# B.S. in Mechanical Engineering with a Biomechanical Option

## Curriculum of Biomechanical Engineering 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)**
  - MATH 2184 (3, F&S) Linear Algebra
  - MAE 1004 (3, F&S) Engineering Drawing and Computer Graphics
  - PHYS 1021 (4, F&S) University Physics I
  - MAE 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
  - MAE 1004 (3, F&S) Engineering Drawing and Computer Graphics
  - MAE 3192 (3, F) Manufacturing Process and Systems
  - MATH 2233 (3, F&S) Multivariable Calculus
  - MAE 2117 (3, F) Engineering Computations
  - H/SS 3 (3)

- **2nd Semester (16 credits)**
  - APSC 2058 (3, F&S) Analytical Mechanics II
  - MAE 2131 (3, S) Thermodynamics
  - CE 2220 (3, F&S) Mechanics of Solids
  - PHYS 1022 (4, F&S) University Physics II
  - APSC 3115 (3, F&S) Engineering Analysis III
  - BME 4820 (3, F) Anatomy and Physiology for Engineers

### Junior:
- **1st Semester (16 credits)**
  - MAE 3126 (3, F) Fluid Mechanics
  - MAE 3217 (1, F) Fluid Mechanics Lab
  - MAE 3191 (3, F) Mechanical Design
  - MAE 3119 (3, F) Electronics and Devices for Mechanical Engineers
  - MAE 3164W (3, F) Materials Engineering
  - GE 3171 (1, S) English Composition
  - H/SS 4 (3)

- **2nd Semester (16 credits)**
  - MAE 3187 (3, S) Heat Transfer
  - MAE 3139 (3, S) Mechanical Systems Design
  - MAE 3120 (3, S) Methods of Engineering Experimentation
  - MAE 3167W (1, S) Mechanics of Materials Lab
  - MAE 3128 (3, S) Biomechanics
  - MATH 2184 (3, F&S) Linear Algebra
  - H/SS 5 (3)

### Senior:
- **1st Semester (12 credits)**
  - MAE 4149 (3, F) Thermal Systems Design
  - MAE 4111 (3, S) Advanced Engineering Thermodynamics
  - MAE 4112 (3, F) Electromechanical Control
  - MAE 4151 (3, S) Capstone Design Project I
  - MAE 4151 (3, S) Capstone Design Project II
  - MAE 4151 (3, S) Capstone Design Project III
  - MAE 4171 (3, S) Patent Law for Engineers
  - 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

<table>
<thead>
<tr>
<th>Color code</th>
<th>Course Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>F = fall semester, S = spring semester</td>
<td>Pre = Pre-requisite</td>
</tr>
<tr>
<td>Co = Co-requisite</td>
<td>Pre/Co = Pre-requisite or Co-requisite</td>
</tr>
<tr>
<td>H/SS = Humanities / Social Sciences</td>
<td>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.</td>
</tr>
<tr>
<td>ASME membership recommended</td>
<td>FE Exam recommended in the senior year</td>
</tr>
</tbody>
</table>

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.