

Master of Science in Aerospace Engineering

Aerospace Engineering

The aerospace engineer is concerned with the design, production, operation, and support of aircraft and spacecraft. Aerospace engineers conduct research to advance air flight and space exploration, by solving problems, developing products, and improving processes for the aerospace industry. Aerospace engineers typically work for aircraft and space vehicle industries, national research laboratories, commercial airlines, and federal government agencies. The curriculum includes traditional courses in aerodynamics, flight dynamics and control, propulsion, structures, manufacturing, instrumentation, and spacecraft systems.

Mission

KU Aerospace Engineering is an international leader in aerospace education and is committed to developing a global community for students, educators, and researchers by strategically aligning teaching, research, and service missions. A world-class graduate and undergraduate education focused on designing, simulating, building, testing, and flying aerospace vehicles is provided. The department invests in research infrastructure and chooses outstanding students who will work with faculty, and staff to conduct basic and applied research of relevance to aerospace vehicles and systems. The department supports the aerospace profession by educating the public, by maintaining the KU aerospace short-course program, and by advising policy-makers in government, industry, and disciplinary professional organizations.

Educational Objectives

The Aerospace Engineering graduate program objective is that our graduates contribute to the aerospace profession, related fields, and other disciplines through skilled professional practice in industry, government, and/or academia. Within a few years after graduation, we expect that:

- Graduates are meaningfully employed or continuing graduate study in aerospace or other high technology fields, with the majority retained in aerospace or closely related engineering
- Graduates have a positive professional career path including promotions, leadership, and/or continued education
- Graduates recognize the value of their educational preparation for their current and future professional endeavors

Educational Outcomes

The Master of Science program in Aerospace Engineering (MSAE) is a program in which students conduct original work related to Aerospace Engineering. Our program is designed to achieve our objectives by establishing measurable learning outcomes which graduates of the program must demonstrate:

1. Demonstrate an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. Demonstrate the ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
3. Demonstrate the ability to develop and conduct either 1) appropriate analytical approaches, 2) simulation, or 3) experimentation;

analyze and interpret data; and use engineering judgment to draw conclusions.

4. Demonstrate an ability to communicate effectively with a range of audiences.

Standard Admission Requirements for all Graduate Programs

- All applicants must meet the requirements outlined in the Admission to Graduate Study (<https://policy.ku.edu/graduate-studies/admission-to-graduate-study/>) policy.
- Bachelor's degree: A copy of official transcripts showing proof of a bachelor's degree (and any post-bachelor's coursework or degrees) from a regionally accredited institution, or a foreign university with equivalent bachelor's degree requirements is required.
- English proficiency: Proof of English proficiency (<https://gradapply.ku.edu/english-requirements/>) for non-native or non-native-like English speakers is required. There are two bands of English proficiency, including Admission and Full proficiency. For applicants to online programs, Full proficiency is required.

Graduate Admission to the Department of Aerospace Engineering

Application Requirements

In order for applications to be considered complete, the following materials must be submitted as part of the application (<https://gradapply.ku.edu/apply/>) by the posted deadline:

1. Three letters of recommendation. Letters must be signed and on letterhead. Recommenders will receive instructions on how to submit their documents at the time the application is submitted.
2. Resume or CV
3. Statement of Objectives
4. Official GRE score report (optional but recommended)

** Please note: All application materials must be received before any kind of decision is made. Do not send paper documents unless requested.*

Admissions Deadlines

Fall Admission:

- Priority Deadline: December 1
- Final Deadline: April 1

Spring Admission:

- Priority Deadline: September 1
- Final Deadline: December 1

Summer Admission:

- Final Deadline: April 1

For full consideration for fellowships, scholarships, and research/teaching assistantships, applications should be received by the priority deadline. Application materials should indicate an interest in financial assistance or research/teaching assistantships.

Application Fees

Domestic: \$65

International: \$85

Document Specifications

Letters of Recommendation

The letter of recommendation form should be on **letterhead** and signed. Recommenders will receive instructions on how to submit their documents at the time the application is submitted.

Proof of Finances

Most international students must submit credible evidence of financial support for the first year of study. Further details and requirements for financial documentation can be found at this link (<https://iss.ku.edu/proof-finances/>).

Admissions Standards

Students who wish to apply for admission to the Aerospace Engineering graduate program must have, as a minimum, a BSAE degree or a BS degree in a closely related field from a university or college with a program equivalent to the KU BSAE program. Students applying with either a BS degree from an engineering program that is not equivalent to the KU BSAE program or a BS degree from a non-aerospace engineering program may have to make up certain undergraduate AE courses at the discretion of the department graduate advisor. Such courses do not count towards degree completion.

Admission

Master's program admission requires an undergraduate GPA of at least 3.0.

Doctoral program admission requires an undergraduate GPA of at least 3.0 and a GPA of at least 3.5 for courses taken as part of a master's program.

In exceptional cases, applicants with a GPA between 2.75-2.99 may be granted admission. Such students would be admitted as Aerospace Engineering Master of Engineering students. If approved by the student's graduate advisor and the departmental graduate advisor, the student may change to an alternate Aerospace Engineering degree program after successful completion of the first semester and receiving a minimum 3.0 GPA.

GRE Requirements

The GRE is not required, however, is strongly recommended. Preferred scores are a minimum of 50% on the Verbal and Analytical sections of the GRE and 85% on the Quantitative section.

English Proficiency Requirement

Non-native English-speaking students who do not meet full proficiency requirements at the time of application are required to check in at the Applied English Center (<https://aec.ku.edu/>) (AEC) upon arrival on campus for orientation. This process serves to confirm each student's level of English proficiency and determine whether English courses will be included as a requirement of the student's academic program.

Refer to the University Policy (<http://policy.ku.edu/graduate-studies/english-proficiency-international-students/>) on English Proficiency Requirements for Admission to Graduate Study.

Funding

Scholarships/Fellowships - The Aerospace Engineering department nominates applicants for University and School of Engineering scholarships and fellowships based on academic merit and other selection criteria.

Graduate Teaching Assistantships (GTAs) - Teaching Assistantships are available and are awarded competitively based on academic qualifications through the department or school.

Graduate Research Assistantships (GRAs) - Students work with their potential academic advisor/mentor to obtain a funded position on a research project.

**Important note: acceptance into the graduate program DOES NOT guarantee financial aid. To be considered for financial aid, applications must be received by the priority deadline.*

Visit Us

The graduate program staff is happy to work with all prospective students in determining the fit between the student and the program. In order to determine this, we feel that visiting our campus in Lawrence is a very important step. In order to facilitate your visit to KU, there are two main options:

The first, and most preferred, option entails simply applying for admission to the program. All prospective students are welcome to attend the School of Engineering Open House. Eligible admitted students are invited to participate in Campus Visit Days in late February (prior to the fall semester of your intended matriculation). These organized campus visit opportunities will allow you to gather a great deal of first-hand information which we hope will help you in making a final decision about whether to attend KU.

The second option is to make arrangements to visit us on your own, outside of organized events. With early notification, we will do our best to work with you to provide information and schedule appointments with faculty when possible. Please contact us if you feel that this is the best option for you.

Contact Information

Please contact the AE Graduate Program Coordinator at aerohawk@ku.edu or (785) 864-2960, to schedule a visit or with questions about the application process.

**The University of Kansas
AE Graduate Program
1530 W. 15th Street
2120 Learned Hall
Lawrence, Kansas, 66045**

M.S. Degree Requirements

The Master of Science program in Aerospace Engineering (MSAE) is a program in which students conduct original work related to Aerospace Engineering. In-person and online options are available.

The Master of Science (M.S.) program in Aerospace Engineering (AE) has 2 options.

- The **Thesis Option** requires a minimum of 30 credit hours of graduate work. The coursework includes 6 hours earned in the satisfactory completion of a thesis.
- The **Project Option** requires a minimum of 30 hours of graduate work. The coursework includes 3 hours in the satisfactory completion of a project.
- Students must take at least one semester of AE 690, Professional Development for Graduate Students.

No more than two courses below the 700-level may be used to satisfy degree requirements, in addition to the required AE 690 course. Graduate mathematics courses are considered those taken at the 600-level and higher, however, Master's students may also use no more than 1 mathematics course (up to 3 hours) at the 500-level to meet degree requirements. All AE courses other than AE 690 must be 700-level and above.

The candidate must pass a final oral examination in which the thesis or research project (results of the independent investigation) is defended and the candidate demonstrates a working knowledge in aerospace engineering.

Thesis or Project Committee

As part of the Plan of Study (<https://enrgradplan.ku.edu/>) a student is required to form a thesis or project committee with a minimum of three Graduate Faculty, a minimum of two must be AE faculty members. Additional committee members may be selected by the student from either AE or other School of Engineering faculty members. The chair of the committee must be an AE faculty member.

Plan of Study

Before the end of the first semester of graduate study the student must complete an online Plan of Study (<https://enrgradplan.ku.edu/>) which includes the following information:

1. A committee chair (advisor) and at least two committee members
2. Proposed area of research
3. Proposed sequence of courses through the semester of graduation
4. Proposed semester of graduation

At the completion of this program, students will be able to:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.
- Develop and conduct either 1) appropriate analytical approaches, 2) simulation, or 3) experimentation; analyze and interpret data; and use engineering judgment to draw conclusions.
- Communicate effectively with a range of audiences.