

Standing Requirements

Program Mission Statement

The Master of Science in Aerospace Engineering program exists in fulfillment of the University's mission "to provide a comprehensive education to prepare graduates for productive careers and responsible citizenship with special emphasis on the needs of aviation, aerospace engineering and related fields".

The program provides formal advanced study, preparing students for careers in the aerospace industry, and in research and development. The program adds depth in three areas of concentration (AOC): aerodynamics and propulsion, structures and materials, and dynamics and control. Focus topics of study include: aerodynamics, aero-acoustics, propulsion design, turbulence and transition, combustion, heat transfer, hypersonics, structural analysis, vibration, nondestructive testing, thermal stresses and fatigue, composites, smart materials, elasticity, UAV's and UAS's, linear and non-linear control, rigid body dynamics, adaptive controls, and space vehicles and satellites.

Applicants must have an undergraduate degree in Aerospace Engineering, Mechanical Engineering, or related fields. Applicants should also possess a strong academic background as demonstrated by their undergraduate CGPA and a healthy GRE score.

The program, be it the thesis-option or non-thesis-option, requires a total of 30 credit hours. Candidates can select courses that prepare them for the aerospace engineering profession, or for doctoral programs of study. This includes 6 credit hours of core courses within the selected AOC, 3 credit hours of graduate Mathematics, and either 21 credit hours of electives for the non-thesis option, or 12 credit hours of electives plus 9 credit hours of thesis for the thesis-option. For the non-thesis option, to graduate within a specific AOC, a student must have taken a minimum of 15 credit hours within that AOC. A maximum of 6 credit hours from outside the AE department may be applied towards the degree program.

Last Modified: 10/28/2018 08:47:31 PM EDT

ERAU University Mission Statement

Our mission is to teach the science, practice and business of aviation and aerospace, preparing students for productive careers¹ and leadership roles in service around the world.²

Our technologically enriched, student-centered environment³ emphasizes learning through collaboration and teamwork,⁴ concern for ethical and responsible behavior,⁵ cultivation of analytical⁶ and management abilities,⁷ and a focus on the development of the professional skills needed for participation in a global community.⁸ We believe a vibrant future for aviation and aerospace rests in the success of our students. Toward this end, Embry-Riddle is committed to providing a climate that facilitates the highest standards of academic achievement⁹ and knowledge discovery,¹⁰ in an interpersonal environment that supports the unique needs of each individual.¹¹ Embry-Riddle Aeronautical University is the world's leader in aviation and aerospace education. The University is an independent, non-profit, culturally diverse institution providing quality education and research in aviation, aerospace, engineering and related fields leading to associate's, baccalaureate's, master's and doctoral degrees.

Program Alignment to University Mission

Select all that apply.

- ¹Preparing students for productive careers
- ²Preparing students for leadership roles in service around the world
- ³Technologically enriched environment
- ⁴Emphasize learning through collaboration and teamwork
- ⁵Concern for ethical and responsible behavior
- ⁶Cultivate analytical abilities
- ⁷Cultivate management abilities
- ⁸Develop the professional skills needed for participation in a global community
- ⁹Facilitating the highest standards of academic achievement
- ¹⁰Facilitating knowledge discovery
- ¹¹Providing an interpersonal environment that supports the unique needs of each individual

Standing Requirements

Program Outcomes

MS Aerospace Engineering Outcome Set

Outcome

Outcome	Mapping
<p>DB_MSAE_PO_01 Students will demonstrate an ability to use analytical methods to analyze and solve engineering problems.</p>	<p>Embry-Riddle General Education Competency Set: Critical Thinking (DB, PC, WW), Lifelong Personal Growth (WW Only), Quantitative Reasoning (DB, PC, WW), Scientific Literacy (DB, PC, WW)</p>
<p>DB_MSAE_PO_02 Students will demonstrate an ability to conduct research and/or independent study.</p>	<p>Embry-Riddle General Education Competency Set: Critical Thinking (DB, PC, WW), Information Literacy (DB, PC, WW), Lifelong Personal Growth (WW Only), Scientific Literacy (DB, PC, WW)</p>
<p>DB_MSAE_PO_04 Students will demonstrate an ability to use written and oral communication effectively.</p>	<p>Embry-Riddle General Education Competency Set: Communication (DB, PC, WW)</p>
<p>DB_MSAE_PO_05 Students will demonstrate an ability to use numerical methods to analyze and solve engineering problems.</p>	<p>Embry-Riddle General Education Competency Set: Critical Thinking (DB, PC, WW), Lifelong Personal Growth (WW Only), Quantitative Reasoning (DB, PC, WW), Scientific Literacy (DB, PC, WW)</p>
<p>DB_MSAE_PO_06 Students will demonstrate an ability to use experimental methods to analyze and solve engineering problems.</p>	<p>Embry-Riddle General Education Competency Set: Critical Thinking (DB, PC, WW), Lifelong Personal Growth (WW Only), Quantitative Reasoning (DB, PC, WW), Scientific Literacy (DB, PC, WW)</p>
<p>DB_MSAE_PO_03 <i>Marked obsolete by Magdy Attia on 10/05/2016 12:24:07 pm EDT</i> Graduateats of the Master of Aerospace Engineering (MAE) and Master of Science in Aerospace Engineering (MSAE) programs will demonstrate an ability to carry out research or special projects.</p>	<p>No Mapping</p>

New Curriculum Map Fall 2018

Courses and Activities Mapped to MS Aerospace Engineering Outcome Set

	Outcome				
	DB_MSAE_PO_01 Students will demonstrate an ability to use advanced concepts to analyze to solve engineering problems.	DB_MSAE_PO_02 Students will demonstrate an ability to conduct research and/or independent study.	DB_MSAE_PO_04 Students will demonstrate an ability to use written and oral communication effectively.	DB_MSAE_PO_05 Students will demonstrate an ability to use numerical methods to analyze and solve engineering problems.	DB_MSAE_PO_06 Students will demonstrate an ability to use experimental methods to analyze and solve engineering problems.
Courses and Learning Activities					
AE 502 Strength and Fatigue of Materials	P	I	I	P	I
AE 514 Introduction to the Finite Element Method	P	I	P	M	I
AE 504 Advanced Compressible Flow	P	I	I	P	I
AE 528 Advanced Incompressible Aerodynamics	P	I	I	P	I
AE 523 Modeling and Simulation of Linear Dynamic Systems	P	I	P	P	I
AE 527 Modern Control Systems	P	I	I	P	I
AE 699 Special Topics in Aerospace Engineering	P	M	M	M	P
AE 700 Thesis	M	M	M	M	M
Legend : I Introduced P Practiced M Mastered					

Last Modified: 10/28/2018 09:02:36 PM

2017-2018 Assessment Cycle

Assessment Plan

Measures

MS Aerospace Engineering Outcome Set

Outcome

Outcome: DB_MSAE_PO_01

Students will demonstrate an ability to use analytical methods to analyze and solve engineering problems.

▼ **Measure:** Student Exams from Various Core Courses *Course level Direct - Exam*

Details/Description:	Instructors of core courses will collect various exam samples from students.
Criterion for Success:	80% of students accomplish a grade of "B" or higher.
Timeframe of Data Collection:	Throughout the academic year: Fall 2017 and Spring 2018
Key/Responsible Personnel:	Instructors of core courses and graduate program coordinator

Outcome: DB_MSAE_PO_02

Students will demonstrate an ability to conduct research and/or independent study.

▼ **Measure:** Graduate Student Survey

Program level Indirect - Survey

Details/Description:	Results of, "Graduating Student Survey: Classes of Fall 2017 / Spring 2018" Program Skills - Daytona Beach MS Aerospace Engineering Question #1: Ability to analyze and solve engineering problems Question # 2: In one or more of the following subject areas, the ability to analyze and solve engineering problems: aerodynamics, aerospace materials, computational methods, controls, propulsion and structures
Criterion for Success:	At least 50% respond, "Very Much" to each question. At least 25% respond, "Quite a bit" to each question.
Timeframe of Data Collection:	typically one month following graduation
Key/Responsible Personnel:	Institutional Research

▼ **Measure:** Thesis Report or AE 699 Final Report
Program level Direct - Student Artifact

Details/Description:	Students who prepared a thesis as part of their Master program or students who take AE 699 Independent Research will deliver a written report outlining their hypothesis, approach, and findings.
Criterion for Success:	80% of students will receive either a passing grade "P" for their thesis report or will receive a grade of "B" or higher in AE 699.
Timeframe of Data Collection:	Academic year: Fall 2017 and Spring 2018.
Key/Responsible Personnel:	Thesis advisors, AE 699 instructors, and the graduate program coordinator.

Outcome: DB_MSAE_PO_04

Students will demonstrate an ability to use written and oral communication effectively.

▼ **Measure:** Thesis Defense
Program level Indirect - Interview

Details/Description:	Students who prepared a thesis as part of their Master will orally defend their work in a 1-hour long presentation including a Q&A session.
Criterion for Success:	80% of students will receive a passing grade for their thesis oral defense.
Timeframe of Data Collection:	Academic year: Fall 2017 and Spring 2018.
Key/Responsible Personnel:	thesis advisors and graduate program coordinator

▼ **Measure:** Thesis Report or AE 699 Final Report
Program level Direct - Student Artifact

Details/Description:	Students who prepared a thesis as part of their Master program or students who take AE 699 Independent Research will deliver a written report outlining their hypothesis, approach, and findings.
Criterion for Success:	80% of students will receive either a passing grade "P" for their thesis report or will receive a grade of "B" or higher in AE 699.
Timeframe of Data Collection:	Academic year: Fall 2017 and Spring 2018.
Key/Responsible Personnel:	Thesis advisors, AE 699 instructors, and the graduate program coordinator.