

M.S. in Uncrewed and Autonomous Systems

The Master of Science in Uncrewed and Autonomous Systems is designed to address workforce demand for uncrewed systems technology professionals. The program includes coursework in policy, design, ethics, technology and systems management related to uncrewed and autonomous systems. Students develop knowledge in uncrewed aircraft systems and autonomous robotics across air, land, maritime and space domains.

At the **Worldwide & Online Campus**, the Master of Science in Uncrewed and Autonomous Systems is offered online through the College of Aviation. The program includes study in uncrewed and autonomous systems technology, addressing factors that influence the adoption, integration and effectiveness of systems such as drones, autonomous ground systems, advanced and urban air mobility platforms and related technologies. Students may select from three specializations: Small Uncrewed Aircraft Systems (sUAS) Operations, Research or Technical Development and Support.

The sUAS Operations Specialization includes preparation for the Federal Aviation Administration (FAA) Part 107 certification and requires completion of a weekend residency during UNSY 520, an in-person residency held over a weekend in Daytona Beach, Florida. Students may also pursue a Trusted UAS Operator certification from the Association for Uncrewed Vehicle Systems International.

Program-Level Student Learning Outcomes

Students will:

- Explain factors influencing the adoption and use of associated system technologies, in relation to past, present, and emerging perspectives.
- Analyze data through the use of appropriate methods supporting application and operations.
- Discuss the origination of system capabilities, processes, and technology.
- Examine the effects of the legal and regulatory process on industry practices.
- Investigate uncrewed systems platform and payload selection based on mission oriented goals.
- Investigate how related technologies could affect future markets.

Worldwide Program Requirements

Core Requirements	18
Specialization	12
Total Credits	30

Program Details

The Master of Science in Uncrewed and Autonomous Systems requires successful completion of a minimum of 30 credit hours. Students enrolled in the Worldwide Graduate Online program may complete the degree in six terms, or approximately two years, assuming full-time enrollment and continuous progress. Students pursuing this graduate degree must earn a minimum cumulative grade point average (CGPA) of 3.00 for all work completed at the University. The courses required to earn this degree are listed below.

Students should be aware that many courses have prerequisites and/or corequisites. Students are responsible for ensuring that all prerequisite and degree requirements are satisfied prior to enrollment in advanced coursework. The suggested plan of study is provided as a guide. A student's actual plan of study may vary based on term of admission, course availability, transfer credit, and other academic considerations.

Students should consult with their academic advisor to develop an individualized plan of study.

Students must complete one approved specialization in addition to the required core curriculum. Students selecting the Small Uncrewed Aircraft Systems (sUAS) Operations specialization must be physically located in the United States while enrolled in UNSY 520 and UNSY 620 and should contact their academic advisor prior to enrolling in UNSY 515 regarding additional costs, potential travel requirements, and FAA testing. Students interested in the Research specialization should consult with their academic advisor regarding thesis requirements and sequencing.

Core Requirements

UNSY 502	Current Issues in Uncrewed and Autonomous Systems	3
UNSY 503	Legal and Regulatory Issues in Uncrewed and Autonomous Systems	3
UNSY 504	Application of Uncrewed and Autonomous Systems	3
UNSY 603	Uncrewed and Autonomous Systems Operational Configuration	3
UNSY 606	Uncrewed and Autonomous Systems Interoperability and Control	3
CYAV 517	Uncrewed and Autonomous Systems Cybersecurity	3

Total Credits **18**

Specializations

Research

RSCH 665	Statistical Analysis	3
RSCH 670	Research Methods	3
RSCH 700A	Graduate Thesis I	3
RSCH 700B	Graduate Thesis II	3

Total Credits **12**

Technical Development and Support

SYSE 500	Fundamentals of Systems Engineering	3
SYSE 530	System Requirements Analysis and Modeling	3
UNSY 531	Artificial Intelligence and Emerging Technologies in Aviation/Aerospace Systems	3
UNSY 635	Remote Sensing Data Analysis	3

Total Credits **12**

Small Uncrewed Aircraft System (sUAS) Operations

Students declaring the sUAS Operations Specialization must be physically located within the U.S., have access to a sUAS with which to train, and hold a current FAA Part 107 Certification while participating in the UNSY 520 and UNSY 620 courses. Students must contact their Academic Advisor regarding additional cost, required travel, and FAA Testing, prior to enrolling in the first course of this specialization, UNSY 515.

UNSY 515	sUAS Operation Fundamentals	3
UNSY 520	sUAS Practical Application and Assessment *	3
UNSY 620	sUAS Operational Planning and Safety Management	3
UNSY 625	sUAS Advanced Fixed-Wing Operations	3

Total Credits **12**

* Course includes a mandatory weekend residency and personal sUAS required at students' expense.

Suggested Plans of Study

Two Year Plan - Research

Requirements	Credits
UNSY 504 - Application of Uncrewed and Autonomous Systems	3
Semester Hours	3

Requirements	Credits
UNSY 502 - Current Issues in Uncrewed and Autonomous Systems	3
Semester Hours	3

Requirements	Credits
UNSY 503 - Legal and Regulatory Issues in Uncrewed and Autonomous Systems	3
Semester Hours	3

Requirements	Credits
CYAV 517 - Uncrewed and Autonomous Systems Cybersecurity	3
Semester Hours	3

Requirements	Credits
UNSY 603 - Uncrewed and Autonomous Systems Operational Configuration	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 15

Requirements	Credits
UNSY 606 - Uncrewed and Autonomous Systems Interoperability and Control	3
Semester Hours	3

Requirements	Credits
RSCH 665 - Statistical Analysis	3
Semester Hours	3

Requirements	Credits
RSCH 670 - Research Methods	3
Semester Hours	3

Requirements	Credits
RSCH 700A - Graduate Thesis I	3
Semester Hours	3

Requirements	Credits
RSCH 700B - Graduate Thesis II	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 15

One Year Plan - Research

Requirements	Credits
UNSY 504 - Application of Uncrewed and Autonomous Systems	3
UNSY 502 - Current Issues in Uncrewed and Autonomous Systems	3
Semester Hours	6

Requirements	Credits
UNSY 503 - Legal and Regulatory Issues in Uncrewed and Autonomous Systems	3
CYAV 517 - Uncrewed and Autonomous Systems Cybersecurity	3
Semester Hours	6

Requirements	Credits
UNSY 603 - Uncrewed and Autonomous Systems Operational Configuration	3
UNSY 606 - Uncrewed and Autonomous Systems Interoperability and Control	3
Semester Hours	6

Requirements	Credits
RSCH 665 - Statistical Analysis	3
RSCH 670 - Research Methods	3
Semester Hours	6

Requirements	Credits
RSCH 700A - Graduate Thesis I	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 27

Requirements	Credits
RSCH 700B - Graduate Thesis II	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 3

Two Year Plan - Technical Development and Support

Requirements	Credits
UNSY 504 - Application of Uncrewed and Autonomous Systems	3
Semester Hours	3

Requirements	Credits
UNSY 502 - Current Issues in Uncrewed and Autonomous Systems	3
Semester Hours	3

Requirements	Credits
UNSY 503 - Legal and Regulatory Issues in Uncrewed and Autonomous Systems	3
Semester Hours	3

Requirements	Credits
SYSE 500 - Fundamentals of Systems Engineering	3
Semester Hours	3

Requirements	Credits
SYSE 530 - System Requirements Analysis and Modeling	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 15

Requirements	Credits
CYAV 517 - Uncrewed and Autonomous Systems Cybersecurity	3
Semester Hours	3

Requirements	Credits
UNSY 603 - Uncrewed and Autonomous Systems Operational Configuration	3
Semester Hours	3

Requirements	Credits
UNSY 606 - Uncrewed and Autonomous Systems Interoperability and Control	3
Semester Hours	3

Requirements	Credits
UNSY 531 - Artificial Intelligence and Emerging Technologies in Aviation/Aerospace Systems	3
Semester Hours	3

Requirements	Credits
UNSY 635 - Remote Sensing Data Analysis	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 15

One Year Plan - Technical Development and Support

Requirements	Credits
UNSY 504 - Application of Uncrewed and Autonomous Systems	3
UNSY 502 - Current Issues in Uncrewed and Autonomous Systems	3
Semester Hours	6

Requirements	Credits
UNSY 503 - Legal and Regulatory Issues in Uncrewed and Autonomous Systems	3
SYSE 500 - Fundamentals of Systems Engineering	3
Semester Hours	6

Requirements	Credits
SYSE 530 - System Requirements Analysis and Modeling	3
CYAV 517 - Uncrewed and Autonomous Systems Cybersecurity	3
Semester Hours	6

Requirements	Credits
UNSY 603 - Uncrewed and Autonomous Systems Operational Configuration	3
UNSY 606 - Uncrewed and Autonomous Systems Interoperability and Control	3
Semester Hours	6

Requirements	Credits
UNSY 531 - Artificial Intelligence and Emerging Technologies in Aviation/Aerospace Systems	3
UNSY 635 - Remote Sensing Data Analysis	3
Semester Hours	6

Total Credits

Total Hours for All Requirements: 30

Two Year Plan - Small Uncrewed System (sUAS) Operations

Year One

Requirements	Credits
UNSY 504 - Application of Uncrewed and Autonomous Systems	3
Semester Hours	3

Requirements	Credits
UNSY 502 - Current Issues in Uncrewed and Autonomous Systems	3
Semester Hours	3

Requirements	Credits
UNSY 503 - Legal and Regulatory Issues in Uncrewed and Autonomous Systems	3
Semester Hours	3

Requirements	Credits
UNSY 515 - sUAS Operation Fundamentals	3
Semester Hours	3

Requirements	Credits
UNSY 520 - sUAS Practical Application and Assessment	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 15

Year Two

Requirements	Credits
CYAV 517 - Uncrewed and Autonomous Systems Cybersecurity	3
Semester Hours	3

Requirements	Credits
UNSY 603 - Uncrewed and Autonomous Systems Operational Configuration	3
Semester Hours	3

Requirements	Credits
UNSY 606 - Uncrewed and Autonomous Systems Interoperability and Control	3
Semester Hours	3

Requirements	Credits
UNSY 620 - sUAS Operational Planning and Safety Management	3
Semester Hours	3

Requirements	Credits
UNSY 625 - sUAS Advanced Fixed-Wing Operations	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 15

One Year Plan - Small Uncrewed System (sUAS) Operations

Year One

Requirements	Credits
UNSY 504 - Application of Uncrewed and Autonomous Systems	3
UNSY 502 - Current Issues in Uncrewed and Autonomous Systems	3
Semester Hours	6

Requirements	Credits
UNSY 503 - Legal and Regulatory Issues in Uncrewed and Autonomous Systems	3
UNSY 515 - sUAS Operation Fundamentals	3
Semester Hours	6

Requirements	Credits
UNSY 520 - sUAS Practical Application and Assessment	3

CYAV 517 - Uncrewed and Autonomous Systems Cybersecurity	3
Semester Hours	6

Requirements	Credits
UNSY 603 - Uncrewed and Autonomous Systems Operational Configuration	3
UNSY 606 - Uncrewed and Autonomous Systems Interoperability and Control	3
Semester Hours	6

Requirements	Credits
UNSY 620 - sUAS Operational Planning and Safety Management	3
UNSY 625 - sUAS Advanced Fixed-Wing Operations	3
Semester Hours	6

Total Credits

Total Hours for All Requirements: 30

Estimated Cost of Attendance

Estimated Cost of Attendance: California Student Information (<https://catalog.erau.edu/student-life/student-affairs/california-student/>)