



# UNCREWED AIRCRAFT SYSTEMS DESIGN & INTEGRATION

## 2023-24 STUDY GUIDE

### About this degree option

In the uncrewed aircraft systems design and integration degree option, the first engineering program in the nation to specialize in drone technologies, students will go behind-the-scenes of drone technology to explore the intricacies of UAS construction and implementation, with no flight ratings required. The curriculum combines principles of computer science, electronics and mechanical engineering, giving students the opportunity to work hands-on in multiple areas: communication systems, electronic circuits, machine design, manufacturing technology, camera systems and other payloads, and more.

### Why this degree option?

K-State Salina offers a variety of advantages, including:

- First engineering technology program in the nation to specialize in drone technologies.
- Go behind-the-scenes of drone technology to explore the intricacies of UAS construction and implementation, with no flight ratings required.
- Design, develop and program new uncrewed aircraft systems.
- Combines courses in computer systems technology, mechanical, electronic and computer engineering technology, and uncrewed aircraft systems to create a comprehensive understanding of how an uncrewed aircraft system functions.

### Careers

Career options for UAS design and integration graduates include, but are not limited to:

- Uncrewed Flight Test Engineer
- Remotely Piloted Vehicle Technician
- Uncrewed Aerial Vehicle Electrician
- Embedded Systems Engineer
- Uncrewed Research Assistant

### Accreditation

We take our reputation seriously. Accreditation validates the quality of an institution as a whole, offering evaluated measurements of everything from academic offerings, governance, administration, mission, finances and resources. Kansas State University has been continuously accredited by the Higher Learning Commission (HLC) since 1916.

[k-state.edu/assessment/accreditation](https://k-state.edu/assessment/accreditation)

### Transfers

At K-State Salina, you can transfer up to 60 qualifying credit hours to help you get your next degree. If you've already earned an associate degree from one of our partner institutions, you may be eligible to apply previously earned credits when enrolling in a related bachelor's degree option. We work with students every day to make the most of transfer credits within K-State Salina programs to help make earning that next degree more achievable. Your hard work matters. We want to help you make the most of it.

## AN AEROSPACE & TECHNOLOGY EDUCATION IS:



### INNOVATIVE LEARNING:

Learning by doing, through hands-on projects, lab time and in-the-field training.



### REAL-WORLD EXPERIENCE:

Exploring innovations in your field through research, practicum and internship opportunities.



### INDUSTRY CONNECTIONS:

Building relationships with industry members and gaining insight into your future career.



### STUDENT-FOCUSED:

Faculty are focused on your personalized experience, working alongside you in the lab and classroom.

## Bachelor of Science

120 credit hours required

### Required coursework

#### Core courses:

ECET 100	Basic Electronics	3
AVT 317	Composites I	3
AVT 450	Aviation Safety Management	3
CMST 250	Hardware and Network Fundamentals	3
CMST 302	Applications in C Programming for Engineering Technology	3
ECET 101	Circuits I	4
ECET 210	Semiconductor Electronics	4
ECET 301	Circuits II	4
ECET 250	Digital Logic	3
ECET 320	Electronic Communication Systems	3
ETB 102	Electronics Seminar	3
ETB 480	UAS Senior Design I	1
ETB 481	UAS Senior Design II	2
MET 111	Technical Graphics	3
MET 211	Statics	3
MET 245	Material Strength & Testing	3
MET 366	Dynamics of Machines	3
UAS 115	Intro to Multi-rotor Flight Lab	1
UAS 270	Introduction to UAS	3
UAS 300	Uncrewed Aircraft Systems Powerplant Fundamentals	3
UAS 280	Multi-Rotor Construction Lab	2
UAS 465	Fixed-wing Construction Lab & Autopilot Integration	3
	<b>Total</b>	<b>60</b>

#### Math:

MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
MATH 220	Analytic Geometry & Calculus I	4
	<b>Total</b>	<b>10</b>

#### Science:

Choose 4 credit hours from the following options:

CHM 110 &	General Chemistry	3
CHM 111	Chemistry Laboratory	1
PHYS 113	General Physics I	4
	<b>Total</b>	<b>4</b>

#### Additional requirements:

COMM 106	Public Speaking I	3
ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
ENGL 302	Technical Writing	3
	<b>Total</b>	<b>12</b>

#### Restrictive electives:

Choose 6 credit hours from the following courses.

ECET 340	Electronic Manufacturing	3
ECET 430	Signals and Systems	3
ETB 352	Microcontroller applications	3
ETB 420	Communication Circuits in Uncrewed Systems	3

#### Technical electives:

Choose 9 credit hours from the following courses. 7 credit hours must be upper-level courses, 300 or above.

AVT 400	Composites II	3
AVT 417	Composites III	3
CMST 315	Introduction to Systems Administration	3
CMST 344	Internetworking	3
ECET 350	Microprocessor Fundamentals	4
ECET 352	Digital Circuits & Systems	4
ECET 430	Signals & Systems	3
ECET 450	Digital Systems & Computer Architecture	4
ETB 310	Applied Data Analysis and Tools	3
MET 117	Mechanical Modeling & Detailing	3
MET 121	Manufacturing Methods	3
MET 125	Computer-Numerical Controlled Machine Processes	2
MET 231	Physical Materials & Metallurgy	3
MET 252	Fluid Power Technology	3
MET 325	Additive Manufacturing	3
MET 353	Fluid Mechanics	3
MET 471	Thermodynamics & Heat Transfer	3
RA 305	Robotics Programming	3
RA 357	Machine Vision	3
UAS 474	Introduction to Processing of Remotely Sensed Data	3
UAS 475	Data Acquisition and Post Processing	3

#### Electives:

Social Science Elective*	3
Humanities Elective*	3
Humanities Elective*	3
Social Science Elective*	3
<b>Total</b>	<b>12</b>

\*Marked electives must be upper-level courses, 300 or above.

For full course descriptions,  
visit [courses.k-state.edu](https://courses.k-state.edu)