

M.S. in Airworthiness Engineering

The Airworthiness Engineering degree addresses the regulatory, technical, and physical principles applicable to airworthiness engineering for professionals involved in air systems development. This program empowers students to cultivate the essential skills required to navigate challenges and spearhead advancements in the field.

The courses offer a meaningful exploration of relevant civil and military airworthiness requirements in vehicle development and operation, thereby providing an understanding of the implications and impact on crewed, uncrewed, and other innovative vehicle systems and their state of operation over a useful life. The expert faculty have extensive industry experience, coordinate with an Industrial Program Advisory Board, and provide students with firsthand knowledge, enthusiasm, and guidance.

Program-Level Student Learning Outcomes

Students will:

- Effectively communicate information, both technical and procedural, in written and oral forms to audiences in the aviation and aerospace disciplines.
- Exhibit an understanding of how civil and military regulatory frameworks, National and International, apply to contemporary issues in air system certification.
- Perform engineering analysis using acceptable methods for substantiating airworthiness compliance to requirements.
- Recognize the importance of honest and ethical behavior concerning airworthiness in all their work, their spoken statements, and their written artifacts.
- Use investigative methods to derive innovative airworthiness compliance solutions over the life cycle.
- Demonstrate topic mastery of airworthiness engineering principles and processes for selected technical discipline areas in air system certification.

Worldwide Program Requirements

Core Requirements	21
Electives	9
Total Credits	30

Program Details

The Master of Science in Airworthiness Engineering 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 the required Airworthiness Engineering core curriculum and select one concentration in Structures, Engineering Management, or Systems Engineering. In consultation with their academic advisor, students should select the concentration that best aligns with

their professional interests and career goals while satisfying degree requirements.

Core Requirements

AWEN 502	Airworthiness Process and Procedures	3
SYSE 505	System Safety and Certification	3
UNSY 500	Introduction to Uncrewed Aircraft Design	3
AWEN 510	Aircraft Airworthiness Engineering Principles	3
MATH 546	Application-Based Advanced Engineering Mathematics	3
AWEN 552	Continued Airworthiness	3
AWEN 690	Graduate Research Project	3
or PMGT 652	Concepts and Practices of Project Management	
Total Credits		21

Electives

Choose One of the Following Concentrations:

Structures

AERO 502	Strength and Fatigue of Materials	3
AERO 510	Aircraft Structural Dynamics	3
AERO 515	Introduction to the Finite Element Method	3
Total Credits		9

Engineering Management

EMGT 500	Managing in the STEM Environment	3
EMGT 530	Project Scheduling and Risk Management	3
EMGT 620	Technology and Innovation Management	3
Total Credits		9

Systems Engineering

SYSE 530	System Requirements Analysis and Modeling	3
SYSE 560	Introduction to Systems Engineering Management	3
SYSE 625	System Quality Assurance	3
Total Credits		9

Suggested Plans of Study

One-Year Plan

Note: One-Year plans only work if the degree is started in the January term.

Year One

Requirements	Credits
AWEN 502 - Airworthiness Process and Procedures	3
UNSY 500 - Introduction to Uncrewed Aircraft Design	3
Semester Hours	6

Requirements	Credits
SYSE 505 - System Safety and Certification	3
Specified Elective	3
Semester Hours	6

Requirements	Credits
AWEN 510 - Aircraft Airworthiness Engineering Principles	3

MATH 546 - Application-Based Advanced Engineering Mathematics	3
Semester Hours	6

Requirements	Credits
AWEN 552 - Continued Airworthiness	3
Specified Elective	3
Semester Hours	6

Requirements	Credits
AWEN 690 - Graduate Research Project	3
Specified Elective	3
Semester Hours	6

Total Credits

Total Hours for All Requirements: 30

Two-Year Plan

Year One

Requirements	Credits
AWEN 502 - Airworthiness Process and Procedures	3
Semester Hours	3

Requirements	Credits
SYSE 505 - System Safety and Certification	3
Semester Hours	3

Requirements	Credits
UNSY 500 - Introduction to Uncrewed Aircraft Design	3
Semester Hours	3

Requirements	Credits
AWEN 510 - Aircraft Airworthiness Engineering Principles	3
Semester Hours	3

Requirements	Credits
MATH 546 - Application-Based Advanced Engineering Mathematics	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 15

Year Two

Requirements	Credits
AWEN 552 - Continued Airworthiness	3
Semester Hours	3

Requirements	Credits
Specified Elective	3
Semester Hours	3

Requirements	Credits
Specified Elective	3
Semester Hours	3

Requirements	Credits
Specified Elective	3
Semester Hours	3

Requirements	Credits
AWEN 690 - Graduate Research Project or PMGT 652 - Concepts and Practices of Project Management	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 15

Estimated Cost of Attendance

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