## BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, BIOMECHANICAL OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems.

The biomechanical engineering option leads to a bachelor’s degree in mechanical engineering while preparing students to work in the biomedical industry or to pursue graduate study in biomedical engineering. It provides a strong foundation in human anatomy and physiology, biomechanics, biomaterials, and design of biomedical devices.

## REQUIREMENTS

### Recommended program of study

**First semester**
- **BISC 1005** The Biology of Nutrition and Health *
- **EXNS 1110** Applied Anatomy and Physiology I
- **MAE 1001** Introduction to Mechanical and Aerospace Engineering
- **MATH 1231** Single-Variable Calculus I *
- **SEAS 1001** Engineering Orientation
- **UW 1020** University Writing *

**Second semester**
- **CHEM 1111** General Chemistry I *
- **MAE 1004** Engineering Drawing and Computer Graphics
- **MATH 1232** Single-Variable Calculus II *
- **MATH 2184** Linear Algebra I
- **PHYS 1021** University Physics I *

**Third semester**
- **APSC 2057** Analytical Mechanics I
- **APSC 2113** Engineering Analysis I
- **MAE 2117** Engineering Computations
- **MATH 2233** Multivariable Calculus *

**Fourth semester**
- **APSC 2058** Analytical Mechanics II
- **CE 2220** Introduction to the Mechanics of Solids
- **CSCI 1121** Introduction to C Programming
- **ECE 2110** Circuit Theory
- **MAE 2131** Thermodynamics

**Fifth semester**
- **APSC 3115** Engineering Analysis III
- **MAE 3126** Fluid Mechanics I
- **MAE 3166** Materials Science and Engineering
- **MAE 3191** Mechanical Design
- **EXNS 2113** Kinesiology

**Sixth semester**
- **Humanities or social sciences elective **

**Seventh semester**
- **MAE 3120** Methods of Engineering Experimentation
- **MAE 3128** Biomechanics I
- **MAE 3134** Linear System Dynamics
- **MAE 3167W** Mechanics of Materials Lab
- **MAE 3193** Mechanical Systems Design

**Eighth semester**
- **MAE 4182** Electromechanical Control System Design
- **MAE 3192** Manufacturing Processes and Systems
- **MAE 6238** Biomaterials
- **MAE 4151** Mechanical Engineering Project

**Two humanities or social sciences electives **

**Eighth semester**
- **MAE 3187** Heat Transfer
- **MAE 4129** Biomechanics II
- **MAE 4152W** Mechanical Engineering Laboratory
Technical elective

Two humanities or social sciences electives **

*Course satisfies the university general education requirement in math, science, and writing.

**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (http://bulletin.gwu.edu/university-regulations/general-education); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf). At least one humanities course must be selected from the University General Education Requirement list (http://bulletin.gwu.edu/university-regulations/general-education); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (http://www.seas.gwu.edu/sites/www.seas.gwu.edu/files/downloads/HSS%20Form%20Fall%202015%20Admits%201_0.pdf).