



Twin Cities Campus

Aerospace Engineering and Mechanics M.S.

Aerospace Engineering & Mechanics

College of Science and Engineering

Link to a [list of faculty](#) for this program.

Contact Information:

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- Program Type: Master's
- Requirements for this program are current for Spring 2018
- Length of program in credits: 30
- This program does not require summer semesters for timely completion.
- Degree: Master of Science

Along with the program-specific requirements listed below, please read the [General Information](#) section of the catalog website for requirements that apply to all major fields.

The Department of Aerospace Engineering and Mechanics offers M.S. and Ph.D. degrees. The graduate programs emphasize engineering sciences that are basic to fluid mechanics, aerospace systems, and solid mechanics. Theoretical, analytical, experimental, and computational aspects of these fields are covered by the courses and research opportunities offered by the department.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission

The preferred undergraduate GPA for admittance to the program is 3.20.

A four-year B.S. degree in an engineering, basic science, or mathematics program is required.

Other requirements to be completed before admission:

Admission depends primarily on the applicant's undergraduate record and letters of recommendation.

Special Application Requirements:

GRE scores are not required but are strongly recommended for students applying for graduate fellowships. In all cases, these test scores are taken into account if provided. Students are admitted fall semester only. Only under unusual circumstances are students allowed to begin their studies at another time during the academic year.

The application deadline is December 15. Additional information is available at http://www.aem.umn.edu/teaching/graduate/Application_procedures.shtml

International applicants must submit score(s) from one of the following tests:

- TOEFL
 - Internet Based - Total Score: 79
 - Internet Based - Writing Score: 21
 - Internet Based - Reading Score: 19
 - Paper Based - Total Score: 550
- IELTS
 - Total Score: 6.5
- MELAB
 - Final score: 80

Key to [test abbreviations](#) (TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the [General Information](#) section of the catalog website.



Program Requirements

Plan A: Plan A requires 14 major credits, 6 credits outside the major, and 10 thesis credits. The final exam is oral.

Plan B: Plan B requires 14 to 24 major credits and 6 to 16 credits outside the major. The final exam is oral.

Plan C: Plan C requires 14 to 24 major credits and 6 to 16 credits outside the major. There is no final exam.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 2.80 is required for students to remain in good standing.

This program emphasizes coursework in engineering sciences that are basic to this field: fluid mechanics, aerospace systems, and solid mechanics. Options include coursework in aerodynamics and aerospace systems, dynamical systems, material properties, and fluid and solid behavior.

The M.S. in Aerospace Engineering and Mechanics requires 30 credits and is offered under Plan A (thesis), Plan B (project), and Plan C (coursework). All plans require a minimum of 14 major credits, of which 12 must be at the 5xxx or 8xxx level, and a minimum of 6 credits outside the major. In addition, Plan A requires 10 thesis credits, and Plan B requires 3 project credits (which may be counted toward the 14 major credits). The remaining course credits may be taken in the major field or in any related field. Two semesters of seminar (AEM 8000) attendance are required, but only one credit may be used towards the course credit requirements. No more than 8 credits of 4xxx courses and no more than 8 credits (6 for Plan A) taken as S/N are allowed.

Required Courses

Take one 2-course sequence in fluids, solids or dynamics

Fluids

[AEM 8201](#) - Fluid Mechanics I (3.0 cr)

[AEM 8202](#) - Fluid Mechanics II (3.0 cr)

Solids

[AEM 5501](#) - Continuum Mechanics (3.0 cr)

[AEM 5503](#) - Theory of Elasticity (3.0 cr)

Dynamics

[AEM 5401](#) - Intermediate Dynamics (3.0 cr)

[AEM 8411](#) - Advanced Dynamics (3.0 cr)

Additional Major Credits

Take an additional 8 credits in AEM. The following sequences in controls or computational fluid mechanics may be used, or any other AEM courses chosen in consultation with adviser.

Controls

[AEM 5321](#) - Modern Feedback Control (3.0 cr)

[AEM 5451](#) - Optimal Estimation (3.0 cr)

[AEM 8421](#) - Robust Multivariable Control Design (3.0 cr)

Computational Fluid Dynamics

[AEM 5253](#) - Computational Fluid Mechanics (3.0 cr)

[AEM 8253](#) - Computational Methods in Fluid Mechanics (3.0 cr)

Seminar

1 credit of AEM 8000 may be used towards program credit requirements.

[AEM 8000](#) - Seminar: Aerospace Engineering and Mechanics (1.0 cr)

Minor or Related Field

For all plans, take a minimum of 6 credits in a minor or in related fields outside AEM

Plan A

Take a minimum of 10 thesis credits

[AEM 8777](#) - Thesis Credits: Master's (1.0 - 18.0 cr)

Plan B

Take 3 credits of AEM 8880 and complete a final project

[AEM 8880](#) - Plan B Project (1.0 - 3.0 cr)