

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 bachelor of science with a major in mechanical engineering, biomechanical option degree program prepares 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. The mechanical engineering (ME) program is accredited by the Accreditation Commission of ABET (<https://www.abet.org/>).

Visit the program website (<http://www.mae.seas.gwu.edu/programs-degrees/>) for additional information.

Bachelor of Sciences with a Second Major in Mechanical Engineering, Biomedical Option

Any undergraduate student who is enrolled at GW may declare a second major in mechanical engineering only if his or her primary degree is a BS. The student must meet the degree requirements for a bachelor of science in mechanical engineering, including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students earning other degrees (e.g., BA, BBA, BFA) must meet the requirements for a double degree (<http://bulletin.gwu.edu/university-regulations/#DDdegrees>).

Graduation grade-point average criteria:

To satisfactorily complete a second major in biomedical engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
SEAS 1001	Engineering Orientation	
CHEM 1111	General Chemistry I (or CHEM 1113)	

MATH 1231	Single-Variable Calculus I ¹
UW 1020	University Writing ¹
Humanities or Social Sciences Elective ²	
Second semester	
MAE 1004	Engineering Drawing and Computer Graphics
MAE 1117	Introduction to Engineering Computations
MATH 1232	Single-Variable Calculus II ¹
MATH 2184	Linear Algebra I
PHYS 1021	University Physics I ¹
Third semester	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MAE 2117	Engineering Computations
MATH 2233	Multivariable Calculus ¹
PHYS 1022	University Physics II ¹
Fourth semester	
APSC 2058	Analytical Mechanics II
CE 2220	Introduction to the Mechanics of Solids
ECE 2110	Circuit Theory
MAE 2131	Thermodynamics
Humanities or Social Sciences Elective ²	
Fifth semester	
APSC 3115	Engineering Analysis III
MAE 3126	Fluid Mechanics I
MAE 3127	Fluid Mechanics Lab
MAE 3166W	Materials Science and Engineering
MAE 3191	Mechanical Design of Machine Elements
MAE 3192	Manufacturing Processes and Systems
BME 4820	Anatomy and Physiology for Engineers
Sixth semester	

MAE 3120 Methods of Engineering
Experimentation

MAE 3128 Biomechanics I

MAE 3134 Linear System Dynamics

MAE 3167W Mechanics of Materials Lab

MAE 3187 Heat Transfer

MAE 3193 Mechanical Systems Design

Seventh semester

MAE 4149 Thermal Systems Design

MAE 4182 Electromechanical Control System
Design

MAE 6238 Biomaterials

MAE 4151 Capstone Design Project I

Two Humanities or Social Sciences Elective ²

Eighth semester

MAE 4152W Capstone Design Project II

MAE 3171 Patent Law for Engineers

Two humanities or social sciences electives ²

One Technical electives ³

¹ Course satisfies the University General Education Requirement (<http://bulletin.gwu.edu/university-regulations/general-education/>) in math, science, and writing.

² To satisfy the SEAS Humanities and Social Science requirement, all mechanical engineering students must take one humanities course and two social sciences courses from the University General Education Requirement (<http://bulletin.gwu.edu/university-regulations/general-education/>) list; PHIL 2135, and two additional humanities or social science or non-technical courses from the MAE Department pre-approved list of electives. All courses selected to satisfy this requirement must be at least 3 credits each. NOTE: Students in the patent law concentration must take MAE 2170 in lieu of one of the additional humanities or social science or non-technical course.

³ Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding: MAE 3171 Patent Law for Engineers, MAE 4172 Engineering Design and the Patent System, MAE 6298 Research, MAE 6998 MS Thesis Research, and MAE 6999 MS Thesis Research. Visit the program website (<http://www.mae.seas.gwu.edu/programs-degrees/>) for additional information.