MA1120(C) or MA1160(C) or MA1161(C) or MA1121(C)*
- CS 1142 Programming at the Hardware Software Interface (3) *Prereqs: CS1122 or CS1131*
- DATA 1200 Data Science with Python (3) *Prereqs: MA1030(C) or MA1031(C) or MA1032(C) or MA1160(C) or MA1161(C)*
- SAT 1610 Computer and Operating Systems Architecture (3) *Prereqs: None*
- SAT 2711 Linux Fundamentals (3) *Prereqs: CS1121 or CS1131 or CS1142 or MIS2100*

D. Advanced Practice

- EE 3261 Control Systems (3) *Prereqs: EE3160*
  - **or** EET 4311 Control Systems (3) *Prereqs: MET2130 and EET2150*
  - **or** ME 4775 Analysis & Design of Feedback Control Systems (4) *Prereqs: ME/MEEM 3750 or EE3160*
- SAT 3310 Scripting for Administration, Automation, and Security (3) *Prereqs: CS1111 or CS1121 or CS1131 or CS1142 or MIS2100*

2. Technical Integration Courses in Robotics (6 credits, minimum)

- CS 3461 Introduction to Robotics (3) *Prereqs: CS3421 or EE3172*
- CS 4761 Human-Robot Interaction (3)
- EE 2180 Introduction to Robotics and Lab (3) *Prereqs: (EE3010(C) or EE2112(C)) and (MA2320(C) or MA2321(C) or MA2330(C))*
- EE 3280 Robot Operating Systems (3) *Prereqs: EE2180 and SAT2711*
- EET 3144 Introduction to Industrial Robotics (3) *Prereqs: None*
- EET 4144 Real-Time Robotic Systems (4) *Prereqs: EET1411 or EET2121 or PH2230 or EE2111 or EE3010*
- EET 4707 Autonomous Systems (3) *Prereqs: (EET4311 or EET5311 or MET4801 or MET5801) and (CS1111 or CS1121 or CS1131 or SAT4310 or SAT4650)*
    - **or** ME 4707 Autonomous Systems (3) *Prereqs: ME/MEEM3750 or ME/MEEM4775(C) or EE3160*
- ME 4705 Robotics and Mechatronics (4) *Prereqs: ME/MEEM3750 or EE3160*
- MET 4355 Industrial Digital Twin Systems (3) *Prereqs: None*
- MET 4800 Dynamics and Kinematics of Robotics Platforms (3) *Prereqs: MET2130 or MET3130*
- Senior Design or Enterprise (3 credits maximum. Instructor must certify significant robotics or mechatronics content.)

3. Human Systems Integration (3 credits)

- HF 2000 Introduction to Engineering Psychology (3) *Prereqs: None*
- HF 2300 Introduction to Human-Centered Design (3) *Prereqs: None*
- HF 3850 Human Factors (3) *Prereqs: (PSY2000 or HF2000) and UN1015*
- HU 3701 Philosophy of Technology (3) *Prereqs: UN1015*
- HU 3704 Ethics of Artificial Intelligence (3) *Prereqs: None*
- HU 3710 Engineering Ethics (3) *Prereqs: UN1015*
- HU 3845 Human-Machine Communication (3) *Prereqs: UN1015*
- HU 3850 Automated Culture: Critical Approaches to AI (3) *Prereqs: UN1015*
- SS 3801 Science, Technology, & Society (3) *Prereqs: None*