

M.S. in Human Factors

Embry-Riddle Aeronautical University's Human Factors graduate program, offered both in person and online, equips students to apply psychological and physiological principles to the design and development of systems, products and work environments.

The graduate program is designed for post-bachelor students who want to advance their learning in human factors and experimental psychology, including statistical and quantitative procedures, user experience design and cognitive engineering.

Studying Human Factors at the **Daytona Beach Campus** provides opportunities to earn a specialized degree within a university known for aviation and aerospace excellence, while gaining hands-on experience in advanced labs using simulators, eye-tracking, biometrics and human-computer interaction technology. Students gain research opportunities, industry connections and career preparation for fields such as aviation, space, safety and technology.

Students may choose between a thesis or non-thesis option to tailor their educational experience.

The Master of Science in Human Factors program at the Daytona Beach Campus is accredited by the Human Factors and Ergonomics Society (HFES).

At the **Worldwide Campus**, the Master of Science in Human Factors is an online program tailored to working professionals who want to better understand the interrelationship between humans and technology, environment, and other system components, as they relate to human performance, limitations, and error in simple and complex systems. This multidisciplinary degree explores how humans interact with technology, designs, social systems, operational interfaces, and environmental factors in contexts that include healthcare, aerospace, transportation, military, security, virtual and augmented reality, simulation, computing, and other complex sociotechnical systems concerned with human performance, system design, comfort, and safety.

Students will also learn and apply critical thought and synthesis skills required to analyze current trends and past events and designs in which human error led to operational failures, as core elements of the curriculum. Our goal is for graduates to emerge from the MS in Human Factors program with the knowledge and ability to identify trends, analyze system requirements, develop strategies, recommend solutions, and recognize opportunities for innovation in this field.

Studying Human Factors through Embry-Riddle Aeronautical University's Worldwide Campus provides the flexibility to earn a degree fully online while continuing to work or manage other responsibilities.

The program delivers specialized education in psychology, human performance, ergonomics and system safety, taught by experienced faculty with industry backgrounds. It offers a strong option for advancing or transitioning careers without the need to relocate.

To tailor the experience to individual goals, students can choose either a thesis (33 credit hours) or a Culminating Research Experience (30 credit hours).

The Master of Science in Human Factors program at the Worldwide Campus is recognized by the Royal Aeronautical Society (RAeS).

Program-Level Student Learning Outcomes

Daytona Beach

Students will:

- Apply the fundamentals of Human Factors and Ergonomic (HF/E) principles and concepts to the benefit of the Human Factors community and to contribute to and enhance the body of scientific knowledge.

- Comprehensively evaluate human cognitive/psychological capabilities and limitations across multiple human factors and ergonomics domains.
- Comprehensively evaluate human physiological capabilities and limitations across multiple human factors and ergonomics domains.
- Apply human factors evidence-based methods to identify, interpret, and define industry-based problems and develop strategies to control, mitigate, and/or solve them.
- Apply basic and advanced experimental design and statistical techniques commonly used in the behavioral sciences to problems of scientific inquiry and practical application.

Worldwide

Students will:

- Apply the fundamentals of Human Factors and Ergonomic (HF/E) principles and concepts to the benefit of the Human Factors community and to contribute to and enhance the body of scientific knowledge.
- Comprehensively evaluate human cognitive/psychological capabilities and limitations across multiple human factors and ergonomics domains.
- Comprehensively evaluate human physiological capabilities and limitations across multiple human factors and ergonomics domains.
- Apply human factors evidence-based methods to identify, interpret, and define industry-based problems and develop strategies to control, mitigate, and/or solve them.

Daytona Beach Program Requirements

Core Requirements	27
Option	9
Total Credits	36

Core Requirements

HFCT 501	Human Factors in Systems	3
HFCT 510	Research Design and Analysis I	3
HFCT 511	Research Design and Analysis II	3
HFCT 515	Ergonomics for Human Factors	3
or HFCT 624	Ergonomics and Biomechanics	
HFCT 615	Sensation and Perception for Human Factors	3
HFCT 617	Human Factors Methods	3
HFCT 620	Memory and Cognition	3
or HFCT 606	Human Cognition	
HFCT 635	Human-Computer Interaction	3
HFCT 675	Multivariate Statistics: Factor Analysis and Data Reduction	3
Total Credits		27

Option

Option I: Non-Thesis

Electives		9
AVSF 611	Aviation/Aerospace System Safety	
HFCT 500	Systems Concepts, Theory, and Tools	
HFCT 520	Team Performance	
HFCT 521	Modeling Humans in Complex Systems	
HFCT 526	Aerospace Physiology	
HFCT 527	Advanced Psychopharmacology	
HFCT 540	Foundations of Public Health	
HFCT 545	Principles of Health, Systems, Policy and Management	
HFCT 548	Epidemiology and Public Health	
HFCT 590	Graduate Seminar	

HFCT 599	Special Topics in Human Factors	
HFCT 614	Human Factors in Medicine	
HFCT 616	Human Factors of Transportation	
HFCT 617	Human Factors Methods	
HFCT 618	Human Factors in Aging: Behavioral and Biological Foundations	
HFCT 622	Human Factors in Entertainment Systems	
HFCT 624	Ergonomics and Biomechanics	
HFCT 625	Applied Testing and Selection	
HFCT 626	Human Factors Principles of Visual Communication	
HFCT 630	Applied Cognitive Science	
HFCT 640	Human Physiology and Adaptation	
HFCT 650	Human Factors of Aviation/Aerospace Applications	
HFCT 680	Graduate Seminar: Current Applications in Human Factors	
HFCT 690	Human Factors Capstone	
HFCT 699	Special Topics in Human Factors	
HFCT 705	Small N Designs and Non-Parametric Analysis	
MGMT 520	Organizational Behavior, Theory, and Applications in Aviation	
MSAV 641	Production and Procurement Management in the Aviation/Aerospace Industry	
SCLM 511	Operations Research	
SFTW 500	Software Engineering Discipline	
SFTW 520	Formal Methods for Software Engineering	
COIN 696	Graduate Internship	
Total Credits		9

Option II: Thesis

Electives		3
AVSF 611	Aviation/Aerospace System Safety	
HFCT 500	Systems Concepts, Theory, and Tools	
HFCT 520	Team Performance	
HFCT 521	Modeling Humans in Complex Systems	
HFCT 526	Aerospace Physiology	
HFCT 527	Advanced Psychopharmacology	
HFCT 540	Foundations of Public Health	
HFCT 545	Principles of Health, Systems, Policy and Management	
HFCT 548	Epidemiology and Public Health	
HFCT 590	Graduate Seminar	
HFCT 599	Special Topics in Human Factors	
HFCT 614	Human Factors in Medicine	
HFCT 616	Human Factors of Transportation	
HFCT 617	Human Factors Methods	
HFCT 618	Human Factors in Aging: Behavioral and Biological Foundations	
HFCT 622	Human Factors in Entertainment Systems	
HFCT 624	Ergonomics and Biomechanics	
HFCT 625	Applied Testing and Selection	
HFCT 626	Human Factors Principles of Visual Communication	
HFCT 630	Applied Cognitive Science	
HFCT 640	Human Physiology and Adaptation	
HFCT 650	Human Factors of Aviation/Aerospace Applications	
HFCT 680	Graduate Seminar: Current Applications in Human Factors	

HFCT 690	Human Factors Capstone	
HFCT 699	Special Topics in Human Factors	
HFCT 705	Small N Designs and Non-Parametric Analysis	
MGMT 520	Organizational Behavior, Theory, and Applications in Aviation	
MSAV 641	Production and Procurement Management in the Aviation/Aerospace Industry	
SCLM 511	Operations Research	
SFTW 500	Software Engineering Discipline	
SFTW 520	Formal Methods for Software Engineering	
COIN 696	Graduate Internship	
Thesis		6
HFCT 700	Graduate Thesis	
Total Credits		9

Suggested Plan of Study

Option I: Non-Thesis

Year One

Requirements	Credits
HFCT 501 - Human Factors in Systems	3
HFCT 510 - Research Design and Analysis I	3
HFCT 615 - Sensation and Perception for Human Factors	3
Semester Hours	9

Requirements	Credits
HFCT 511 - Research Design and Analysis II	3
HFCT 515 - Ergonomics for Human Factors or 624 - Ergonomics and Biomechanics	3
HFCT 620 - Memory and Cognition or 606 - Human Cognition	3
Semester Hours	9

Total Credits

Total Hours for All Requirements: 18

Year Two

Requirements	Credits
HFCT 617 - Human Factors Methods	3
HFCT 675 - Multivariate Statistics: Factor Analysis and Data Reduction	3
Elective	3
Semester Hours	9

Requirements	Credits
HFCT 635 - Human-Computer Interaction	3
Elective	3
Elective	3
Semester Hours	9

Total Credits

Total Hours for All Requirements: 18

Option II: Thesis

Year One

Requirements	Credits
HFCT 501 - Human Factors in Systems	3
HFCT 510 - Research Design and Analysis I	3
HFCT 615 - Sensation and Perception for Human Factors	3
Semester Hours	9

Requirements	Credits
HFCT 511 - Research Design and Analysis II	3
HFCT 515 - Ergonomics for Human Factors or 624 - Ergonomics and Biomechanics	3
HFCT 620 - Memory and Cognition or 606 - Human Cognition	3
Semester Hours	9

Total Credits

Total Hours for All Requirements: 18

Year Two

Requirements	Credits
HFCT 617 - Human Factors Methods	3
HFCT 675 - Multivariate Statistics: Factor Analysis and Data Reduction	3
HFCT 700 - Graduate Thesis	3
Semester Hours	9

Requirements	Credits
HFCT 635 - Human-Computer Interaction	3
HFCT 700 - Graduate Thesis	3
Elective	3
Semester Hours	9

Total Credits

Total Hours for All Requirements: 18

Worldwide Program Requirements

Core Requirements	21
Option	9-12
Total Credits	30-33

Program Details

The Master of Science in Human Factors requires successful completion of a minimum of 30 credit hours for the Culminating Research Experience (CRE) option or 33 credit hours for the Thesis option. 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 may complete either the 30-credit Culminating Research Experience (CRE) option or the 33-credit Thesis option. Students interested in the Thesis option should consult with their academic advisor to ensure appropriate planning, sequencing of thesis coursework, and fulfillment of all thesis requirements.

Core Requirements

HFCT 606	Human Cognition	3
HFCT 612	Human Performance, Limitation, and Error	3
HFCT 621	Human Factors in Virtual and Simulated Environments	3
HFCT 624	Ergonomics and Biomechanics	3
HFCT 640	Human Physiology and Adaptation	3
HFCT 641	Systems Psychology	3
HFCT 647	Human Factors in Complex Systems	3
Total Credits		21

Cumulative Research Experience Option

HFCT 653	Cognitive Systems Engineering	3
HFCT 691	Culminating Research Experience	3
RSCH 650	Research Methods and Analysis *	3
Total Credits		9

Thesis Option

RSCH 665	Statistical Analysis	3
RSCH 670	Research Methods	3
HFCT 700A	Graduate Thesis I	3
HFCT 700B	Graduate Thesis II	3
Total Credits		12

* RSCH 650 must be taken as the last course for CRE students

Suggested Plan of Study

Two Year Plan - Thesis Option

Year One

Requirements	Credits
HFCT 606 - Human Cognition	3
Semester Hours	3

Requirements	Credits
HFCT 612 - Human Performance, Limitation, and Error	3
Semester Hours	3

Requirements	Credits
HFCT 640 - Human Physiology and Adaptation	3
Semester Hours	3

Requirements	Credits
HFCT 621 - Human Factors in Virtual and Simulated Environments	3
Semester Hours	3

Requirements	Credits
RSCH 665 - Statistical Analysis	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 15

Year Two

Requirements	Credits
HFCT 624 - Ergonomics and Biomechanics	3
Semester Hours	3

Requirements	Credits
RSCH 670 - Research Methods	3
Semester Hours	3

Requirements	Credits
HFCT 641 - Systems Psychology	3
Semester Hours	3

Requirements	Credits
HFCT 647 - Human Factors in Complex Systems	3
Semester Hours	3

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

Total Credits

Total Hours for All Requirements: 15

Year Three

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

Total Credits

Total Hours for All Requirements: 3

One Year Plan - Thesis Option

Year One

Requirements	Credits
HFCT 606 - Human Cognition	3
RSCH 665 - Statistical Analysis	3
Semester Hours	6

Requirements	Credits
HFCT 612 - Human Performance, Limitation, and Error	3
RSCH 670 - Research Methods	3
Semester Hours	6

Requirements	Credits
HFCT 621 - Human Factors in Virtual and Simulated Environments	3
HFCT 624 - Ergonomics and Biomechanics	3
Semester Hours	6

Requirements	Credits
HFCT 640 - Human Physiology and Adaptation	3
HFCT 641 - Systems Psychology	3
Semester Hours	6

Requirements	Credits
HFCT 647 - Human Factors in Complex Systems	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 27

Year Two

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

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

Total Credits

Total Hours for All Requirements: 6

Two Year Plan - Culminating Research Experience

Year One

Requirements	Credits
HFCT 606 - Human Cognition	3
Semester Hours	3

Requirements	Credits
HFCT 612 - Human Performance, Limitation, and Error	3
Semester Hours	3

Requirements	Credits
HFCT 640 - Human Physiology and Adaptation	3
Semester Hours	3

Requirements	Credits
HFCT 621 - Human Factors in Virtual and Simulated Environments	3
Semester Hours	3

Requirements	Credits
RSCH 650 - Research Methods and Analysis	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 15

Year Two

Requirements	Credits
HFCT 624 - Ergonomics and Biomechanics	3
Semester Hours	3

Requirements	Credits
HFCT 641 - Systems Psychology	3
Semester Hours	3

Requirements	Credits
HFCT 647 - Human Factors in Complex Systems	3
Semester Hours	3

Requirements	Credits
HFCT 653 - Cognitive Systems Engineering	3
Semester Hours	3

Requirements	Credits
HFCT 691 - Culminating Research Experience	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 15

One Year Plan - Culminating Research Experience

Year One

Requirements	Credits
HFCT 606 - Human Cognition	3
RSCH 650 - Research Methods and Analysis	3
Semester Hours	6

Requirements	Credits
HFCT 612 - Human Performance, Limitation, and Error	3
HFCT 624 - Ergonomics and Biomechanics	3
Semester Hours	6

Requirements	Credits
HFCT 621 - Human Factors in Virtual and Simulated Environments	3
HFCT 640 - Human Physiology and Adaptation	3
Semester Hours	6

Requirements	Credits
HFCT 641 - Systems Psychology	3
HFCT 647 - Human Factors in Complex Systems	3
Semester Hours	6

Requirements	Credits
HFCT 653 - Cognitive Systems Engineering	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 27

Year Two

Requirements	Credits
HFCT 691 - Culminating Research Experience	3
Semester Hours	3

Total Credits

Total Hours for All Requirements: 3

Estimated Cost of Attendance

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