Bachelor of Science in Aerospace Engineering

Careers

Professional Opportunities

Aerospace engineers design, develop, and test aircraft, spacecraft, and missiles and supervise manufacture of these products. They explore advances in air flight and space exploration. Aerospace engineers typically work for aircraft, guided missile and space vehicle industries, national research laboratories, commercial airlines, and federal government agencies.

Undergraduate Admission to the School of Engineering

Admission to the KU School of Engineering (and its degree programs) is selective. Students may be admitted to an engineering or computer science degree program (https://engr.ku.edu/2021-curriculum-guide-links/) as freshmen (first year) students, but all admissions, for both in-state and out-of-state students, are selective. Applications are judged on several factors, such as high school record, scores on national tests, academic record at college or university level, and trend of grades and more. High school transcripts are required.

Minimum Academic Standards for Admission to the School of Engineering

To be considered for admission to the School of Engineering, beginning first-year students must meet or exceed the following minimum standards:

- Must be admissible (https://admissions.ku.edu/major-specific-requirements/) to the University of Kansas by assured admissions or individual review, AND
- Have a 3.0+ high school GPA, AND
- Demonstrate mathematics preparedness by:
  - Obtaining a mathematics ACT score of 22+ (or math SAT score of 540+), or
  - Achieving a ‘C’ or better in a high school calculus course; or
  - Earning credit via IB or AP credit for the above-mentioned course in accordance with KU placement credit requirements; or
  - Achieving at minimum a qualifying score for MATH 125 on the ALEKS mathematics placement exam.

Exploring Engineering

Students not admitted directly to the School of Engineering or their major but who are admissible to the university may be admitted to the College of Liberal Arts and Sciences as an Undecided student. They can later re-apply to the School of Engineering during the semester they are completing the admission requirements for transfer students.

Transfer Admission Standards

Applications from all transfer students, whether from other institutions or from other academic schools at the University of Kansas, are evaluated on a case-by-case basis. Transfer students must be admissible (http://admissions.ku.edu/apply/requirements/utransfer/) to KU AND have a cumulative college transferable grade-point average of 2.5+ to be considered. In addition, students must have grades of “C” or better in those courses in math (must include MATH 125 Calculus I or equivalent), science, and engineering applicable to the engineering degree.

Current KU Students admitted to other academic units may apply to the School of Engineering by completing a Change of School form (https://inowformsprivate.ku.edu/imagenowforms/fs/?form=OUR%20Change%20of%20School%20Form).

Already Applied to KU, But Not Engineering?

Don’t worry. It’s not too late to change your mind if you’ve already applied to KU and selected a major outside the School of Engineering. If you think one of the 12 engineering or computer science majors is a better fit for your talents, you can still change your requested major — preferably before May 1 — and be considered for admission to the School of Engineering and all the benefits that go with it.

To update your application, visit Undergraduate Admissions (http://admissions.ku.edu/update-your-application/) and click on “Change application term, major, mailing address, and/or email address.”

Please contact a member of our recruitment team (studyengineering@ku.edu), 785-864-3881, if you have any difficulty.

Students who are not admissible to their desired major are admitted to the School of Engineering as undecided engineering undergraduate students.
Application Deadlines For New Freshman and Transfer Applicants

September 15  Priority deadline for current KU students to apply for spring admission to Engineering.

November 1  Final deadline for scholarship consideration for incoming freshmen planning to enter in fall or summer semesters.

December 1  Final deadline to apply for the Self Engineering Leadership Fellows Program for incoming freshmen.

February 1  Final deadline for scholarship consideration for transfer students planning to enter in fall or summer semesters. Applications available for the Engineering Learning Community.

February 15  Priority deadline for current KU students to apply for summer or fall admission to Engineering.

May 1  Enrollment Deposit due.

Four Year Degree Completion Plan

The following are recommended enrollments:

**Bachelor of Science in Aerospace Engineering Degree Requirements**

The typical number of credit hours required for a Bachelor's of Science in Aerospace Engineering is 129 hours:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>AE 245</td>
<td>Introduction to Aerospace Engineering</td>
<td>3</td>
</tr>
<tr>
<td>AE 290</td>
<td>0.25 AE 290</td>
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<td>4 MATH 126</td>
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<td>5 EPHX 210</td>
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<td>3 KU Core (GE3H, ECON, AE4.1, or AE4.2)*</td>
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<tr>
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<tr>
<td>AE 345</td>
<td>3 AE 360</td>
<td>3</td>
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<tr>
<td>CE 260H</td>
<td>5 AE 445</td>
<td>3</td>
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<tr>
<td>MATH 220H</td>
<td>3 MATH 127H</td>
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**Junior**

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<tr>
<td>AE 507H</td>
<td>3 AE 421</td>
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<tr>
<td>AE 550</td>
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<tr>
<td>AE 571</td>
<td>3 AE 572H</td>
<td>3</td>
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<tr>
<td>MATH 290H</td>
<td>2 EEC 316</td>
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**Senior**

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<td>AE 290</td>
<td>0.25 AE 290</td>
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</tr>
<tr>
<td>AE 510</td>
<td>4 AE 430</td>
<td>3</td>
</tr>
<tr>
<td>AE 521 or 520</td>
<td>4 AE 522, 523, or 524</td>
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<tr>
<td>AE 590</td>
<td>1 Technical Elective**</td>
<td>3</td>
</tr>
<tr>
<td>Technical Elective**</td>
<td>3 KU Core (GE3H, ECON, AE4.1, or AE4.2)*</td>
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<tr>
<td>15.25</td>
<td>13.25</td>
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Total Hours 129

Requirements for Enrollment in Junior-Level Aerospace Courses

Enrollment in junior-level aerospace courses is limited to students who have received grades of C- or higher in all first- and second-year courses in mathematics, physics, ME 212, CE 260, CE 310, AE 211, AE 245, AE 345, and AE 445.

Curriculum Notes

* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

** Technical electives are selected from upper-level aerospace courses, approved courses from other engineering departments, or approved math courses.

*** Students with credit in CHEM 130 may add CHEM 149 to meet the CHEM 150 requirement.

H Honors equivalent course is available.

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Bachelor of Science in Aerospace Engineering

AE 290    Aerospace Colloquium          2
AE 345    Fluid Mechanics               3
AE 360    Introduction to Astronautics  3
AE 421    Aerospace Computer Graphics   3
AE 430    Aerospace Instrumentation Laboratory  3
AE 445    Aircraft Aerodynamics and Performance  3
AE 507    Aerospace Structures I       3
AE 508    Aerospace Structures II      3
AE 510    Aerospace Materials and Processes  4

Select one of the following Design I options:  4
    AE 520    Space Systems Design I
    AE 521    Aerospace Systems Design I

Select one of the following Design II options:  4
    AE 522    Aerospace Systems Design II
    AE 523    Space Systems Design II
    AE 524    Propulsion Systems Design I
    AE 545    Fundamentals of Aerodynamics
    AE 550    Dynamics of Flight I
    AE 551    Dynamics of Flight II
    AE 571    Fundamentals of Airplane Reciprocating Propulsion Systems
    AE 572    Fundamentals of Jet Propulsion
    AE 590    Aerospace Senior Seminar

Engineering Science Courses
AE 211    Computing for Engineers       3
CE 260    Statistics and Dynamics       5
CE 310    Strength of Materials         4
ME 212    Basic Engineering Thermodynamics  3
EECS 316   Circuits, Electronics and Instrumentation  3

Science Courses
CHEM 150   Chemistry for Engineers      5
PHSX 210   General Physics I for Engineers  3
PHSX 216   General Physics I Laboratory  1
PHSX 212   General Physics II            3
PHSX 236   General Physics II Laboratory  1

Mathematics Courses
MATH 125   Calculus I                     4
MATH 126   Calculus II                    4
MATH 127   Calculus III                   4
MATH 220   Applied Differential Equations  3
MATH 290   Elementary Linear Algebra     2

KU Core
KU Core GE 2.1 Written Communication*  6
KU Core GE 3H Humanities               3
KU Core AE 4.1 Human Diversity         3
KU Core AE 4.2 Global Awareness*        3
ECON 104   Introductory Economics        3
    or ECON 142 Principles of Microeconomics
    or ECON 144 Principles of Macroeconomics

Technical Electives are selected from upper level aerospace courses, approved courses from other engineering departments, or approved math courses.

Total Hours 129

Credit for ROTC Courses: A student enrolled in one of the ROTC programs can receive 3 hours of technical electives if the ROTC program is completed.

*The Written Communication and Global Awareness goals can be satisfied in ways other than standard coursework. See http://kucore.ku.edu/ for your options.

Departmental Honors

To complete the departmental honors program, an aerospace engineering undergraduate student must

• Graduate with a KU grade-point average of 3.5.
• Take at least 2 departmental honors courses and earn a grade of B or better in each. At least one course of which must include an independent research component
    • An AE 700-level technical elective can be used for one of these courses
• The departmental honors courses are

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<tr>
<td>AE 506</td>
<td>Aerospace Structures I, Honors</td>
<td>3</td>
</tr>
<tr>
<td>AE 509</td>
<td>Honors Aerospace Structures II</td>
<td>3</td>
</tr>
<tr>
<td>AE 546</td>
<td>Aerodynamics, Honors</td>
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<tr>
<td>AE 552</td>
<td>Honors Dynamics of Flight II</td>
<td>4</td>
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<tr>
<td>AE 573</td>
<td>Honors Propulsion</td>
<td>3</td>
</tr>
<tr>
<td>AE 593</td>
<td>Honors Research</td>
<td>1-5</td>
</tr>
</tbody>
</table>

Students require permission of instructor to enroll in honors courses. The Application for Departmental Honors (https://deptsec.ku.edu/~engr/forms/form/50/) form must be completed by April 1 during the year of graduation in order to be recognized.