**B.S. in Mechanical Engineering with an Robotics option**

**Curriculum of Robotics Option, 2023-2024**

**Freshman:**
- 1st Semester (16 credits)
  - MAE 1001 (1, F) Intro to Mechanical and Aerospace Engineering
  - MATH 1231 (3, F&S) Single Variable Calculus I
  - SEAS 1001 (1, F) Engineering Operations
  - CHEM 1111 or CHEM 1113 (4, F&S) General Chemistry
  - UW 1020 (4, F&S) University Writing
  - H/SS 1 (3)

- 2nd Semester (19 credits)
  - MAE 1004 (3, F&S) Engineering Drawing and Computer Graphics
  - MATH 2184 (3, F&S) Linear Algebra
  - PHYS 1021 (4, F&S) University Physics I
  - MATH 1232 (3, F&S) Single Variable Calculus II
  - MAE 1117 (3, F) Intro to Engineering Computations
  - H/SS 2 (3)

**Sophomore:**
- 1st Semester (15 credits)
  - APSC 2057 (3, F&S) Analytical Mechanics I
    Pre: PHYS 1021
  - APSC 2113 (3, F&S) Engineering Analysis I
    Pre/Co: MATH 2233
  - MAE 3192 (3, F) Manufacturing Process and Systems
    Pre: MATH 1004
  - MATH 2233 (3, F&S) Multivariable Calculus
    Pre: MATH 1232
  - MAE 2117 (3, F) Engineering Computation
    Pre: MAE 1117, MATH 1232

- 2nd Semester (16 credits)
  - APSC 2058 (3, F&S) Analytical Mechanics II
    Pre: APSC 2057
  - MAE 2131 (3, S) Thermodynamics
    Pre: PHYS 1021
  - CE 2220 (3, F&S) Mechanics of Solids
    Pre: APSC 2057, 2113
  - PHYS 1022 (4, F&S) University Physics II
    Pre: PHYS 1021, MATH 1232
  - APSC 3115 (3, F&S) Engineering Analysis III
    Pre: MATH 1232

**Junior:**
- 1st Semester (16 credits)
  - MAE 3126 (3, F) Fluid Mechanics
    Pre: APSC 2058
  - MAE 3217 (1, F) Fluid Mechanics Lab
    Pre: APSC 2058, Co: MAE 3126
  - MAE 3191 (3, F) Mechanical Design
    Pre: CE 2220
  - MAE 3119 (3, F) Electronics and Devices for Mechanical Engineers
    Pre: MAE 2117, PHYS 1022
  - MAE 3166W (3, F) Materials Engineering
    Pre: CHEM 1111, PHYS 1022

- 2nd Semester (16 credits)
  - MAE 3187 (3, S) Heat Transfer
    Pre: MAE 3126, 2131
  - MAE 3134 (3, S) Linear System Dynamics
    Pre: APSC 2113, Co: APSC 2058
  - MAE 3193 (3, S) Mechanical Systems and Design
    Pre: MAE 3191
  - MAE 3120 (3, S) Methods of Engineering Experimentation
    Pre: MAE 3119
  - MAE 3167W (1, S) Materials of Material Lab
    Pre: MAE 3166W

**Senior:**
- 1st Semester (15 credits)
  - MAE 4151 (3, F) Capstone Design Project I
    Pre: MAE 3108
  - MAE 4182 (3, F) Electromechanical Control System Design
    Pre: MAE 2117, 3134
  - Technical Elective / Robotics Elective (3)
  - Technical Elective (3)
  - H/SS 5 (3)

- 2nd Semester (15 credits)
  - MAE 4152W (3, S) Capstone Design Project II
    Pre: MAE 4151
  - MAE 4194 (3, F) Mechantronics Design
    Pre: MAE 4182
  - MAE 6245 (3, F&S) Robotic System
    Pre: MAE 4182
  - Robotics Elective / Technical Elective (3)
  - H/SS 6 (3)

**Color code:**
- **Design Courses**
- **Mechanical, Materials, Processes**
- **Electrical, Measurements, Controls**
- **Thermal/Fluid Sciences**
- **Engineering Orientation, Computations**
- **Humanities/Social Sciences, Writing**
- **Mathematics**
- **Basic Science**

F = fall semester, S = spring semester
Pre = Pre-requisite
Co = Co-requisite
Pre/Co = Pre-requisite or Co-requisite
H/SS = Humanities / Social Sciences - all MAE students must take one humanities course and two social science courses from University general education requirement; PHIL 2133, and two additional humanities or social science or non-technical courses from SEAS/MAE Department’s pre-approved list of electives.

**Technical Elective:** Shall be selected from among the MA 3000, 4000, or 6000 level courses, except that the following are excluded: MAE 3171, 4172, 6298, 6999. All technical electives must be approved by the undergraduate advisor. Technical courses from other departments (3000, 4000, or 6000 level) may be permitted, on a case-by-case basis, if approved by both the undergraduate advisor and department chair.

**ASME membership recommended**
**FE Exam recommended in the senior year**

**Robotics Elective:**
Robotics option students must take one 3-credit course from the following list: MAE 6246 Electromechanical Control System Design, MAE 6254 Applied Nonlinear Control, BME 4835 Introduction to Assistive Robotics, BME 4489 Socially Assistive Robotics & Interactive Learning, or a (3000, 4000, or 6000 level) technical course relevant to robotics if approved by the faculty advisor and department chair. Approval must be obtained before registering for the selected course. The selected course must be listed in the student’s SEAS Undergraduate Advising Form.