

B.S. in Mechanical Engineering with a Biomechanical Option

Curriculum of Biomechanical Engineering Option, 2025-2026

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	Non-Technical Elective 1 (3)
Freshman: 2nd Semester (19 credits)	MATH 2184 (3, F&S) Linear Algebra Pre: MATH 1220 or 1221 or 1231	MAE 1004 (3, F&S) Engineering Drawing and Computer Graphics	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	Non-Technical Elective 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	BME 4820 (3, F) Anatomy and Physiology for Engineers
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 Materials Lab Pre: MAE 3166W	MAE 3128 (3, S) Biomechanics Pre: APSC 2057, CE 2220
Senior: 1st Semester (15 credits)	MAE 4149 (3, F) Thermal Systems Design Pre: MAE 3187	MAE 4182 (3, F) Electromechanical Control System Design Pre: MAE 2117, 3134	MAE 4151W (3, F) Capstone Design Project I Pre: MAE 3193	MAE 6238 (3, S) Biomaterials Pre: MAE 3166	Non-Technical Elective 3 (3)	
Senior: 2nd Semester (15 credits)	MAE 4152W (3, S) Capstone Design Project II Pre: MAE 4151	MAE 3171 (3, S) Patent Law for Engineers	Non-Technical Elective 4 (3)	Non-Technical Elective 5 (3)	Non-Technical Elective 6 (3)	

Color code:

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

F = fall semester, S = spring semester

Pre = Pre-requisite

Co = Co-requisite

Pre/Co = Pre-requisite or Co-requisite

Non-Technical Elective:

All MAE students must take one humanities course and two social science courses from the University 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. Please see the "Non-Technical Elective Requirement" in the bulletin.

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