

# 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

Code	Title	Credit Hours
<b>Major Requirements (courses count in major GPA)</b>		
AERN 35020	AIRCRAFT PROPULSION SYSTEMS	3

AERN 35040	AIRCRAFT SYSTEMS I	3
AERN 35150	AIRCRAFT STRUCTURES	3
AERN 45030	AIRCRAFT SYSTEMS II	3
AERN 45150	APPLIED FLIGHT DYNAMICS I	3
BA 44152	PROJECT MANAGEMENT	3
or ENGR 36620	PROJECT MANAGEMENT IN ENGINEERING	
ENGR 11000	INTRODUCTION TO ENGINEERING	3
ENGR 13585	COMPUTER AIDED ENGINEERING GRAPHICS	3
ENGR 15300	INTRODUCTION TO ENGINEERING ANALYSIS USING MATLAB®	2
ENGR 15301	INTRODUCTION TO ENGINEERING ANALYSIS USING MATLAB® LAB	1
ENGR 20000	PROFESSIONAL DEVELOPMENT IN ENGINEERING	1
ENGR 20002	MATERIALS AND PROCESSES	3
ENGR 26220	PROGRAMMING FOR ENGINEERS	2
ENGR 26222	PROGRAMMING FOR ENGINEERS LABORATORY	1
ENGR 30001	APPLIED THERMODYNAMICS	3
ENGR 33031	PROGRAMMABLE LOGIC CONTROLLERS	3
ENGR 33033	HYDRAULICS/PNEUMATICS	3
ENGR 33041	CONTROL SYSTEMS	3
ENGR 33111	STATICS AND STRENGTH OF MATERIALS	3-6
or MERT 22005 & MERT 22007	STATICS and STRENGTH OF MATERIALS	
ENGR 35550	LAW AND ETHICS FOR ENGINEERS	3
ENGR 45151	APPLIED FLIGHT DYNAMICS II	3
ENGR 47200	SYSTEMS ENGINEERING	3
ENGR 48099	ENGINEERING CAPSTONE I (ELR) <sup>1</sup>	3
ENGR 48199	ENGINEERING CAPSTONE II (ELR) (WIC) <sup>1,2</sup>	3
Aeronautics (AERN) Elective		3
Engineering (ENGR) Elective		3
Electricity and Electronics Electives, choose from the following:		4-7
EERT 12000 & EERT 12001	ELECTRIC CIRCUITS I and ELECTRIC CIRCUITS II	
ENGR 21020 & ENGR 21022	SURVEY OF ELECTRICITY AND ELECTRONICS and SURVEY OF ELECTRICITY AND ELECTRONICS LABORATORY	
<b>Additional Requirements (courses do not count in major GPA)</b>		
COMM 15000	INTRODUCTION TO HUMAN COMMUNICATION (KADL)	3
ECON 22060	PRINCIPLES OF MICROECONOMICS (KSS)	3
PHY 13001 & PHY 13021	GENERAL COLLEGE PHYSICS I (KBS) and GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB) <sup>3</sup>	5
or PHY 23101	GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)	
PHY 13002 & PHY 13022	GENERAL COLLEGE PHYSICS II (KBS) and GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB) <sup>3</sup>	5
or PHY 23102	GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB)	
UC 10001	FLASHES 101	1
Mathematics Electives, choose from the following: <sup>4,5</sup>		6-8
MATH 11022 & MATH 12002	TRIGONOMETRY (KMCR) and ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	
MATH 12011 & MATH 12012	CALCULUS WITH PRECALCULUS I (KMCR) and CALCULUS WITH PRECALCULUS II (KMCR)	
Kent Core Composition		6
Kent Core Humanities and Fine Arts (minimum one course from each)		9

Kent Core Social Sciences (must be from two disciplines) (cannot be ECON)	3
General Electives (total credit hours depends on earning 120 credits hour, including 39 upper-division credit hours)	5
<b>Minimum Total Credit Hours:</b>	<b>120</b>

- <sup>1</sup> ENGR 48099 and ENGR 48199 must be taken during the same academic year.
- <sup>2</sup> A minimum C grade must be earned to fulfill the writing-intensive requirement.
- <sup>3</sup> 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.
- <sup>4</sup> 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.
- <sup>5</sup> 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.

## Graduation Requirements

Minimum Major GPA	Minimum Overall GPA
2.500	2.500

- 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		Credits
COMM 15000	INTRODUCTION TO HUMAN COMMUNICATION (KADL)	3
ENGR 11000	INTRODUCTION TO ENGINEERING	3
ENGR 15300	INTRODUCTION TO ENGINEERING ANALYSIS USING MATLAB®	2
ENGR 15301	INTRODUCTION TO ENGINEERING ANALYSIS USING MATLAB® LAB	1
UC 10001	FLASHES 101	1
Mathematics Elective		3
Kent Core Requirement		3
<b>Credit Hours</b>		<b>16</b>
Semester Two		
ENGR 13585	COMPUTER AIDED ENGINEERING GRAPHICS	3
ENGR 20002	MATERIALS AND PROCESSES	3
! PHY 13001 & PHY 13021	GENERAL COLLEGE PHYSICS I (KBS) and GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB)	5
or PHY 23101	or GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB)	
! Mathematics Elective		3-5
<b>Credit Hours</b>		<b>14</b>
Semester Three		
ECON 22060	PRINCIPLES OF MICROECONOMICS (KSS)	3

ENGR 33111	STATICS AND STRENGTH OF MATERIALS	3-6
or	or STATICS <b>and</b> STRENGTH OF MATERIALS	
MERT 22005		
<b>and</b>		
MERT 22007		
!	PHY 13002 GENERAL COLLEGE PHYSICS II (KBS)	5
	& PHY 13022 and GENERAL COLLEGE PHYSICS LABORATORY	
or	II (KBS) (KLAB)	
	PHY 23102 or GENERAL UNIVERSITY PHYSICS II (KBS)	
	(KLAB)	
Kent Core Requirement		3
<b>Credit Hours</b>		<b>14</b>
<b>Semester Four</b>		
!	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
<b>Credit Hours</b>		<b>16</b>
<b>Semester Five</b>		
	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
<b>Credit Hours</b>		<b>15</b>
<b>Semester Six</b>		
	AERN 35150 AIRCRAFT STRUCTURES	3
	AERN 45150 APPLIED FLIGHT DYNAMICS I	3
	ENGR 26220 PROGRAMMING FOR ENGINEERS	2
	ENGR 26222 PROGRAMMING FOR ENGINEERS LABORATORY	1
	ENGR 47200 SYSTEMS ENGINEERING	3
Kent Core Requirement		3
<b>Credit Hours</b>		<b>15</b>
<b>Semester Seven</b>		
	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
<b>Credit Hours</b>		<b>15</b>
<b>Semester Eight</b>		
	AERN 35020 AIRCRAFT PROPULSION SYSTEMS	3
	BA 44152 PROJECT MANAGEMENT	3
	or or PROJECT MANAGEMENT IN ENGINEERING	
	ENGR 36620	
!	ENGR 48199 ENGINEERING CAPSTONE II (ELR) (WIC)	3
	Aeronautics (AERN) Elective	3
Kent Core Requirement		3
<b>Credit Hours</b>		<b>15</b>
<b>Minimum Total Credit Hours:</b>		<b>120</b>

## 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
<b>Total Credit Hours:</b>	<b>36-37</b>

## 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.