

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

## Curriculum of Robotics Option, 2024-2025

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)
Freshman: 2nd Semester (19 credits)	MAE 1004 (3, F&S) Engineering Drawing and Computer Graphics	MATH 2184 (3, F&S) Linear Algebra Pre: MATH 1220 or 1221 or 1231	PHYS 1021 (4, F&S) University Physics I Pre: MATH 1220 or 1221 or 1231	MATH 1232 (3, F&S) Single Variable Calculus II Pre: MATH 1221 or 1231	MAE 1117 (3, 5) 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: MAE 1004	MATH 2233 (3, F&S) Multivariable Calculus Pre: MATH 1232	MAE 2117 (3, F) Engineering Computation Pre: MAE 1117, MATH 1232	
Sophomore: 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 Mechancs 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	H/SS 3 (3)
Junior: 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) Mechanicals of Material Lab Pre: MAE 3166W	H/SS 4 (3)
Senior: 1st Semester (15 credits)	MAE 4151 (3, F) Capstone Design Project I Pre: MAE 3193	MAE 4182 (3, F) Electromechanical Control System Design Pre: MAE 2117, 3134	Technical Elective / Robotics Elective (3)	Technical Elective (3)	H/SS 5 (3)	
Senior: 2nd Semester (15 credits)	MAE 4152W (3, S) Capstone Design Project II Pre: MAE 4151	MAE 4194 (3, F) Mechatronics Design Pre: MAE 4182	MAE 6245 (3, F&S) Robotic System Pre: MAE 4182	Robotics Elective / Technical Elective (3)	H/SS 6 (3)	

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<span style="display: inline-block; width: 15px; height: 15px; background-color: #fcf8e3; border: 1px solid black;"></span> Mechanical, Materials, Processes
<span style="display: inline-block; width: 15px; height: 15px; background-color: #f4cccc; border: 1px solid black;"></span> Electrical, Measurements, Controls
<span style="display: inline-block; width: 15px; height: 15px; background-color: #c6e0b4; border: 1px solid black;"></span> Thermal/Fluid Sciences
<span style="display: inline-block; width: 15px; height: 15px; background-color: #f4cccc; border: 1px solid black;"></span> Engineering Orientation, Computations
<span style="display: inline-block; width: 15px; height: 15px; background-color: #fce4d6; border: 1px solid black;"></span> Humanities/Social Sciences, Writing
<span style="display: inline-block; width: 15px; height: 15px; background-color: #d9ead3; border: 1px solid black;"></span> Mathematics
<span style="display: inline-block; width: 15px; height: 15px; background-color: #f4cccc; border: 1px solid black;"></span> 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 2135, 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.