AERONAUTICAL SYSTEMS ENGINEERING TECHNOLOGY - B.S.

College of Aeronautics and Engineering
www.kent.edu/cae

About This Program
The Aeronautical Systems Engineering Technology program prepares students for a career in the broad field of aeronautics. The program focuses on analytical and hands-on problem-solving in areas of interest to the aeronautics industry. The state-of-the-art facilities; knowledgeable, experienced and friendly faculty; a focus on practical skills; and internship opportunities prepare you for an exciting career in the aeronautics field. Read more...

Contact Information
• cae@kent.edu | 330-672-2892
• Speak with an Advisor
• Chat with an Admissions Counselor

Program Delivery
• Delivery
  • In person
• Location
  • Kent Campus

Examples of Possible Careers and Salaries*
Aerospace engineering and operations technologists and technicians
• 7.0% faster than the average
• 11,900 number of jobs
• $68,570 potential earnings

Calibration technologists and technicians and engineering technologists and technicians, except drafters, all other
• 2.1% slower than the average
• 91,600 number of jobs
• $64,190 potential earnings

Electro-mechanical and mechatronics technologists and technicians
• 3.0% about as fast as the average
• 14,600 number of jobs
• $59,800 potential earnings

Accreditation
The Bachelor of Science degree in Aeronautical Systems Engineering Technology is accredited by the Engineering Technology Accreditation Commission of ABET, www.abet.org, under the General Criteria and the Program Criteria for Aeronautical Engineering Technology and Similarly Named Programs. This degree program is also accredited by the Aviation Accreditation Board International (www.aabi.aero).

* Source of occupation titles and labor data comes from the U.S. Bureau of Labor Statistics’ Occupational Outlook Handbook. Data comprises projected percent change in employment over the next 10 years; nation-wide employment numbers; and the yearly median wage at which half of the workers in the occupation earned more than that amount and half earned less.

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.

First-Year Students on the Kent Campus: First-year admission policy on the Kent Campus is selective. Admission decisions are based upon cumulative grade point average, strength of high school college preparatory curriculum and grade trends. Students not admissible to the Kent Campus may be administratively referred to one of the seven regional campuses to begin their college coursework. For more information, visit the admissions website for first-year students.

First-Year Students on the Regional Campuses: First-year admission to Kent State’s campuses at Ashtabula, East Liverpool, Geauga, Salem, Stark, Trumbull and Tuscarawas, as well as the Twinsburg Academic Center, is open to anyone with a high school diploma or its equivalent. For more information on admissions, contact the Regional Campuses admissions offices.

International Students: All international students must provide proof of English language proficiency unless they meet specific exceptions. For more information, visit the admissions website for international students.

Transfer Students: Students who have attended any other educational institution after graduating from high school must apply as undergraduate transfer students. For more information, visit the admissions website for transfer students.

Former Students: Former Kent State students or graduates who have not attended another college or university since Kent State may complete the reenrollment or reinstatement form on the University Registrar’s website. Admission policies for undergraduate students may be found in the University Catalog.

Some programs may require that students meet certain requirements before progressing through the program. For programs with progression requirements, the information is shown on the Coursework tab.

Transfer students must have a minimum 2.250 overall GPA in all college-level coursework for admission to the Aeronautical Systems Engineering Technology major.

Program Requirements

Major Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AERN 35020</td>
<td>AIRCRAFT PROPULSION SYSTEMS</td>
<td>3</td>
</tr>
</tbody>
</table>
### Kent Core Humanities and Fine Arts (minimum one course from each)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AERN 35040</td>
<td>AIRCRAFT SYSTEMS I</td>
<td>3</td>
</tr>
<tr>
<td>AERN 35150</td>
<td>AIRCRAFT STRUCTURES</td>
<td>3</td>
</tr>
<tr>
<td>AERN 40200</td>
<td>ELECTRONICS ELECTIVES</td>
<td>3</td>
</tr>
<tr>
<td>AERN 45150</td>
<td>APPLIED FLIGHT DYNAMICS I</td>
<td>3</td>
</tr>
<tr>
<td>BA 44152</td>
<td>PROJECT MANAGEMENT</td>
<td>3</td>
</tr>
<tr>
<td>or ENGR 36620</td>
<td>PROJECT MANAGEMENT IN ENGINEERING</td>
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</tr>
</tbody>
</table>

### Kent Core Composition

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 11000</td>
<td>INTRODUCTION TO ENGINEERING</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 13585</td>
<td>COMPUTER AIDED ENGINEERING GRAPHICS</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 15300</td>
<td>INTRODUCTION TO ENGINEERING ANALYSIS USING MATLAB</td>
<td>2</td>
</tr>
</tbody>
</table>

### Mathematics Electives, choose from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC 10001</td>
<td>FLASHES 101</td>
<td>1</td>
</tr>
<tr>
<td>PHY 13001</td>
<td>GENERAL COLLEGE PHYSICS I (KBS)</td>
<td>3</td>
</tr>
<tr>
<td>&amp; PHY 13021</td>
<td>GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KL)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Additional Requirements (courses do not count in major GPA)

<table>
<thead>
<tr>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>COMM 15000</td>
<td>INTRODUCTION TO HUMAN COMMUNICATION (KAD)</td>
<td>3</td>
</tr>
<tr>
<td>ECON 22060</td>
<td>PRINCIPLES OF MICROECONOMICS (KSS)</td>
<td>3</td>
</tr>
<tr>
<td>PHY 13001</td>
<td>GENERAL COLLEGE PHYSICS I (KBS)</td>
<td>3</td>
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### Graduation Requirements

<table>
<thead>
<tr>
<th>Minimum Major GPA</th>
<th>Minimum Overall GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.500</td>
<td>2.000</td>
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</tbody>
</table>

- A minimum C grade may be required in some courses.

### Roadmap

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.

#### Semester One

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<td>2</td>
</tr>
<tr>
<td>UC 10001</td>
<td>FLASHES 101</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Credit Hours

| Semester One | 16 |

#### Semester Two

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 13585</td>
<td>COMPUTER AIDED ENGINEERING GRAPHICS</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 20002</td>
<td>MATERIALS AND PROCESSES</td>
<td>3</td>
</tr>
<tr>
<td>! PHY 13001</td>
<td>GENERAL COLLEGE PHYSICS I (KBS)</td>
<td>3</td>
</tr>
<tr>
<td>&amp; PHY 13021</td>
<td>GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KL)</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Credit Hours

| Semester Two | 14 |

#### Semester Three

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 22060</td>
<td>PRINCIPLES OF MICROECONOMICS (KSS)</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Credit Hours

| Semester Three | 3 |

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1. ENGR 48099 and ENGR 48199 must be taken during the same academic year.
2. A minimum C grade must be earned to fulfill the writing-intensive requirement.
3. Students who desire to change their major to Aerospace Engineering or Mechatronics Engineering should take PHY 23101 and PHY 23102. Failing to do so may result in additional coursework.
4. Applicants to this program should understand that this is a math-intensive program. Students admitted to the program are expected to demonstrate prerequisite knowledge on a math placement exam (the ALEKS exam) prior to starting their first semester. Students who do not obtain the minimum score required to place into MATH 12011 are at risk of delaying graduation.
5. Students who desire to change their major to Aerospace Engineering or Mechatronics Engineering should take MATH 11022 and MATH 12002. Failing to do so will result in additional coursework.

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- A minimum C grade may be required in some courses.
ENGR 33111 or STATICS AND STRENGTH OF MATERIALS 3-6
or MERT 22005
and MERT 22007

! PHY 13002 GENERAL COLLEGE PHYSICS II (KBS) 5
& PHY 13022 and GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB)
or PHY 23102 or GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)
Kent Core Requirement 3

Credit Hours 14

Semester Four
! AERN 35040 AIRCRAFT SYSTEMS I 3
ENGR 20000 PROFESSIONAL DEVELOPMENT IN ENGINEERING 1

Electricity and Electronics Electives 4-7
Kent Core Requirement 3
General Electives 5

Credit Hours 16

Semester Five
AERN 45030 AIRCRAFT SYSTEMS II 3
ENGR 30001 APPLIED THERMODYNAMICS 3
ENGR 33031 PROGRAMMABLE LOGIC CONTROLLERS 3
ENGR 33033 HYDRAULICS/PNEUMATICS 3
ENGR 33041 CONTROL SYSTEMS 3

Credit Hours 15

Semester Six
AERN 35150 AIRCRAFT STRUCTURES 3
AERN 45150 APPLIED FLIGHT DYNAMICS I 3
ENGR 26222 PROGRAMMING FOR ENGINEERS LABORATORY 1
ENGR 47200 SYSTEMS ENGINEERING 3
Kent Core Requirement 3

Credit Hours 15

Semester Seven
ENGR 35550 LAW AND ETHICS FOR ENGINEERS 3
ENGR 45151 APPLIED FLIGHT DYNAMICS II 3

! ENGR 48099 ENGINEERING CAPSTONE I (ELR) 3
Engineering (ENGR) Elective 3
Kent Core Requirement 3

Credit Hours 15

Semester Eight
AERN 35020 AIRCRAFT PROPULSION SYSTEMS 3
BA 44152 PROJECT MANAGEMENT 3
or ENGR 36620 or PROJECT MANAGEMENT IN ENGINEERING

! ENGR 48199 ENGINEERING CAPSTONE II (ELR) (WIC) 3
Aeronautics (AERN) Elective 3
Kent Core Requirement 3

Credit Hours 15

Minimum Total Credit Hours: 120

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.

Flashes 101 (UC 10001) 1 credit hour

Course is not required for students with 30+ transfer credits (excluding College Credit Plus) or age 21+ at time of admission.

Diversity Domestic/Global (DIVD/DIVG) 2 courses

Students must successfully complete one domestic and one global course, of which one must be from the Kent Core.

Experiential Learning Requirement (ELR) varies

Students must successfully complete one course or approved experience.

Kent Core (see table below) 36-37 credit hours

Writing-Intensive Course (WIC) 1 course

Students must earn a minimum C grade in the course.

Upper-Division Requirement 39 credit hours

Students must successfully complete 39 upper-division (numbered 30000 to 49999) credit hours to graduate.

Total Credit Hour Requirement 120 credit hours

Kent Core Requirements
Kent Core Composition (KCMP) 6
Kent Core Mathematics and Critical Reasoning (KMCR) 3
Kent Core Humanities and Fine Arts (KHUM/KFA) (min one course each) 9
Kent Core Social Sciences (KSS) (must be from two disciplines) 6
Kent Core Basic Sciences (KBS/KLAB) (must include one laboratory) 6-7
Kent Core Additional (KADL) 6

Total Credit Hours: 36-37

Program Learning Outcomes
Graduates of this program will be able to:

1. Apply knowledge, techniques, skills and modern tools of mathematics, science, engineering and technology to solve broadly defined engineering problems appropriate to the discipline.
2. Design systems, components or processes meeting specified needs for broadly defined engineering problems appropriate to the discipline.
3. Apply written, oral and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.
4. Conduct standard tests, measurements and experiments and analyze and interpret the results to improve processes.
5. Function effectively as a member as well as a leader on technical teams.

Full Description
The Bachelor of Science degree in Aeronautical Systems Engineering Technology prepares graduates to enter careers in the design, installation, manufacturing, testing, evaluation, technical sales and maintenance of aeronautical/aerospace systems. Students gain technical expertise in engineering materials, statics, strength of materials, applied aerodynamics, applied propulsion and electronics.
Graduates have strengths in the analysis, applied design, development, implementation and oversight of more advanced aeronautical/aerospace systems and processes. Applicants to this program should understand that this is a math-intensive program.

Information on the program's education objectives, student enrollment and graduation data can be found on the college website.

Students may apply early to the Master of Engineering Technology degree and double count 9 credit hours of graduate courses toward both degree programs. See the Combined Bachelor’s/Master’s Degree Program policy in the University Catalog for more information.