

# BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING (STEM)

The mechanical engineering program at GW teaches students the fundamentals in statics, dynamics, design, materials, fluid mechanics, thermodynamics, and heat transfer—knowledge that lets engineers design and build creative solutions for global challenges. Students have opportunities to explore aspects of traditional mechanical and aerospace engineering as well as emerging research in biomedical engineering and nanotechnology. Mechanical engineering students are pioneers, working on new technologies that could ultimately lead to fewer greenhouse gas emissions, while others have participated in biomechanics research to help the U.S. Olympic Swimming Team bring home more medals. Program graduates have many career options and opportunities to make a difference, including careers in the automotive, aerospace, manufacturing, power generation and transformation, and biomedical industries. The mechanical engineering (ME) program is accredited by the Accreditation Commission of ABET (<https://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 (<http://bulletin.gwu.edu/engineering-applied-science/#seasregulationstext>) in this Bulletin.

This is a STEM designated program.

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

## ADMISSIONS

For more information on the admission process, please visit the Office of Undergraduate Admissions website (<https://undergraduate.admissions.gwu.edu/>). Applications may be submitted via the Common Application (<https://go.gwu.edu/commonapp/>).

Supporting documents not submitted online should be mailed to:  
Office of Undergraduate Admissions

The George Washington University  
800 21st Street NW, Suite 100  
Washington DC 20052

Contact for questions:  
[gwadm@gwu.edu](mailto:gwadm@gwu.edu) or 202-994-6040

## REQUIREMENTS

| Code                  | Title                            | Credits |
|-----------------------|----------------------------------|---------|
| <b>First semester</b> |                                  |         |
| CHEM 1111             | General Chemistry I <sup>1</sup> |         |
| or CHEM 1113          | General Chemistry for Engineers  |         |

MAE 1001 Introduction to Mechanical and Aerospace Engineering

MATH 1231 Single-Variable Calculus I <sup>1</sup>

SEAS 1001 Engineering Orientation

UW 1020 University Writing

Humanities and social science 1 <sup>2</sup>

### Second semester

MAE 1004 Engineering Drawing and Computer Graphics

MAE 1117 Introduction to Engineering Computations

MATH 1232 Single-Variable Calculus II <sup>1</sup>

MATH 2184 Linear Algebra I

PHYS 1021 University Physics I <sup>1</sup>

Humanities or social science 2 <sup>2</sup>

### Third semester

APSC 2057 Analytical Mechanics I

APSC 2113 Engineering Analysis I

MAE 2117 Engineering Computations

MAE 3192 Manufacturing Processes and Systems

MATH 2233 Multivariable Calculus <sup>1</sup>

### 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 3119 Electronics and Devices for Mechanical Engineers

MAE 3126 Fluid Mechanics I

MAE 3127 Fluid Mechanics Lab

MAE 3166W Materials Science and Engineering

MAE 3191 Mechanical Design of Machine Elements

Humanities and social science 3 <sup>2</sup>

| <b>Sixth semester</b>                        |   |
|--|---|
| MAE 3120                                     | Methods of Engineering Experimentation  |
| MAE 3134                                     | Linear System Dynamics                  |
| MAE 3167W                                    | Mechanics of Materials Lab              |
| MAE 3187                                     | Heat Transfer                           |
| MAE 3193                                     | Mechanical Systems Design               |
| Humanities and social science 4 <sup>2</sup> |   |
| <b>Seventh semester</b>                      |   |
| MAE 4149                                     | Thermal Systems Design                  |
| MAE 4151                                     | Capstone Design Project I               |
| MAE 4182                                     | Electromechanical Control System Design |
| Technical elective <sup>3</sup>              |   |
| Humanities and social science 5 <sup>2</sup> |   |
| <b>Eighth semester</b>                       |   |
| MAE 4152W                                    | Capstone Design Project II              |
| Technical elective <sup>3</sup>              |   |
| Technical elective <sup>3</sup>              |   |
| Technical elective <sup>3</sup>              |   |
| Humanities and social science 6 <sup>2</sup> |   |

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

<sup>2</sup>To satisfy the SEAS Humanities, Social Science, and Non-Technical Elective Requirement, all mechanical engineering students must take one humanities course and two social sciences courses from University General Education Requirement; PHIL 2135, and two additional humanities or social science or non-technical courses from the Department of Mechanical and Aerospace Engineering's preapproved list of electives. 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 in lieu of one of the additional humanities or social science or non-technical course.

<sup>3</sup>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.

| <b>Code</b>  | <b>Title</b>                              | <b>Credits</b> |
|--|---|----------------|
| Technical electives are selected from MAE courses in the 3000, 4000, and 6000 ranges, excluding the following: |   |                |
| MAE 3171   | Patent Law for Engineers                  |                |
| MAE 4172   | Engineering Design and the Patent System  |                |
| MAE 6298   | Research                                  |                |
| MAE 6998 & MAE 6999  | MS Thesis Research and MS Thesis Research |                |

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

## COMBINED PROGRAM

### Combined program

- Dual Bachelor of Science with a major in mechanical engineering and Master of Science in the field mechanical engineering (<http://bulletin.gwu.edu/engineering-applied-science/mechanical-aerospace-engineering/combined-bs-ms-mechanical-engineering/>)