MASTER OF SCIENCE IN THE FIELD OF MECHANICAL AND AEROSPACE ENGINEERING

The master of science in the field of mechanical and aerospace engineering degree program offers a rigorous course of study that helps prepare students for leadership roles in government and industry. Students have the opportunity to work across disciplines in emerging areas of technology. The program is designed to build a solid background on the fundamentals of the related discipline, and at the same time it can be tailored to meet individual needs under the guidance of an academic advisor. Students can tailor their program to meet their interests and goals by choosing from the following focus areas: aerospace engineering; design of mechanical engineering systems; fluid mechanics, thermal sciences, and energy; industrial engineering; solid mechanics and materials science; and structures and dynamics; and robotics, mechatronics, and controls. Thesis and non-thesis options are available.

Specific admission requirements are shown on the Graduate Program Finder (http://www.gwu.edu/all-graduate-programs).

More information is available on the departmental website (https://www.mae.seas.gwu.edu).

Educational Planner:
In consultation with an academic advisor, each student must develop an Educational Planner through DegreeMAP that governs the student’s degree requirements. The Educational Planner should be established soon after matriculation and must be completed before the end of the student’s first semester. The Educational Planner must be approved by the advisor.

REQUIREMENTS

Credit Requirements:
- Thesis option: 30 credits are required for graduation; 6 of these credits are thesis credits
- Non-thesis option: 33 credits are required for graduation
- In either option, the student must select one focus area from the chart below and complete the required 9 credits of courses in that area. The remaining credits are selected by the student in consultation with a faculty advisor.

Graduation and Scholarship Requirements:
Students are responsible for knowing the university’s minimum GPA requirement for graduation and scholarships. Please visit the Graduation and Scholarship Requirements (http://bulletin.gwu.edu/engineering-applied-science/#graduation_requirements_ms) section on this site to read the requirements.

Program Restrictions:
Normally, no more than two courses taken outside the Department of Mechanical and Aerospace Engineering may be counted toward the requirements for the graduate degree. In special circumstances this may be changed with the approval of the advisor.

Aerospace Engineering

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>APSC 6212</td>
<td>Analytical Methods in Engineering II</td>
<td></td>
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<tr>
<td>APSC 6213</td>
<td>Analytical Methods in Engineering III</td>
<td></td>
</tr>
<tr>
<td>MAE 6286</td>
<td>Numerical Solution Techniques in Mechanical and Aerospace Engineering</td>
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</tbody>
</table>

One of the following:
- MAE 6207 Theory of Elasticity I
- MAE 6221 Fluid Mechanics
- MAE 6276 Mechanics of Space Flight

Electives
Remaining credits in aeroacoustics, aeronautics, astronautics, propulsion, or space systems elective courses

Design of Mechanical Engineering Systems

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MAE 6243</td>
<td>Advanced Mechanical Engineering Design</td>
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</tr>
<tr>
<td>MAE 6251</td>
<td>Computer-Integrated Manufacturing</td>
<td></td>
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</table>

One of the following:
- APSC 6212 Analytical Methods in Engineering II
- APSC 6213 Analytical Methods in Engineering III
- MAE 6286 Numerical Solution Techniques in Mechanical and Aerospace Engineering

Electives
Remaining credits in computer-aided design, computer-integrated design and manufacturing, mechanical engineering design, or robotics courses
## Fluid Mechanics, Thermal Sciences, and Energy

<table>
<thead>
<tr>
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<tr>
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<td>APSC 6213</td>
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## Industrial Engineering

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<tr>
<td><strong>Required</strong></td>
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<tr>
<td>EMSE 6755</td>
<td>Quality Control and Acceptance Sampling</td>
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<tr>
<td>EMSE 6770</td>
<td>Techniques of Risk Analysis and Management</td>
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<tr>
<td>MAE 6251</td>
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## Electives

Remaining credits in elective courses

## Solid Mechanics and Materials Science

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<tr>
<td>MAE 6210</td>
<td>Continuum Mechanics</td>
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<tr>
<td>MAE 6238</td>
<td>Biomaterials</td>
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<tr>
<td>MAE 6239</td>
<td>Computational Nanosciences</td>
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<tr>
<td>MAE 6291</td>
<td>Special Topics in Mechanical Engineering</td>
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<tr>
<td>ECE 6221</td>
<td>Introduction to Physical Electronics</td>
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## Electives

Remaining credits in elective courses

## Structures and Dynamics

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## Electives

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## Robotics, Mechatronics, and Controls

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<tbody>
<tr>
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</tr>
<tr>
<td>MAE 6245</td>
<td>Robotic Systems</td>
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<tr>
<td>MAE 6246</td>
<td>Electromechanical Control Systems</td>
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<tr>
<td>MAE 6240</td>
<td>Kinematic Synthesis</td>
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<tr>
<td>MAE 6242</td>
<td>Advanced Mechanisms</td>
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<tr>
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## Electives

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