

# Unmanned Aircraft Systems

## Bachelor of Science (BS)

# Unmanned Aircraft Systems

If you have the will to be a part of a new and growing field that can prove invaluable to law enforcement, agriculture, videography, surveying and many other areas, Southeast Missouri State University's Bachelor of Science in Unmanned Aircraft Systems (UAS) can help get you there. Many professionals use UAS, or "drones," to protect life by using this technology in applications that would normally put human lives at risk. There are already many applications for UAS and the list continues to grow! Southeast is currently the only university in Missouri offering a bachelor's degree in unmanned aircraft systems.

Students learn the fascinating fundamentals of these machines, including maintenance, customization, acquisition, and commercial use. Rather than building drones from the ground up, students take advantage of existing products and resources to adapt drones to meet specific needs. Courses include programming, electrical and electronic systems, mechanical operations, flight, drone design, sensing systems, mission planning, regulations, and safety.

### Unmanned Aircraft Systems students will...

- Understand the fundamental concepts required to be a professional in the field, including concepts in electronics, mechanical design, and programming.
- Obtain a more specialized knowledge in unmanned aircraft systems, including flight, design, policy, and mission planning.
- Have the ability to tailor the program to a more specific application area with 9 hours from areas such as agriculture, criminal justice, geographic information systems, and automation.
- Have experience using the techniques, skills, and tools necessary for modern careers in the field of unmanned aircraft systems.

### Career Planning

Career preparation is part of the mission of Southeast. 100% of programs offer our students an internship, study-abroad program, clinical opportunity, student teaching or research internship.

The Office of Career Services in Academic Hall 057 can provide students with professional career counseling and coaching, resume critiques, practice interviews, job search strategies, career events, networking opportunities, and more.

### Career Opportunities

Unmanned Aircraft Systems is a new program at southeast, however the field is expected to experience rapid growth because of the increased use of commercial unmanned aircraft systems. In addition, the Association for Unmanned Vehicle Systems International estimates the addition of 103,000 jobs for those involved in the manufacturing and operations of drones pending FAA rule changes.

Graduates would be able to have a career as a:

- UAS Mission Planner
- UAS Operator/Pilot
- UAS Technician
- UAS Designer

UAS systems are used in fields such as:

- Law Enforcement and Disaster Response
- Agriculture and Forestry
- Videography and Photography
- Surveying and Inspection

### Transfer and Dual Credit Students

If you have dual credit or transfer credit, please visit our transfer course equivalencies guide at [semo.edu/transferecredit](http://semo.edu/transferecredit).

**To learn more**  
 Office of Admissions  
 (573) 651-2590  
[admissions@semo.edu](mailto:admissions@semo.edu)  
[semo.edu](http://semo.edu)

**To explore**  
 the College of Science,  
 Technology, Engineering and  
 Mathematics online, visit  
[semo.edu/stem](http://semo.edu/stem)

**For advising**  
 Center for Academic Advising  
[semo.edu/advising](http://semo.edu/advising)

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This is a guide based on the 2018-2019 Undergraduate Bulletin and is subject to change. The time it takes to earn a degree will vary based on several factors such as dual enrollment, remediation, and summer enrollment. Students will meet with an academic advisor each semester and use Degree Works to monitor their individual progress.

### CURRICULUM CHECKLIST

#### Unmanned Aircraft Systems – 92 Hour Major; No Minor Required

##### Required Courses:

- \_\_\_ CH 180 Chemistry in Our World (3)
  - \_\_\_ CS 155 Computer Science I (4)
  - \_\_\_ CS 265 Computer Science II (4)
  - \_\_\_ ET 160 Basic Circuits (3)
  - \_\_\_ ET 164 AC Circuit Analysis (3)
  - \_\_\_ ET 245 Digital Systems (3)
  - \_\_\_ ET 260 Electronics (3)
  - \_\_\_ ET 366 Microcontrollers (3)
  - \_\_\_ ET 380 Vision & Sensor Systems (3)
  - \_\_\_ ET 381 Fundamentals of Aviation in UAS (3)
  - \_\_\_ ET 382 UAS Fundamentals (3)
  - \_\_\_ ET 383 UAS Design (3)
  - \_\_\_ ET384 UAS Law, Policy, & Safety (3)
  - \_\_\_ ET 385 UAS Mission Planning & Applications (3)
  - \_\_\_ IM 300 Technical Communication (3)
  - \_\_\_ IU 314 GeoInfo Science Today (3)
  - \_\_\_ MA 137 Pre-calculus (5)
  - \_\_\_ MA 140 Analytical Geometry & Calculus I (5)
  - \_\_\_ MN 120 Introduction to Mechanical Design (3)
  - \_\_\_ MN 220 Engineering Economic Systems (3)
  - \_\_\_ MN 319 Statics & Strengths of Materials (3)
  - \_\_\_ MN 324 Mechanical Design Process (3)
  - \_\_\_ PH 120 Introductory Physics I (5)
  - \_\_\_ TN 255 Microcomputer Maintenance & Troubleshooting (3)
  - \_\_\_ UI 450 Capstone Experience (3)
- Technical Electives – choose 9 hours:
- \_\_\_ AG 440 Precision Agriculture (3)
  - \_\_\_ AG 444 Spatial Analysis (3)
  - \_\_\_ CJ 430 Policing in an Information Age (3)
  - \_\_\_ CS 480 Data Communications (3)
  - \_\_\_ GO 340 Remote Sensing (3)
  - \_\_\_ GO 445 Geographic Information Systems (3)
  - \_\_\_ GO 520 GIS Application (3)
  - \_\_\_ IS 320 Human Computer Interaction (3)
  - \_\_\_ MN 356 Robotic Fundamentals (3)
  - \_\_\_ TN 425 Wireless Communications & Mobile Networks (3)

**University Studies Requirements** – some requirements may be fulfilled by coursework in major program

- Social and Behavioral Sciences – 3 hours
- Constitution requirement – 3 hours
- US History requirement – 3 hours
- Written Communication – 6 hours
- Oral Communication – 3 hours
- Natural Sciences – 7 hours (from two disciplines, one to include a lab)
- Mathematics – 3 hours
- Humanities & Fine Arts – 9 hours (from at least two disciplines)
- Additional requirements – 5 hours (to include UI100 for native students)

### SAMPLE FOUR-YEAR PLAN

	Fall Semester		Spring Semester	
	Course #	Hrs	Course #	Hrs
<b>FIRST YEAR</b>	UI100	3	CS155	4
	EN100	3	ET160	3
	CH180	3	MA140	5
	MA137	5	PH120	5
	MN120	3		
<b>Total</b>	<b>17</b>	<b>Total</b>	<b>17</b>	
<b>SECOND YEAR</b>	CS265	4	ET260	3
	ET164	3	ET366	3
	ET245	3	ET382	3
	ET381	3	IM300	3
	MN319	3	MN324	3
		University Studies	3	
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>18</b>	
<b>THIRD YEAR</b>	ET383	3	ET384	3
	TN255	3	MN220	3
	Program elective 1	3	Program elective 2	3
	University Studies	3	University Studies	3
	University Studies	3	University Studies	3
<b>Total</b>	<b>15</b>	<b>Total</b>	<b>15</b>	
<b>FOURTH YEAR</b>	ET380	3	ET385	3
	IU314	3	UI450	3
	University Studies	3	Program elective 3	3
	University Studies	3	University Studies	3
			University Studies	3
<b>Total</b>	<b>12</b>	<b>Total</b>	<b>15</b>	

**Degree requirements for all students:** a minimum of 120 credit hours, completion of University Studies program, completion of 39 senior division hours (300-599), Writing Proficiency Exam (WP003), and completion of the Measure of Academic Proficiency and Progress (MAPP) at the senior level. Refer to the Undergraduate Bulletin or Degree Works for additional graduation requirements for your program.

Revised  
7/10/2018