AEROSPACE ENGINEERING, MS

for the degree of Master of Science in Aerospace Engineering (on campus & non-thesis online)

The Department of Aerospace Engineering offers both MS with thesis (https://aerospace.illinois.edu/academics/graduate/ms-degree-program/ms-degree-thesis/) and MS non-thesis (https://ae.illinois.edu/academics/graduate/ms-degree-program/ms-degree-non-thesis-campus/) programs. Students in the MS with thesis program are required to have a research advisor and applicants are encouraged to contact department faculty (https://aerospace.illinois.edu/directory/faculty/) in their areas of interest to inquire about possible research and funding opportunities.

Interested students may specialize in computational science and engineering via the Computational Science & Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering/) optional graduate concentration.

Graduate Teaching Experience
MS students are not required to hold a teaching assistantship.

Department Research
Research activities in the Department of Aerospace Engineering encompass a wide range of problem areas in aerospace engineering and related engineering disciplines as described on the department's research area Web site (https://aerospace.illinois.edu/research/).

There are several nationally-renowned interdisciplinary centers in The Grainger College of Engineering where Aerospace Engineering faculty members engage in research along with many other campus faculty members. A list of these, along with links to full descriptions, appears at the department’s interdisciplinary centers Web site (https://aerospace.illinois.edu/research/interdisciplinary-centers/).

Members of the Aerospace Engineering Department have access to a wide range of excellent research facilities. These laboratories support a wide range of activity and are described at the department’s research facilities Web site (https://aerospace.illinois.edu/research/research-facilities/).

The MS in Aerospace Engineering is also offered online. The degree requirements are the same as for the on-campus MS non-thesis program and the degree awarded to online students is the same degree awarded to resident students. Online students have five years to complete the program.

Online students should develop a course program plan in consultation with their advisor. Suggested program tracks (https://aerospace.illinois.edu/academics/graduate/suggested-program-tracks/) are provided for each of the three main technical divisions in the department:

1. Aerodynamics, Fluid Mechanics, Combustion and Propulsion (AFMCP);
2. Astrodynamics, Controls and Dynamical Systems (ACDS); and

For additional details and requirements, refer to the department's Website (http://aerospace.illinois.edu/) and the Graduate College Handbook (https://grad.illinois.edu/gradhandbook/).

<table>
<thead>
<tr>
<th>Thesis Option</th>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE 599</td>
<td>Thesis Research (min-max applied toward the degree)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>AE 590</td>
<td>Seminar (registration of 0 hours every term while in residence )</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Aerospace Engineering breadth requirement (<a href="https://aerospace.illinois.edu/academics/graduate/breadth-and-mathematics-requirements/">https://aerospace.illinois.edu/academics/graduate/breadth-and-mathematics-requirements/</a>)</td>
<td>6-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One mathematics course from an approved list (<a href="https://aerospace.illinois.edu/academics/graduate/breadth-and-mathematics-requirements/">https://aerospace.illinois.edu/academics/graduate/breadth-and-mathematics-requirements/</a>)</td>
<td>3-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective courses chosen in consultation with an advisor (subject to Other Requirements and Conditions below)</td>
<td>12-15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Hours</td>
<td></td>
<td></td>
<td>32</td>
</tr>
</tbody>
</table>

Other Requirements and Conditions

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Requirements and Conditions may overlap</td>
<td>A minimum of 16 hours of AE course work at the 400-level and above. (May include up to 8 hours of AE 599.)</td>
</tr>
</tbody>
</table>
A minimum of 12 500-level credit hours overall applied toward the degree, with 8 hours being AE courses. (May include up to 4 hours of AE 599.)

No hours of AE 597 (or other independent study) may be applied in this option.

Attendance at all Aerospace Engineering AE 590 seminars each semester while on campus.

Minimum GPA: 3.0

A departmental petition is required to change from the thesis to the non-thesis option.

## Non-Thesis Option

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE 590</td>
<td>Seminar (registration for 0 hours every term while in residence)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aerospace Engineering breadth requirement</td>
<td>9-12</td>
</tr>
<tr>
<td></td>
<td>One mathematics course from an approved list</td>
<td>3-4</td>
</tr>
<tr>
<td></td>
<td>Elective courses chosen in consultation with an advisor</td>
<td>16-20</td>
</tr>
<tr>
<td></td>
<td><strong>Total Hours</strong></td>
<td>32</td>
</tr>
</tbody>
</table>

### Other Requirements and Conditions

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Requirements and Conditions may overlap</td>
<td>A minimum of 16 hours of AE course work at the 400-level and above.</td>
</tr>
<tr>
<td></td>
<td>A minimum of 12 500-level credit hours overall applied toward the degree, with 8 hours being AE courses.</td>
</tr>
<tr>
<td></td>
<td>A maximum of 4 hours of AE 597 (or other independent study) may be applied toward the elective course work requirement.</td>
</tr>
<tr>
<td></td>
<td>Attendance at all Aerospace Engineering AE 590 seminars each semester while on campus.</td>
</tr>
<tr>
<td>Minimum GPA:</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>Generally, students holding a research assistantship will not be allowed in the non-thesis option.</td>
</tr>
<tr>
<td></td>
<td>A departmental petition is required to change from the thesis to the non-thesis option and vice-versa.</td>
</tr>
</tbody>
</table>

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1. An ability to utilize and apply advanced mathematical, computational, design and/or experimental skills
2. An ability to identify, formulate and solve advanced problems in aerospace engineering
3. Effectively communicate technical ideas through reports, presentations, or other media at the high level associated with graduate education
4. Depth of knowledge in one or more sub-disciplines associated with aerospace engineering and their research or technical area of interest.
5. Knowledgeable about contemporary research in aerospace engineering and related disciplines
6. Knowledgeable about ethical standards of conducting research, analyzing data and disseminating information as part of the engineering profession
7. An ability to conduct research, analyze results, report findings, and draw conclusions that result in original contributions to knowledge in aerospace engineering and/or related fields (Not a requirement for M.S. Non-thesis students)
8. Effectively train and/or teach others in a classroom, laboratory, seminar, or other setting to disseminate knowledge in the aerospace engineering discipline. (Not a requirement for M.S. students)

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**Admission Requirements**

The Department of Aerospace Engineering accepts applications for admission to the MS with thesis and MS non-thesis graduate programs per the following deadlines:

**Fall Admission**
Other Graduate Programs in the Department of Aerospace Engineering

- Majors
  - Aerospace Engineering, PhD (https://catalog.illinois.edu/graduate/engineering/aerospace-engineering-phd/)
    - optional concentrations
      - Computational Science & Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering/)
  - Aerospace Engineering, Direct PhD (https://aerospace.illinois.edu/academics/graduate/phd-program/phd-student-status-and-requirements/direct-phd/)
    - optional concentrations
      - Computational Science & Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering/)
- Concentrations
  - Aerospace Systems Engineering (http://catalog.illinois.edu/graduate/engineering/engineering-meng/aerospace-systems/)
    - available for:
      - Engineering, MENG (http://catalog.illinois.edu/graduate/engineering/engineering-meng/)

The Department of Aerospace Engineering (AE) offers graduate programs leading to the degrees of Master of Science and Doctor of Philosophy in Aerospace Engineering and a Master of Engineering in Engineering degree with a concentration in Aerospace Systems Engineering.
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Department of Aerospace Engineering
Department Head: Jonathan Freund (jfreund@illinois.edu)
Director of Graduate Studies: Ioannis Chasiotis (https://aerospace.illinois.edu/directory/profile/chasioti/)
Contact: Jenna Russell
Aerospace Department website (https://aerospace.illinois.edu/)
Aerospace MS program website (https://aerospace.illinois.edu/academics/graduate/ms-degree-program/)
Aerospace Department faculty (https://ae.illinois.edu/directory/faculty/)
311 Talbot Laboratory, 104 S. Wright St, Urbana, IL 61801
(217) 300-9774
Aerospace Engineering email (ae-grad@illinois.edu)

Grainger College of Engineering
Grainger College of Engineering website (https://grainger.illinois.edu/)

Admissions
Aerospace Engineering, Graduate Admissions & Requirements
Graduate College Admissions & Requirements (https://grad.illinois.edu/admissions/apply/)

Information listed in this catalog is current as of 12/2022