B.S. in Mechanical Engineering with a Robotics Option
Curriculum of Robotics Option, 2021-2022

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 Orientation
- CHEM 1111 or CHEM 1113 (4, F&S) General Chemistry
- UW 1020 (4, F&S) University Writing

2nd semester (16 credits)
- MAE 1004 (3, F&S) Engineering Drawing and Computer Graphics
- MATH 1232 (3, F&S) Single Variable Calculus II
- APSC 2057 (3, F&S) University Physics I
- APSC 2113 (3, F&S) Engineering Computation

Sophomore:
1st semester (16 credits)
- MAE 2117 (3, F) Analytical Mechanics II Pre: APSC 2057
- MATH 2233 (3, F&S) Multivariable Calculus Pre: MATH 1232
- CE 2220 (3, F&S) Mechanics of Solids Pre: APSC 2057, 2113
- MAE 2131 (3, S) Mechanical Systems Design Pre: MAE 3191

2nd semester (16 credits)
- APSC 2058 (3, F&S) Analytical Mechanics I Pre: APSC 2113, PHYS 1021
- APSC 2113 (3, F&S) Engineering Analysis I Pre: MATH 1231 Co: MATH 1232
- PHYS 1022 (4, F&S) University Physics II Pre: PHYS 1021
- PHYS 1023 (4, F&S) Engineering Analysis II Pre: PHYS 1021

Junior:
1st semester (16 credits)
- MAE 3126 (3, F) Fluid Mechanics Pre: MAE 3166, PHYS 1022
- MAE 3127 (1, F) Fluid Mechanics Lab Co: MAE 3126
- MAE 3191 (3, F) Manufacturing Process and Systems Pre: APSC 2057, 2113
- MAE 3192 (3, F) Mechanical Design Pre: CE 2220

2nd semester (17 credits)
- MAE 3193 (3, S) Engineering Electronics Pre: ECE 2110
- MAE 3166W (3, F) Materials Engineering Pre: CHEM 1111, PHYS 1022
- MAE 3134 (3, S) Linear System Dynamics Pre: APSC 2058, 2113
- MAE 3187 (3, S) Heat Transfer Pre: MAE 3126, 2131

Senior:
1st semester (15 credits)
- Technical Elective/Robotics Elective (3)
- MAE 4149 (3, F) Thermal Systems Design Pre: MAE 3187
- MAE 6245 (3, F&S) Robotic Systems Pre: MAE 4182
- Technical Elective/Robotics Elective (3)
- MAE 4152W (3, S) Capstone Design Project II Pre: MAE 4151

2nd semester (18 credits)
- MAE 3171, 4172, 6298, 6299, 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

Technical Elective: Shall be selected from among the M&E 3000, 4000, or 6000 level courses, except that the following are excluded: MAE 3171, 4172, 6298, 6299, 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. Approval must be obtained before registering for the selected course. The selected course must be listed in the student's SEAS Undergraduate Advising Form.

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.

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

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 2135, and two additional humanities or social science or non-technical courses from SEAS/MAE Department’s pre-approved list of electives.