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 (http://engr.ku.edu/sites/engr.drupal.ku.edu/files/docs/pdfs/Majors_and_Curriculum_Guide_2014_Online.pdf) 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 and ACT scores (or equivalent SAT scores) are required.

Minimum Academic Standards for Admission

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 (http://admissions.ku.edu/apply/requirements/usfreshmen/) to the University of Kansas by assured admissions or individual review AND
- Have a 3.0+ GPA AND
- Have a mathematics ACT score of 22 (or math SAT score of 540).

Important: Simply meeting these requirements won't guarantee admission to a School of Engineering degree program. Students who perform beyond these minimums will have a better probability of being admitted to their selected major.

Minimum Academic Standards for Direct Admission into Degree Program for incoming Freshmen

Students with a 26+ Math ACT (600+ Math SAT) or meet eligibility requirements for MATH 125 (Calculus I) (http://catalog.ku.edu/liberal-arts-sciences/math/#undergraduatetext) may be admitted directly into their chosen major, with the exception of those seeking admission into an EECs program. Electrical Engineering, Computer Science, Computer Engineering, and Interdisciplinary Computing students must have a 28+ Math ACT (640+ Math SAT) or eligibility for MATH 125 for direct admission.

First-Year General Engineering Program

Students with a 22-25 Math ACT (540-580 Math SAT) or meet eligibility requirements for Math 104 (Pre-Calculus) (http://catalog.ku.edu/ liberal-arts-sciences/math/#undergraduatetext) are admitted to the School of Engineering First-Year Experience non-degree program for undergraduate students.

First-year Engineering students have one academic year (two semesters and one summer) to transition into a degree program. Admission to a degree program is possible after one of the following is met:

- Complete 12+ credit hours at KU, earn a "B" or higher in Math 104 (Pre-Calculus), earn a "C" or higher in all science and engineering courses, and earn a KU GPA of 2.5+ OR
- Earn a "C" or better in MATH 125 (Calculus I), earn a "C" or better in all science and engineering courses, and earn a KU GPA of 2.5+

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/ustransfer/) 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.

Students interested in the Information Technology program are admitted as juniors. They must have completed 60 hours of pre-requisite courses including foundational courses in math, science, and computer science and have a 2.5+ cumulative GPA or better. The Information Technology program resides at the Edwards Campus in Overland Park, KS. Click here (http://edwardscampus.ku.edu/overview-bachelors-information-technology/) for more information.

Current KU Students admitted to other academic units may apply to the School of Engineering by completing a Change of School form (http://engineering.ku.edu/forms/). This must be turned in to the School of Engineering Dean’s Office by the appropriate deadlines indicated below.

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.
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.
- **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:

- **Freshman**
  - **Fall**: Hours Spring | Hours
    - MATH 125
    - Written Communication (KU Core GE 2.1)***
    - CHEM 150 (KU Core GE 3N)***
    - AE 245
    - AE 290
    - KU Core (GE3H, ECON, AE4.1, or AE4.2)***
    - AE 290
  
  - **Spring**: Hours
    - 4 MATH 126
    - 3 Written Communication (KU Core GE 2.1)***
    - 5 CHEM 210 (KU Core GE 1.1)
    - 3 AE 211
    - 3 KU Core (GE3H, ECON, AE4.1, or AE4.2)***
    - 0.25 AE 290
  
  - **Fall and Spring Total**: Hours 15.25

- **Sophomore**
  - **Fall**: Hours Spring | Hours
    - MATH 220
    - CE 301
    - PHSX 212
    - PHSX 236
    - AE 345
    - 3 ME 312
    - 3 AE 290
    - 0.25 AE 290
  
  - **Spring**: Hours
    - 3 MATH 127
    - 5 CE 310
    - 3 AE 360
    - 1 AE 445
  
  - **Fall and Spring Total**: Hours 18.25

- **Junior**
  - **Fall**: Hours Spring | Hours
    - MATH 290
    - AE 507
    - AE 550
    - AE 545
    - AE 571
    - AE 290
    - AE 290
  
  - **Spring**: Hours
    - 2 AE 421
    - 3 AE 508
    - 4 AE 551
    - 4 AE 572
    - 3 EECS 316
    - 0.25 AE 290
    - 0.25 AE 290
  
  - **Junior Total**: Hours 16.25

- **Senior**
  - **Fall**: Hours Spring | Hours
    - AE 510
    - AE 521
    - AE 590
    - AE 507
    - AE 508
    - AE 521
    - Technical Elective
    - AE 345
    - AE 360
    - AE 430
    - AE 445
    - AE 510
    - AE 521
    - AE 290
  
  - **Spring**: Hours
    - 4 AE 430
    - 4 AE 522, 523, or 524 (part of 6)
    - 1 Technical Elective
    - 3 AE 521
    - 4 AE 521
    - 3 AE 430
    - 3 AE 445
    - 3 AE 290
    - 0.25 AE 290
    - 0.25 AE 290
  
  - **Senior Total**: Hours 15.25

- **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 312, CE 301, CE 310, AE 245, AE 345, and AE 445.

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:

- **Code**
- **Title**
- **Hours**

Aerospace Engineering Courses
- AE 245: Introduction to Aerospace Engineering
- AE 290: Aerospace Colloquium
- AE 345: Fluid Mechanics
- AE 360: Introduction to Astronautics
- AE 421: Aerospace Computer Graphics
- AE 430: Aerospace Instrumentation Laboratory
- AE 445: Aircraft Aerodynamics and Performance
- AE 507: Aerospace Structures I
- AE 508: Aerospace Structures II
- AE 510: Aerospace Materials and Processes
- AE 521: Aerospace Systems Design I

Select one of the following: 4
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AE 522  Aerospace Systems Design II
AE 523  Space Systems Design
AE 524  Propulsion Systems Design I
AE 545  Fundamentals of Aerodynamics 4
AE 550  Dynamics of Flight I 4
AE 551  Dynamics of Flight II 4
AE 571  Fundamentals of Airplane Reciprocating Propulsion Systems 3
AE 572  Fundamentals of Jet Propulsion 3
AE 590  Aerospace Senior Seminar 1

Engineering Science Courses
AE 211  Computing for Engineers 3
CE 301  Statics and Dynamics 5
CE 310  Strength of Materials 4
ME 312  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
Technical Electives are selected from upper level aerospace courses, approved courses from other engineering departments, or approved math courses.

Total Hours 129

• Graduate with a KU grade-point average of 3.5.
• Take at least 2 departmental honors courses, at least one of which must include an independent research component.
• The departmental honors courses are

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<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>
<td>4</td>
</tr>
<tr>
<td>AE 552</td>
<td>Honors Dynamics of Flight II</td>
<td>4</td>
</tr>
<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>
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</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.

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