BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, AEROSPACE 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, aerospace option degree program prepares students to work in the aerospace industry or to pursue graduate study in aerospace engineering. It provides a strong foundation in aerodynamics, airplane performance, propulsion, aerospace structures, orbital mechanics, spacecraft dynamics, and aircraft and spacecraft design. The mechanical engineering (ME) program is accredited by the Engineering Accreditation Commission of ABET (http://www.abet.org).

Double major

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.

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

REQUIREMENTS

Code	Title	Credits
Recommended program of study		
First semester		
CHEM 1111	General Chemistry I [1]	
or CHEM 1113	General Chemistry for Engineers	
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
MATH 1231	Single-Variable Calculus I [1]	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing [1]	
H/SS 1 [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]	
H/SS 2 [2]		
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MAE 2117	Engineering Computations	
MAE 3192	Manufacturing Processes and Systems (Humanities or Social Sciences Elective)	
MATH 2233	Multivariable Calculus [1]	
Fourth semester		
APSC 2058	Analytical Mechanics II	
APSC 3115	Engineering Analysis III	
CE 2220	Introduction to the Mechanics of Solids	
MAE 2131	Thermodynamics	
PHYS 1022	University Physics II	
Fifth semester		
MAE 3126	Fluid Mechanics I	
MAE 3127	Fluid Mechanics Lab	
MAE 3166W	Materials Science and Engineering	
MAE 3191	Mechanical Design of Machine Elements	
MAE 3119	Electronics and Devices for Mechanical Engineers	
Aero elective		
Sixth semester		
MAE 3120	Methods of Engineering Experimentation	
MAE 3134	Linear System Dynamics	
MAE 3155	Aerodynamics	
MAE 3167W	Mechanics of Materials Lab	
MAE 3187	Heat Transfer	
MAE 3193	Mechanical Systems Design	
Seventh semester		

MAE 3162	Aerospace Structures
MAE 4151	Capstone Design Project I
MAE 4157	Aerodynamics Laboratory
MAE 4182	Electromechanical Control System Design
H/SS 3 [2]	
H/SS 4 [2]	
Eight semester	
MAE 4152W	Capstone Design Project II (Eight semester)
MAE 6229	Propulsion
Aerospace elective [3]	
H/SS 5 [2]	
H/SS 6 [2]	

[1] Course satisfies the University General Education Requirement (https://bulletin.gwu.edu/university-regulations/general-education/) in quantitative reasoning, scientific reasoning, and written communication.

[2] To satisfy the SEAS humanities and social science requirement, all mechanical engineering students must take one (1) humanities course and two (2) social sciences courses from the University General Education Requirement (https://bulletin.gwu.edu/university-regulations/general-education/); PHIL 2135; and two (2) additional humanities, social science, or non-technical courses from the MAE Department's pre-approved list of electives. Each course selected to satisfy this requirement must be taken for at least 3 credits. 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] Space: Students take MAE 3145 in the fifth semester and MAE 6249 in the eighth semester.

Aero: Students take MAE 4163 in the seventh semester and MAE 6247 in the eighth semester.

[4] All technical electives must be approved by the undergraduate advisor. On a case-by-case basis, technical electives may be chosen from other departments if approved by both the undergraduate advisor and the department chair. Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding: MAE 3171, MAE 4172, MAE 6298, MAE 6998, and MAE 6999.

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