

# UNMANNED AIRCRAFT SYSTEMS FLIGHT OPERATIONS - B.S.

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

## About This Program

The Unmanned Aircraft Systems Flight Operations program provides you with the knowledge and skills to become a successful drone pilot and work in industries such as agriculture, public safety and more. With hands-on training, cutting-edge technology and experienced faculty, you will be equipped to navigate the skies with confidence. Enroll now and soar towards a promising career in unmanned aircraft systems. 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

## 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 Unmanned Aircraft Systems Flight Operations major.

## Program Requirements

### Major Requirements

Code	Title	Credit Hours
<b>Major Requirements (courses count in major GPA)</b>		
AERN 15000	INTRODUCTION TO AERONAUTICS	3
AERN 15745	NON-PILOT ELEMENTS OF FLIGHT THEORY	3
AERN 25100	INTRODUCTION TO AVIATION MANAGEMENT	3
AERN 25250	ELEMENTS OF AVIATION WEATHER	3
AERN 25350	FUNDAMENTALS OF AIR TRAFFIC CONTROL	2
AERN 25351	FUNDAMENTALS OF AIR TRAFFIC CONTROL LABORATORY	1
AERN 25800	INTRODUCTION TO UNMANNED AIRCRAFT SYSTEMS	3
AERN 30000	PROFESSIONAL DEVELOPMENT IN AERONAUTICS	1
AERN 35020	AIRCRAFT PROPULSION SYSTEMS	3
AERN 35040	AIRCRAFT SYSTEMS I	3
AERN 35250	UNMANNED AIRCRAFT SYSTEMS LAW AND REGULATIONS	2
AERN 35650	NON-PILOT INSTRUMENT FLIGHT THEORY	3
AERN 35810	UNMANNED AIRCRAFT SYSTEMS	3
AERN 35830	UNMANNED AIRCRAFT SYSTEMS SENSING AND SENSOR SYSTEMS	3
AERN 35840	UNMANNED AIRCRAFT SYSTEMS COMMAND, CONTROL AND COMMUNICATIONS	3
AERN 35892	SMALL UNMANNED AIRCRAFT SYSTEMS FLIGHT PRACTICUM (ELR)	2
AERN 45030	AIRCRAFT SYSTEMS II	3
AERN 45130	PHYSIOLOGY AND HUMAN FACTORS OF FLIGHT	3
AERN 45135	AVIATION SAFETY THEORY	3
AERN 45150	APPLIED FLIGHT DYNAMICS I	3
AERN 45250	AVIATION LAW	3
AERN 45791	AVIATION SECURITY AND POLICY SEMINAR (WIC) <sup>1</sup>	3
AERN 45800	UNMANNED AIRCRAFT SYSTEMS FLIGHT OPERATIONS THEORY	4
AERN 45892	UNMANNED AIRCRAFT SYSTEMS FLIGHT PRACTICUM (ELR)	2
ENGR 45151	APPLIED FLIGHT DYNAMICS II	3

Aeronautics (AERN) Electives	6
<b>Additional Requirements (courses do not count in major GPA)</b>	
COMM 15000 INTRODUCTION TO HUMAN COMMUNICATION (KADL)	3
MATH 11010 ALGEBRA FOR CALCULUS (KMCR)	3
MATH 11022 TRIGONOMETRY (KMCR)	3
PHY 13001 GENERAL COLLEGE PHYSICS I (KBS)	4
PHY 13012 COLLEGE PHYSICS II (KBS)	2
PHY 13021 GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB)	1
PHY 13022 GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB)	1
UC 10001 FLASHES 101	1
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)	6
General Electives (total credit hours depends on earning 120 credit hours, including 39 upper-division credit hours)	7
<b>Minimum Total Credit Hours:</b>	<b>120</b>

<sup>1</sup> A minimum C grade must be earned to fulfill the writing-intensive requirement.

## Graduation Requirements

Minimum Major GPA	Minimum Overall GPA
2.500	2.000

## 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
AERN 15000 INTRODUCTION TO AERONAUTICS	3
AERN 25800 INTRODUCTION TO UNMANNED AIRCRAFT SYSTEMS	3
MATH 11010 ALGEBRA FOR CALCULUS (KMCR)	3
UC 10001 FLASHES 101	1
Kent Core Requirement	3
Kent Core Requirement	3
<b>Credit Hours</b>	<b>16</b>
<b>Semester Two</b>	
AERN 15745 NON-PILOT ELEMENTS OF FLIGHT THEORY	3
AERN 25350 FUNDAMENTALS OF AIR TRAFFIC CONTROL	2
AERN 25351 FUNDAMENTALS OF AIR TRAFFIC CONTROL LABORATORY	1
MATH 11022 TRIGONOMETRY (KMCR)	3
Aeronautics (AERN) Elective	3
Kent Core Requirement	3
<b>Credit Hours</b>	<b>15</b>
<b>Semester Three</b>	
AERN 25100 INTRODUCTION TO AVIATION MANAGEMENT	3
AERN 25250 ELEMENTS OF AVIATION WEATHER	3
AERN 35810 UNMANNED AIRCRAFT SYSTEMS	3
Kent Core Requirement	3
Kent Core Requirement	3
<b>Credit Hours</b>	<b>15</b>

Semester Four	Credits
AERN 35830 UNMANNED AIRCRAFT SYSTEMS SENSING AND SENSOR SYSTEMS	3
COMM 15000 INTRODUCTION TO HUMAN COMMUNICATION (KADL)	3
PHY 13001 GENERAL COLLEGE PHYSICS I (KBS)	4
PHY 13021 GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB)	1
General Elective	3
<b>Credit Hours</b>	<b>14</b>

Semester Five	Credits
AERN 30000 PROFESSIONAL DEVELOPMENT IN AERONAUTICS	1
AERN 35020 AIRCRAFT PROPULSION SYSTEMS	3
AERN 35892 SMALL UNMANNED AIRCRAFT SYSTEMS FLIGHT PRACTICUM (ELR)	2
PHY 13012 COLLEGE PHYSICS II (KBS)	2
PHY 13022 GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB)	1
Aeronautics (AERN) Elective	3
Kent Core Requirement	3
<b>Credit Hours</b>	<b>15</b>

Semester Six	Credits
AERN 35040 AIRCRAFT SYSTEMS I	3
AERN 35650 NON-PILOT INSTRUMENT FLIGHT THEORY	3
AERN 45150 APPLIED FLIGHT DYNAMICS I	3
AERN 45250 AVIATION LAW	3
Kent Core Requirement	3
<b>Credit Hours</b>	<b>15</b>

Semester Seven	Credits
AERN 35840 UNMANNED AIRCRAFT SYSTEMS COMMAND, CONTROL AND COMMUNICATIONS	3
AERN 45030 AIRCRAFT SYSTEMS II	3
AERN 45130 PHYSIOLOGY AND HUMAN FACTORS OF FLIGHT	3
ENGR 45151 APPLIED FLIGHT DYNAMICS II	3
General Electives	4
<b>Credit Hours</b>	<b>16</b>

Semester Eight	Credits
AERN 35250 UNMANNED AIRCRAFT SYSTEMS LAW AND REGULATIONS	2
AERN 45135 AVIATION SAFETY THEORY	3
AERN 45791 AVIATION SECURITY AND POLICY SEMINAR (WIC)	3
AERN 45800 UNMANNED AIRCRAFT SYSTEMS FLIGHT OPERATIONS THEORY	4
AERN 45892 UNMANNED AIRCRAFT SYSTEMS FLIGHT PRACTICUM (ELR)	2
<b>Credit Hours</b>	<b>14</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
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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. Demonstrate a comprehensive understanding of unmanned aircraft systems, including their design, operation and maintenance.
2. Demonstrate the ability to effectively plan, execute and manage UAS missions for a variety of applications, ensuring optimal performance, data accuracy and safety.
3. Interpret and apply current and future regulations related to airspace, privacy, safety and data protection.
4. Demonstrate and employ critical thinking and problem solving techniques when unexpected issues arise to make informed decisions, adapt strategies and ensure the successful completion of missions while prioritizing safety and mission goals.

The educational objectives of the program are the following:

1. Exhibit the qualities of excellence, integrity, leadership, management and professionalism within their area of professional specialization in aviation.
2. Demonstrate a professional commitment to safety and contribute to the safety culture within their area of professional specialization in aviation.
3. Demonstrate the ability to improve aerospace for generations to come through experiential learning, creativity and innovation within their area of professional specialization in aviation.
4. Manifest the college's core values in the areas of collaboration, compassion, inclusiveness, innovation, integrity, respect and

perseverance within their area of professional specialization in aviation.

## Full Description

The Bachelor of Science degree in Unmanned Aircraft Systems Flight Operations is for students who aspire to become professional unmanned aircraft pilots (drone pilot). This program is focused on the safe operations of unmanned aircraft systems, regulations, the technology of autonomous systems and policies regarding the operations of unmanned aerial elements.

The mission of the Bachelor of Science degree in Unmanned Aircraft Systems Flight Operations is to cultivate a new generation of professionals equipped with the knowledge, skills and technological awareness to excel in the dynamic field of unmanned aviation, and provide students with a comprehensive education that combines cutting-edge technological expertise with a deep understanding of the regulatory, operational and safety considerations essential to the responsible and effective use of unmanned aircraft systems (UAS) and advanced air mobility (AAM).

Students may apply early to the M.S. degree in Aviation Management and Logistics 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.