

AEROSPACE ENGINEERING AND MECHANICS, MS

The Department of Aerospace Engineering and Mechanics offers a Master of Science in aerospace engineering and mechanics degree via an on-campus program and an off-campus (distance learning) program through the Office of Teaching Innovation and Digital Education. An MSAEM can be earned by coursework only or by a combination of coursework and an approved thesis. Most distance learning students elect to complete the coursework only degree option. On-campus students supported by assistantships are expected to complete an approved thesis.

Admissions

In addition to the minimum Graduate School admission requirements, to be considered for regular admission an application must include:

- Three letters of recommendation (only two letters for Accelerated Masters Program applicants)
- GRE (optional)

Aerospace Engineering and Mechanics standards are higher than the graduate school minimums, and all application materials are carefully considered. Meeting minimum graduate school requirements does not guarantee admission into the Aerospace Engineering and Mechanics MSAEM program.

Students applying to the Aerospace Engineering and Mechanics MSAEM program without a bachelor's degree in aerospace engineering, mechanical engineering or engineering mechanics are required to complete the following coursework from an accredited university (if not already completed) prior to applying:

- Calculus (12 semester credit hours)
- Ordinary Differential Equations
- 12 semester credit hours of calculus-based engineering mechanics - Statics, Dynamics, Mechanics of Materials and Fluid Mechanics.

Students have the opportunity to enroll in the mechanics courses through the Office of Teaching Innovation and Digital Education as a non-degree seeking (NDS) applicant.

The Aerospace Engineering and Mechanics MSAEM distance program is open to US students as well as international students residing in the US with appropriate visas.

See the Admission Criteria section of this catalog for more information.

Curricular Requirements

The MSAEM degree can be earned by 30 hours of coursework (non-thesis option) or by a combination of 24 hours of coursework, 6 hours of thesis research, and a committee approved thesis that includes an oral defense and written document (thesis option). A 3.0 GPA for coursework is required. Most distance learning students elect to complete the coursework only degree option. On-campus students supported by assistantships are expected to complete an approved thesis.

For both degree options, students must complete two core courses, one from each core designation.

AEM Core Courses		Hours
Mechanics		
AEM 500	Intermediate Fluid Mechanics	3
AEM 546	Intermediate Solid Mechanics	3
AEM 562	Intermediate Dynamics	3

Mathematics

GES 551	Matrix And Vector Analysis	3
GES 554	Partial Diff Equations	3
AEM 548	Stochastic Mechanics	3

Elective, thesis and culminating experience requirements are outlined in the Thesis and Non-Thesis links. At least 18 hours must be AEM designation. Non-AEM courses must be approved by the Graduate Program Coordinator or the student's research advisor.

Plan I: Thesis Option Curriculum		Hours
Core Coursework		6
Elective Coursework		18
AEM 599	Thesis Research	6
Total Hours		30

Plan II: Non-Thesis Option Curriculum		Hours
Core Coursework		6
Elective Coursework		24
Total Hours		30

Independent study hours AEM 593/594 counting for elective coursework is limited to 3 hours for Plan I students and 6 hours for Plan II students.

Transfer Credit

Transfer credit requests are evaluated by the Graduate School and the AEM department and follow Graduate School policy.

Accelerated Master's Program

The Accelerated Masters Program (AMP) is designed specifically for outstanding UA students to complete the requirements for both their bachelor's degree and a master's degree in aerospace engineering in an accelerated five year period. Both BSAE and BSME students can apply to the MSAEM program via AMP. General eligibility requirements, maximum number of dual-credit hours allowed and information about scholarships and assistantships are location on the Graduate School's AMP page

In addition to the graduate school's AMP requirements, the AEM department also requires students applying to AMP to

1. Complete prior to admission at least six hours of BSAE or BSME junior-level (300 or higher) core-program courses as listed on the appropriate department's flow chart,
2. Submit a statement of purpose and two letters of recommendation.

Applications are evaluated by the Graduate School and the AEM department. Meeting minimum GPA eligibility requirements does not guarantee admission.

Students interested in AMP and the MSAEM program can contact the AEM Graduate Program Coordinator, Dr. James P. Hubner (phubner@eng.ua.edu), for more information.

Students apply for the program online. Applications are evaluated by the Graduate School and the AEM department. Meeting minimum eligibility requirements does not guarantee admission.

Comprehensive Examination/Capstone

Students pursuing the MSAEM Plan II degree option have the choice of completing one of the following options to satisfy the requirement of a culminating experience:

1. Complete a capstone project and receive faculty advisor approval for the written report detailing the culminating experience: The research project is an in-depth study of a topic that must be approved by the student's research advisor, an AEM faculty member or an approved non-AEM faculty member on the Graduate Faculty in which the student selects based on mutual research interests. The project is not as comprehensive as a thesis. The project must integrate knowledge and concepts from more than one of the program courses. MSAEM Plan II students may, but are not required to, enroll in three hours of AEM 593 or AEM 594 Special Projects and submit the written reports detailing the culminating experience as part of the AEM 593 or AEM 594 course requirements. The approved written report for the culminating experience must be submitted to their advisor providing sufficient time to evaluate and potentially require edits prior to the end of the semester, usually two to three weeks before final exam week.
2. For students currently employed and working in the engineering profession, write a report and receive faculty advisor approval on how knowledge gained from MSAEM coursework has been used and integrated into your work assignments and projects over the past year. The faculty advisor must be an AEM faculty member in which the student selects based on mutual interests. The report is not as comprehensive as a thesis. Examples must integrate specific knowledge, concepts, models, and/or analyses from more than one of the program courses.

The student must complete at least 18 hours prior to starting the culminating experience. For both options, a conference-style technical paper is a good guide.

Plan I: Thesis Option

The MSAEM Thesis option degree requires 24 hours of coursework, 6 hours of thesis research (AEM 599), and an approved thesis. Additional requirements to those outlined under Curricular Requirements include:

- 18 hours of the 30 required must have AEM designation or transferred under AEM designation
- Non AEM electives must be approved by the student's Research Advisor or the Graduate Program Coordinator
- Thesis committee requirements follow Graduate School policy. The thesis committee should be formed at least the semester prior to the thesis defense.
- Thesis submission deadlines, document formatting, and graduating semester enrollment requirements follow the Graduate School calendar and policy.

Plan II: Non-Thesis Option

The MSAEM Non-Thesis option degree requires 30 hours of coursework and the completion of a Capstone Project or Comprehensive Exam. Additional requirements to those outlined under Curricular Requirements include:

- 18 hours of the 30 required must have AEM designation or transferred under AEM designation
- Non AEM electives must be approved by the student's Research Advisor or the Graduate Program Coordinator

Time Limits for Degree Completion Requirements

Graduate School Policy

Student Progress Requirement

Students are expected to progress through their degree program in a timely manner and with consultation with their advisor.

Academic Misconduct Information

Graduate School Policy

Withdrawals and Leave of Absence Information

Graduate School Policy

Academic Grievances Information

Graduate School Information

Grades and Academic Standing

Graduate School Policy

Graduate School Deadlines Information

Graduate School Information

Application for Graduation Information

Graduate School Policy

Assistantships (teaching and research) are offered by the department and faculty to highly-qualified applicants with preference towards those pursuing a PhD. Most assistantships start in the fall and last one academic year with consideration for renewal. A full assistantship provides a competitive stipend, tuition and health benefits. Assistantships usually do not cover fees related to personal items.

Assistantship offers are contingent upon receipt of acceptable results of a pre-employment background report. To maintain assistantship funding, recipients must register for at least the minimum number of graduate hours, remain in good academic standing, competently and timely perform departmental assigned activities, successfully complete our International Teaching Assistant Program (ITAP) within the first academic year if an international student, and continually progress through the degree program. These criteria are evaluated by your assigned research advisor and the Department Head. Failing to meet or complete any of these criteria can result in the termination of the assistantship but not necessarily dismissal from the program if in good academic standing.

No additional application is necessary to be considered for a departmental assistantship; however, **if seeking an assistantship then it is recommended to submit your application by January 31 or earlier for the ensuing fall semester.** Contacting faculty with similar research interests is encouraged.

Several national, state and university fellowship programs exist, including the University's Graduate Council Fellowship. Students are encouraged to seek these opportunities as well.

For additional information about financial assistance in the AEM graduate programs, contact the Graduate Program Coordinator.