

# B.S. in Uncrewed Aircraft Systems

Embry-Riddle Aeronautical University (ERAU) offers a Bachelor of Science (B.S.) in Uncrewed Aircraft Systems (UAS) degree program that prepares students for careers in the rapidly growing field of uncrewed aerial systems. The program is designed to provide students with a comprehensive education in UAS operations and provides the foundational knowledge for careers in advanced uncrewed and autonomous operations, such as advanced air mobility. The ERAU UAS program covers a wide range of topics, including systems design, operations, applications, regulations, safety, security, maintenance, sensor systems, data collection, data analysis, and related topics. Students learn about the principles of flight, remote sensing, geographic information systems (GIS), photogrammetry, communication systems, and UAS applications in industries such as agriculture, construction, public safety, energy, and transportation.

## Degree Requirements

The Bachelor of Science in Uncrewed Aircraft Systems may be attained in eight semesters. To earn the degree, successful completion of 122 credit hours is required.

General Education	37
Aeronautical Knowledge	13
Geospatial Data Acquisition and Processing	16
Operations and Leadership	18
Technical Skills Development	8
Program Support	9
Service Learning	6
Open Electives	15
<b>Total Credits</b>	<b>122</b>

### Students will:

- Apply knowledge of mathematics, science, and applied sciences at various levels of education.
- Analyze and interpret data provided from various sources.
- Make positive contributions and develop functional skills for multi-disciplinary and diverse team contributions.
- Understand the professional and ethical responsibility as it applies to the uncrewed aircraft industry and the broader aviation community.
- Develop effective technical writing and verbal communication skills.
- Recognize the need for, and demonstrate an ability to engage in, lifelong learning as it relates to their chosen profession.
- Apply knowledge of contemporary issues affecting the uncrewed aircraft system industry.
- Apply the techniques, skill, and modern technology necessary for safe professional practice in the uncrewed aircraft systems industry.
- Explain the national and international aviation environment with particular focus on uncrewed aircraft systems laws, regulations and labor issues.
- Apply pertinent knowledge in identifying and solving problems.
- Demonstrate knowledge of issues affecting and principles for promoting commercial viability and sustainability of the uncrewed aircraft system industry.

## General Education Requirements

For a full description of Embry-Riddle General Education guidelines, please see the General Education section of this catalog. These minimum requirements are applicable to all degree programs.

Communication Theory and Skills (COM 122 and COM 219 and COM 221)	9
Lower-Level Humanities	3
Lower-Level Social Science (PSY 101 required)	3
Lower or Upper-Level Humanities or Social Sciences	3
Upper-Level Humanities/Social Science	3
Computer Science (CS 118 or CYB 235)	3
Mathematics (MA 111 and MA 112)	6
Physical Science (PS 113, PS 117, PS 113L or PS 117L)	7
<b>Total Credits</b>	<b>37</b>

## Aeronautical Knowledge

AS 121	Private Pilot Operations	5
AS 220	Uncrewed Aircraft Systems	3
AS 309	Aerodynamics	3
UA 100	Remote Pilot Operations	2
<b>Total Credits</b>		<b>13</b>

## Geospatial Data Acquisition and Processing

AS 241	UAS Systems Architecture and Integration	3
or AS 235	Uncrewed Aircraft Systems Operation and Cross-Country Data Entry	
AS 368	UAS Sensing Systems	3
AS 390	Application of UAS Technology	3
GEO 210	Introduction to Geographic Information Systems	3
GEO 310	Advanced Geographic Information Systems	3
UA 201	Mapping Applications and Data Collection with UAS	1
<b>Total Credits</b>		<b>16</b>

## Operations and Leadership

AS 222	Uncrewed Aircraft Systems Security	3
AS 315	UAS Robotics	3
AS 322	Operational and Industrial Aspects of UAS	3
or AS 319	UAS Law	
AS 323	Crew Resource Management for UAS	3
AS 423	UAS Infrastructure Development and Modeling	3
AS 473	Operational Applications in Uncrewed Aircraft Systems	3
<b>Total Credits</b>		<b>18</b>

## Technical Skills Development

AS 416	UAS Field Service and Sustainment	3
AS 437	Concepts in Advanced Air Mobility	3
UA 301	Advanced UAS Flight Operations	1
UA 401	UAS Mission Application	1
<b>Total Credits</b>		<b>8</b>

## Program Support

EGR 120	Graphical Communications	3
or EGR 115	Introduction to Computing for Engineers	
AT 202	Introduction to Air Traffic Management	3
HF 300	Human Factors I: Principles and Fundamentals	3
<b>Total Credits</b>		<b>9</b>

**Service Learning**

UA 390	UAS Practicum I	3
UA 490	UAS Practicum II	3
<b>Total Credits</b>		<b>6</b>

**Open Electives**

Upper Level Open Electives - 300-400	6
Open Electives - Any Level	9
<b>Total Credits</b>	<b>15</b>

**Total Credit Hours** 122

Note: Refer to Undergraduate Academic Regulations and Procedures section for credit for flight training at other institutions.

After matriculation to Embry-Riddle, all flight training must be completed on-campus to earn the Uncrewed Aircraft Systems degree.

Students should be aware that several courses in each academic year might have prerequisites and/or corequisites. Please check the course descriptions in this catalog before registering for classes to ensure requisite sequencing.

**Year One**

	<b>Credits</b>	
UA 100	Remote Pilot Operations	2
AS 121	Private Pilot Operations	5
AS 220	Uncrewed Aircraft Systems	3
COM 122	English Composition	3
EGR 120	Graphical Communications	3
or EGR 115	Introduction to Computing for Engineers	
CS 118	Fundamentals of Computer Programming	3
or CYB 235	Computer and Network Technologies	
MA 111	Pre-Calculus for Aviation	3
MA 112	Applied Calculus for Aviation	3
	HU 14X Humanities Elective	3
COM 219	Speech	3
<b>Credits Subtotal</b>		<b>31.0</b>

**Year Two**

AS 222	Uncrewed Aircraft Systems Security	3
AS 241	UAS Systems Architecture and Integration	3
or AS 235	Uncrewed Aircraft Systems Operation and Cross-Country Data Entry	
AS 323	Crew Resource Management for UAS	3
AT 202	Introduction to Air Traffic Management	3
COM 221	Technical Report Writing	3
GEO 210	Introduction to Geographic Information Systems	3
GEO 310	Advanced Geographic Information Systems	3
PS 113	Introductory Physics I	3
PS 117	Introductory Physics II	3
PS 113L	Introductory Physics I Laboratory	1
or PS 117L	Introductory Physics II Lab	
PSY 101	Introduction to Psychology	3
<b>Credits Subtotal</b>		<b>31.0</b>

**Year Three**

AS 309	Aerodynamics	3
AS 315	UAS Robotics	3
AS 322	Operational and Industrial Aspects of UAS	3
or AS 319	UAS Law	
AS 368	UAS Sensing Systems	3
AS 390	Application of UAS Technology	3

AS 416	UAS Field Service and Sustainment	3
AS 437	Concepts in Advanced Air Mobility	3
HF 300	Human Factors I: Principles and Fundamentals	3
	HU/SS Lower or Upper-Level Elective	3
	Open Elective - Upper-Level	3
UA 201	Mapping Applications and Data Collection with UAS	1
<b>Credits Subtotal</b>		<b>31.0</b>

**Year Four**

AS 423	UAS Infrastructure Development and Modeling	3
AS 473	Operational Applications in Uncrewed Aircraft Systems	3
	HU/SS Upper-Level Elective	3
	Open Elective - Upper-Level	3
	Open Elective	9
UA 301	Advanced UAS Flight Operations	1
UA 390	UAS Practicum I	3
UA 401	UAS Mission Application	1
UA 490	UAS Practicum II	3
<b>Credits Subtotal</b>		<b>29.0</b>
<b>Credits Total:</b>		<b>122.0</b>