

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 engineering technology. The program focuses on analytical and hands-on problem solving in areas of interest to the engineering technology industry. The state-of-the-art facilities; knowledgeable, experienced and friendly faculty; focus on practical skills; and internship opportunities prepare you for an exciting career in the engineering technology 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

Mechanical engineering technologists and technicians

- 3.1% about as fast as the average
- 43,500 number of jobs
- \$58,230 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) 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, 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's Academic Policies.

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 program's 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.

Effective for the fall 2025 admission term:

Admission to the Aeronautical Systems Engineering Technology major is selective.

New Students: Admission into this major requires a minimum 2.700 unweighted high school GPA. Students who do not meet this requirement will be admitted to the Applied Engineering and Technology Management concentration of the Applied Engineering major. Students may change their major to Aeronautical Systems Engineering Technology after satisfying the below requirements for current students.

Note: Applicants 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.

Current Students: Students may change their major to Aeronautical Systems Engineering Technology if they meet the following criteria:

- Minimum 2.500 overall Kent State GPA
- Minimum C grade in both ENGR 11001 and ENGR 11002
- Minimum C grade in either MATH 11022 or MATH 12011

Transfer Students: Transfer students must have completed minimum 12 credit hours of college-level coursework with a minimum 2.500 overall GPA for admission to the Aeronautical Systems Engineering Technology major. Students with less than 12 credit hours completed will be evaluated based on their high school transcript using the criteria in the above "new student" section.

International Students: All international students must provide proof of English language proficiency (unless they meet specific exceptions to waive) by earning a minimum 71 TOEFL iBT score, minimum 6.0 IELTS score, minimum 47 PTE score or minimum 100 DET score, or by completing the ELS level 112 Intensive English Program. For more information on international admission visit the admissions website for international students.

Program Requirements

Major Requirements

| Code | Title | Credit Hours |
|--|--|--------------|
| Major Requirements (courses count in major GPA) | | |
| 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 11001 | INTRODUCTION TO ENGINEERING | 2 |
| ENGR 11002 | INTRODUCTION TO ENGINEERING LABORATORY | 1 |
| ENGR 13586 & ENGR 13587 | COMPUTER AIDED DESIGN I and COMPUTER AIDED DESIGN I LABORATORY | 3 |
| or MERT 12001 | COMPUTER-AIDED DESIGN | |
| 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 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) ¹ | 3 |
| ENGR 48199 | ENGINEERING CAPSTONE II (ELR) (WIC) ^{1,2} | 3 |
| Aeronautics (AERN) Elective | | 3 |
| Engineering (ENGR) Elective | | 3 |
| Electrical Circuits 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 | |
| ENGR 35500 & ENGR 35501 | SIGNALS AND CIRCUITS and SIGNALS AND CIRCUITS LABORATORY | |
| Programming Elective, choose from the following: | | 3-4 |
| CS 13001 | COMPUTER SCIENCE I: PROGRAMMING AND PROBLEM SOLVING | |
| CS 13011 & CS 13012 | COMPUTER SCIENCE IA: PROCEDURAL PROGRAMMING and COMPUTER SCIENCE IB: OBJECT ORIENTED PROGRAMMING | |
| ENGR 26220 & ENGR 26222 | PROGRAMMING FOR ENGINEERS and PROGRAMMING FOR ENGINEERS LABORATORY | |
| Additional Requirements (courses do not count in major GPA) | | |
| 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) ³ | 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) ³ | 5 |
| or PHY 23102 | GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB) | |
| UC 10001 | FLASHES 101 | 1 |
| Mathematics Electives, choose from the following: ⁴ | | 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 credit hours, including 39 upper-division credit hours) | | 5 |
| Minimum Total Credit Hours: | | 120 |

- ¹ ENGR 48099 and ENGR 48199 must be taken during the same academic year. ENGR 48099 is only offered during the fall semester and ENGR 48199 is only offered during the spring semester.
- 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 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 11001 | INTRODUCTION TO ENGINEERING | 2 |
| ENGR 11002 | INTRODUCTION TO ENGINEERING LABORATORY | 1 |
| 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 |
| Credit Hours | | 16 |
| Semester Two | | Credits |
| ENGR 13586 & ENGR 13587 or MERT 12001 | COMPUTER AIDED DESIGN I and COMPUTER AIDED DESIGN I LABORATORY or COMPUTER-AIDED DESIGN | 3 |
| ENGR 20002 | MATERIALS AND PROCESSES | 3 |
| ! PHY 13001 & PHY 13021 or PHY 23101 | GENERAL COLLEGE PHYSICS I (KBS) and GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB) or GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB) | 5 |
| ! Mathematics Elective | | 3-5 |
| Credit Hours | | 14 |
| Semester Three | | Credits |
| ECON 22060 | PRINCIPLES OF MICROECONOMICS (KSS) | 3 |
| ENGR 33111 or MERT 22005 and MERT 22007 | STATICS AND STRENGTH OF MATERIALS or STATICS <i>and</i> STRENGTH OF MATERIALS | 3-6 |

| ! PHY 13002 & PHY 13022 or PHY 23102 | GENERAL COLLEGE PHYSICS II (KBS) and GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB) or GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB) | 5 |
|--------------------------------------|---|------------|
| Credit Hours | | 14 |
| Semester Four | | Credits |
| ! AERN 35040 | AIRCRAFT SYSTEMS I | 3 |
| ENGR 20000 | PROFESSIONAL DEVELOPMENT IN ENGINEERING | 1 |
| ! Electrical Circuits Electives | | 4-7 |
| Kent Core Requirement | | 3 |
| General Electives | | 5 |
| Credit Hours | | 16 |
| Semester Five | | Credits |
| 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 | | Credits |
| AERN 35150 | AIRCRAFT STRUCTURES | 3 |
| AERN 45150 | APPLIED FLIGHT DYNAMICS I | 3 |
| ENGR 47200 | SYSTEMS ENGINEERING | 3 |
| Programming Elective | | 3-4 |
| Kent Core Requirement | | 3 |
| Credit Hours | | 15 |
| Semester Seven | | Credits |
| 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 | | Credits |
| AERN 35020 | AIRCRAFT PROPULSION SYSTEMS | 3 |
| BA 44152 or ENGR 36620 | PROJECT MANAGEMENT or PROJECT MANAGEMENT IN ENGINEERING | 3 |
| ! 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.

The educational objectives of the program are the following:

1. Drive positive change in the community by engaging in careers in the field of aeronautical, systems and other engineering technologies in a manner that promotes excellence and integrity.
2. Practice forward-thinking through continued education by way of graduate education, professional development and other continued self-motivated learning.
3. Successfully navigate the ever-changing trajectory of the world, practicing compassion as you strive to meet your personal career goals.

Full Description

The Bachelor of Science degree in Aeronautical Systems Engineering Technology successfully prepares graduates of the future to work in multi-disciplinary teams in aeronautical, systems and other engineering technology fields in ways that positively improve efficiency, reduce waste and increase sustainability. The program 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.

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.