MASTER OF SCIENCE IN THE FIELD OF MECHANICAL AND AEROSPACE ENGINEERING

The Master of Science in Mechanical and Aerospace Engineering degree program offers a rigorous course of study through which students are prepared for leadership careers 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 offered focus areas.

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

More information can be found on the departmental website (http://www.graduate.seas.gwu.edu/programs/mechanical-and-aerospace-engineering/admissions-requirements).

REQUIREMENTS

The following requirements must be fulfilled: non-thesis option—a minimum of 33 credits, including the required focus area curriculum; thesis option—27 credits, including the required focus area curriculum and 6 credits in thesis research.

Aerospace Engineering

Required

APSC 6212 Analytical Methods in Engineering II
or APSC 6213 Analytical Methods in Engineering III
MAE 6286 Numerical Solution Techniques in Mechanica land Aerospace Engineering

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

Required

MAE 6243 Advanced Mechanical Engineering Design

MAE 6251 Computer-Integrated Manufacturing
MAE 6286 Numerical Solution Techniques in Mechanica land 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

Required

APSC 6213 Analytical Methods in Engineering III
MAE 6221 Fluid Mechanics
MAE 6286 Numerical Solution Techniques in Mechanica land Aerospace Engineering

Electives

Remaining credits in elective courses

Industrial Engineering

Required

EMSE 6755 Quality Control and Acceptance Sampling
EMSE 6770 Techniques of Risk Analysis and Management
MAE 6201 Intro to Manufacturing
MAE 6252 Projects in Computer-Integrated Design and Manufacturing

One of the following:

MATH 2233 Multivariable Calculus
APSC 3115 Engineering Analysis III
CSCI 1041 Introduction to FORTRAN Programming
CSCI 1121 Introduction to C Programming
CSCI 1131 Introduction to Programming with C

Electives

Remaining credits in elective courses in two approved three-course sequences, one in the Department of Mechanical and Aerospace Engineering, the other in a cooperating department in SEAS
## Solid Mechanics and Materials Science

**Required**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>APSC 6213</td>
<td>Analytical Methods in Engineering III</td>
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Two of the following:

<table>
<thead>
<tr>
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<th>Course Title</th>
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<tbody>
<tr>
<td>MAE 6210</td>
<td>Continuum Mechanics</td>
</tr>
<tr>
<td>MAE 6238</td>
<td>Biomaterials</td>
</tr>
<tr>
<td>MAE 6239</td>
<td>Computational Nanosciences</td>
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</tbody>
</table>

**Electives**

Remaining credits in elective courses

## Structures and Dynamics

**Required**

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<tr>
<td>MAE 6207</td>
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</tr>
<tr>
<td>MAE 6286</td>
<td>Numerical Solution Techniques in Mechanica land Aerospace Engineering</td>
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**Electives**

Remaining credits in elective courses

## Robotics, Mechatronics, and Controls

**Required**

<table>
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<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>MAE 6245</td>
<td>Robotic Systems</td>
</tr>
<tr>
<td>MAE 6246</td>
<td>Electromechanical Control Systems</td>
</tr>
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</table>

One of the following:

<table>
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<th>Course Title</th>
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<tbody>
<tr>
<td>MAE 6240</td>
<td>Kinematic Synthesis</td>
</tr>
<tr>
<td>MAE 6242</td>
<td>Advanced Mechanisms</td>
</tr>
<tr>
<td>MAE 6243</td>
<td>Advanced Mechanical Engineering Design</td>
</tr>
</tbody>
</table>

**Electives**

Remaining credits in elective courses