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, computeraided 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/).

Double major

Code

MAE 1117

SEAS and non-SEAS students interested in pursuing the BS in mechanical engineering as a double major should see Double Major under SEAS Regulations (https://bulletin.gwu.edu/engineering-applied-science/#seasregulationstext) in this Bulletin.

Credits

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

Title

REQUIREMENTS

Recommended program of study				
First semester				
CHEM 1111	General Chemistry I	4		
or CHEM 1113	General Chemistry for Engineers			
MAE 1001	Introduction to Mechanical and Aerospace Engineering	1		
MATH 1231	Single-Variable Calculus I *	3		
SEAS 1001	Engineering Orientation	1		
UW 1020	University Writing *	4		
One humanities and social sciences elective **		3		
Second semester				
MAE 1004	Engineering Drawing and Computer Graphics	3		

Introduction to Engineering Computations

MATH 1232	Single-Variable Calculus II *	3
MATH 2184	Linear Algebra I	3
PHYS 1021	University Physics I *	4
One humanities or soc	cial sciences elective ²	3
Third semester		
APSC 2057	Analytical Mechanics I	3
APSC 2113	Engineering Analysis I	3
MAE 2117	Engineering Computations	3
MAE 3192	Manufacturing Processes and Systems	3
MATH 2233	Multivariable Calculus *	3
Fourth semester		
APSC 2058	Analytical Mechanics II	3
APSC 3115	Engineering Analysis III	3
CE 2220	Introduction to the Mechanics of Solids	3
MAE 2131	Thermodynamics	3
PHYS 1022	University Physics II	4
Fifth semester		
MAE 3126	Fluid Mechanics I	3
MAE 3127	Fluid Mechanics Lab	1
MAE 3166W	Materials Science and Engineering	3
MAE 3191	Mechanical Design of Machine Elements	3
MAE 3119	Electronics and Devices for Mechanical Engineers	0,3
BME 4820	Anatomy and Physiology for Engineers	3
Sixth semester		
MAE 3120	Methods of Engineering Experimentation	3
MAE 3128	Biomechanics I	3
MAE 3134	Linear System Dynamics	3
MAE 3167W	Mechanics of Materials Lab	1
MAE 3187	Heat Transfer	3
MAE 3193	Mechanical Systems Design	3
Seventh semester		
MAE 4149	Thermal Systems Design	3

MAE 4182	Electromechanical Control System Design	3
MAE 6238	Biomaterials	3
One humanities or social sciences elective ²		
Eighth semester		
MAE 4152W	Capstone Design Project II	3
MAE 3171	Patent Law for Engineers	3
Three humanities or social sciences electives (total 9 credits) $^{\rm 2}$		

^{*}Course satisfies the University General Education Requirement (https://bulletin.gwu.edu/university-regulations/general-education/) in math, science, and writing.

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^{**}To satisfy the GW Engineering Non-Technical Elective Requirement (https://www.seas.gwu.edu/humanities-and-social-science-requirement/), all mechanical engineering students must take one humanities course and two social sciences courses from University General Education lists; PHIL 2135 (https://bulletin.gwu.edu/search/?P=PHIL%202135), and two non-technical courses from the pre-approved list of electives (https://engineering.gwu.edu/humanities-and-social-science-requirement/). All courses selected to satisfy this requirement must be at least 3 credits. Note that students in the patent law concentration must take MAE 2170 (https://bulletin.gwu.edu/search/?P=MAE%202170) in lieu of one of the two additional non-technical courses.