AEROSPACE ENGINEERING - B.S.

Description
The Bachelor of Science degree in Aerospace Engineering focuses on the application of engineering principles to the design, manufacturing and functionality of aerospace vehicles such as aircraft, missiles and spacecraft, to include autonomous and semi-autonomous unmanned aerial systems. Students gain an in-depth knowledge of aerodynamics, aerospace materials, structures, propulsion, flight mechanics and stability and control while being briefly exposed to orbital mechanics, control, space structures and rocket propulsion.

Fully Offered At:
- Kent Campus

Admission Requirements
The university affirmatively strives to provide educational opportunities and access to students with varied backgrounds, those with special talents and adult students who graduated from high school three or more years ago.

Freshmen Students: Admission to the Aerospace Engineering major is selective. Prospective candidates must have a minimum 3.000 high school GPA; and a minimum 24 ACT composite score (minimum 24 ACT sub-scores in both English and math) or a minimum 1160 SAT score (minimum 580 sub-scores in both mathematics and evidence-based reading and writing); and the capability of being placed directly into MATH 12002 or its equivalent. (The old SAT scores for admittance was 1100 SAT score with minimum 550 sub-scores in both mathematics and critical reading.)

Students who do not meet these requirements may apply for admission to the Aeronautical Systems Engineering Technology concentration within the Aeronautics major and apply for transfer into the Aerospace Engineering major at the conclusion of their freshman year. Admissions at that time will require a minimum 3.200 overall Kent State GPA and a minimum B grade in both MATH 12002 and PHY 23101.

English Language Proficiency Requirements for International Students:
All international students must provide proof of English language proficiency (unless they meet specific exceptions) by earning a minimum 525 TOEFL score (71 on the Internet-based version), minimum 75 MELAB score, minimum 6.0 IELTS score or minimum 48 PTE Academic score, or by completing the ELS level 112 Intensive Program. For more information on international admission, visit the Office of Global Education’s admission website.

Transfer Students: Admission into the Aerospace Engineering major requires minimum 12 credit hours in college-level coursework with a minimum 3.200 overall GPA and a minimum B grade in both MATH 12002 and PHY 23101 (or their equivalents). Transfer students who have completed fewer than 12 credit hours of college-level coursework will be evaluated on both collegiate and high school records and must submit a final high school transcript and an ACT or SAT score.

Program Learning Outcomes
Graduates of the program will be able to:
1. Apply knowledge of mathematics, science and engineering.
2. Design and conduct experiments, and analyze and interpret data.
3. Design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
4. Function on multidisciplinary teams.
5. Identify, formulate and solve engineering problems.
6. Understand professional and ethical responsibility.
7. Communicate effectively, via both written and verbal means.
8. Understand the impact of engineering solutions in a global, economic, environmental and societal context.
9. Recognize the need for, and be able to engage in life-long learning.
10. Be aware of contemporary issues in the aerospace industry.
11. Use the techniques, skills and modern engineering tools necessary for engineering practice.

University Requirements
All students in a bachelor’s degree program at Kent State University must complete the following university requirements for graduation.

NOTE: University requirements may be fulfilled in this program by specific course requirements. Please see Program Requirements for details.

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirement</th>
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<tbody>
<tr>
<td>Kent Core Mathematics and Critical Reasoning (KMCR)</td>
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<tr>
<td>Kent Core Composition (KCMP)</td>
<td>6</td>
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<tr>
<td>Upper-Division Requirement</td>
<td>39 (or 42)</td>
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<tr>
<td>Destination Kent State: First Year Experience</td>
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<tr>
<td>Course is not required for students with 25 transfer credits, excluding College Credit Plus, or age 21+ at time of admission.</td>
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<td>Diversity Domestic/Global (DIV/DIVG)</td>
<td>2 courses</td>
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<td>Students must successfully complete one domestic and one global course, of which one must be from the Kent Core.</td>
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<tr>
<td>Experiential Learning Requirement (ELR)</td>
<td>varies</td>
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<td>Students must successfully complete one course or approved experience.</td>
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<td>Kent Core (see table below)</td>
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<td>Writing-Intensive Course (WIC)</td>
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<td>Students must earn a minimum C grade in the course.</td>
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<td>Total Credit Hour Requirement</td>
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<td>Some bachelor’s degrees require students to complete more than 120 credit hours.</td>
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Program Requirements

Major Requirements
[BS-AERS]

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<td>AERN 15300</td>
<td>INTRODUCTION TO ENGINEERING ANALYSIS USING MATLAB®</td>
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<tr>
<td>AERN 15500</td>
<td>INTRODUCTION TO AEROSPACE ENGINEERING (min C grade)</td>
<td>3</td>
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<tr>
<td>AERN 20000</td>
<td>PROFESSIONAL DEVELOPMENT IN AERONAUTICS I</td>
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<tr>
<td>AERN 25200</td>
<td>STATICS</td>
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<td>AERN 25400</td>
<td>DYNAMICS</td>
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<td>AERN 25500</td>
<td>AERODYNAMICS FOR ENGINEERS (min C grade)</td>
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<tr>
<td>AERN 30000</td>
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<td>AERN 35200</td>
<td>THERMAL FLUID ENGINEERING</td>
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<td>AERN 35201</td>
<td>THERMAL-FLUID ENGINEERING LABORATORY</td>
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<td>AERN 35300</td>
<td>AEROSPACE VEHICLE PERFORMANCE</td>
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<td>AERN 35400</td>
<td>SYSTEM DYNAMICS AND CONTROL</td>
<td>3</td>
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<td>AERN 35500</td>
<td>SIGNALS AND CIRCUITS</td>
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<td>AERN 35600</td>
<td>HIGH-SPEED AERODYNAMICS</td>
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<td>AERN 45360</td>
<td>PROFESSIONAL DEVELOPMENT IN AERONAUTICS III</td>
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<td>AERN 45600</td>
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<td>AEROELASTICITY</td>
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Aeronautics (AERN) Electives: 6

Additional Requirements (courses do not count in major GPA)

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<tr>
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<td>MATH 32052</td>
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Graduation Requirements

Minimum Major GPA: 2.750
Minimum Overall GPA: 2.500
This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

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Minimum Total Credit Hours: 121