

# Academic Programs at the Daytona Beach Campus

## College of Arts and Sciences

*Dean:* Rodney B. Piercey

The Arts and Sciences College is home to several outstanding degree programs and, in addition, is the primary provider of the curricula that fulfill the university's general education goals. Students may choose to pursue such majors as Aerospace Studies, Communications, Engineering Physics, and Human Factor Psychology. Minor programs of study are offered in Mathematics as well as many of the major fields.

The College of Arts and Sciences' primary responsibility is to provide a high quality educational opportunity to all adequately prepared students. It seeks to inculcate in its students a lifelong love of learning; an appreciation of the cultural, intellectual, and historical impact of the search for truth and knowledge; the opportunity for professional specialization; and emotional and social development through out-of-class experiences. All students are expected to master the skills that enable them to communicate clearly, to understand the logic of mathematics and the methods of scientific inquiry, and to understand their cultural heritage and that of others. The College seeks to develop in its students the ability to think independently, to accept responsibility, to interact with people different from themselves, to assess ideas, to challenge orthodoxies, and to criticize opinions in order to achieve the intellectual, ethi-

cal, and aesthetic maturity expected in educated citizens. The College affirms the right of all students to achieve an educational level limited only by their own commitment and ability.

The College endorses the use of non-traditional experiences to enhance learning including: cooperative education, industry internships, study abroad and undergraduate research involvement. The College participates in the university Honors Program; thus students of exceptional academic promise can develop unique and challenging programs of study.

The College of Arts and Sciences is home to Air Force, Army, and Naval Reserve Officers Training Corps (ROTC). The ROTC programs provide students an opportunity to receive military training while pursuing a baccalaureate degree. Several significant scholarships are available for students interested in these excellent programs.

# Academic Programs at the Daytona Beach Campus

## *Aerospace Studies*

Bachelor of Science

### PROGRAM PLAN OF STUDY AND REQUIREMENTS

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The Aerospace Studies program consists of core requirements and three minors. The core requirements in this program help make our students worldly thinkers who understand that information and skills gleaned from one area of life can be applied to other areas. The program's core requirements respond directly to calls by American corporate leaders for graduates who understand both technology and human behavior. To that end, students choose from courses in the humanities, geography, international studies, philosophy and ethics, and psychology. The core prepares students to connect their three minor fields of study meaningfully and usefully. In the capstone experience, the student chooses a senior thesis or a co-op in industry.

By combining three minors, students design their own degree programs. Such combinations as security or air traffic control/psychology/safety or space studies/computer science/psychology offer combinations of fields that the aerospace industry should find useful. Minors in secondary education, humanities, and mathematics can lead to the teaching profession or graduate studies. Minors in the business areas give students practical knowledge that combines well with the more technical areas. The element of choice in the program gives students experience in planning their own futures: the program seeks to produce stu-

dents with an entrepreneurial spirit who will cross boundaries, make creative connections, and become leaders in aviation and aerospace.

Students should be aware that several courses in each academic year may have prerequisites and/or corequisites. Check the course descriptions at the back of this catalog before registering for classes to assure requisite sequencing.

### DEGREE REQUIREMENTS

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The Bachelor of Science degree in Aerospace Studies requires successful completion of a minimum of 120 credit hours. Included within the 120 credit hours must be forty credit hours of upper-division courses (300-400 level.)

### GENERAL EDUCATION

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Courses	Credits
Communication Theory and Skills*	9
Computer Science	3
Lower-level Humanities*	3
Mathematics	6
Physical and Life Science	6
Lower-level Social Sciences*	6
HU/SS 300-400 level*	3
<b>Total Credits</b>	<b>36</b>

# Academic Programs at the Daytona Beach Campus

\*Embry-Riddle courses in the general education categories *Communication Theory and Skills*, *Humanities*, and *Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories.

COMMUNICATION THEORY AND SKILLS:

COM: 122, 219, 221, 222, 260, 351, 360, 364, 410, 411, 415, 420

HU: 319, 355, 361, 362, 363, 399, 499.

HUMANITIES:

LOWER-LEVEL: HU 140-146

UPPER-LEVEL: 300-400 level

SOCIAL SCIENCES:

LOWER-LEVEL:

EC 200, 210, 211

(EC 200 is not acceptable together with EC 210 or EC 211 or their equivalent),

PSY 220

SS 110, 120, 130, 204, 210

UPPER-LEVEL:

HF 300

PSY 350

SS 302, 305, 310, 320, 325, 326, 331, 340, 350, 352, 360, 399, 499

CE 396/		
397	Cooperative Education,- or -	3-6
HU 475	Senior Thesis	3
<b>Total Credits</b>		<b>21-32</b>

♦Must be chosen from one of the courses above not used to satisfy general education credit.

## MINORS

Students must select three minor fields of study. At least one of these must be aviation/aerospace related. Total credits within the minors will vary from 18-30, depending on the minors chosen. See Minor Courses of Study in this catalog.

<b>Open Electives</b>	<b>0-21</b>
<b>TOTAL DEGREE CREDITS</b>	<b>120-132</b>

## CORE REQUIREMENTS

Course	Title	Credits
AS 120	Introduction to Aeronautical Science,- or -	
SP 110	Introduction to Space Flight,- or -	
FAA	Private Pilot Certificate	3
BA 105	American Business Enterprise,- or -	
BA 201	Principles of Management	3
HU 335	Technology and Modern Civilization	3
HU ♦	One course from the Humanities Series (HU 140 - HU 146), - or -	
SS 204	Introduction to Geography	3
HU/SS	International Studies Electives (Selected from BA 335, SS 325, 326, SS 331 or SS 340)	6
HU 330	Values and Ethics, - or -	
HU 341	World Philosophy (If not taken for general education credit)	3
MA 222	Business Statistics (If not taken for general education credit)	3
PSY 220	Introduction to Psychology (If not taken for general education credit)	3

# Academic Programs at the Daytona Beach Campus

## Communication

### Bachelor of Science

The Communication program offers students the opportunity to practice professional forms of communication. Besides mastering the linguistic, editing, communication, and design skills that all communication professionals need, students will also master specific writing and communication genres such as feature writing or crisis communication. The program aims to produce graduates with the outstanding portfolios and workplace skills that will make them competitive for a variety of communication jobs in the fast-moving world of aviation/aerospace.

### DEGREE REQUIREMENTS

The Bachelor of Science degree in Communication requires successful completion of a minimum of 121 credit hours.

#### FRESHMAN YEAR

Course	Title	Credits
	Communication General Ed Option*	3
	Computer Science General Ed Option*	3
	Lower-level Humanities General Ed*	3
	Math General Ed Option*	3
	Lower-level Social Science General Ed*	3
AS 120	Principles of Aeronautical Science	3
COM 219	Speech	3
COM 260	Introduction to Media	3
SS	Lower-level Social Sciences	3
	Open elective	3
<b>Total Credits</b>		<b>30</b>

#### SOPHOMORE YEAR

Course	Title	Credits
	Communication General Ed Option*	3
	Physical Science General Ed Option*	3
	Math General Ed Option*	3
	Communication elective	3
	Aviation Survey Option	6
	Area of Concentration Course	6
COM 265	Introduction to News Writing	3
COM 364	Layout and Design	3
<b>Total Credits</b>		<b>30</b>

#### JUNIOR YEAR

Course	Title	Credits
	Physical Science General Ed Option*	3
	Aviation Survey Option	3
	Communication elective	6
	Area of Concentration Course	3
	Artistic Expression elective	3
	Co-Op - or - Communication elective	3
COM 360	Media Relations I	3
COM 410	Advanced Professional Writing	3
COM 412	Seminar in Writing for Specific Audiences	3
HU/SS	Upper-level General Ed elective	3
<b>Total Credits</b>		<b>33</b>

#### SENIOR YEAR

Course	Title	Credits
	Artistic Expression elective	3
	Area of Concentration Course	6
	Global and Cultural Background elective	6
	Open electives	9
COM 440	Employment Practicum	1
COM 460	Media Relations II	3
<b>Total Credits</b>		<b>28</b>
<b>TOTAL DEGREE CREDITS</b>		<b>121</b>

# Academic Programs at the Daytona Beach Campus

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\*Embry-Riddle courses in the general education categories of *Communication Theory and Skills*, *Humanities*, and *Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Communication vertical outline. Course substitutions may be made upon approval of the program chairman.

## COMMUNICATION THEORY AND SKILLS:

COM 122, 219, 221, 222, 260, 265, 351, 360, 364, 410, 411, 412  
 HU 143, 315, 319, 355, 361, 362, 420

## HUMANITIES:

LOWER-LEVEL:  
 HU 140-146, 250  
 UPPER-LEVEL:  
 HU 300, 305, 310, 320, 325, 330, 335, 341, 345, 399, 499

## SOCIAL SCIENCES:

LOWER-LEVEL:  
 EC 200, 210, 211  
 (EC 200 is not acceptable together with EC 210 or EC 211 or their equivalent)  
 PSY 220  
 SS 110, 120, 130, 204, 210

UPPER-LEVEL:  
 EC 310, 312, 315, 420, SS 302, 305, 310, 320, 325, 326, 331, 335, 340, 350, 352, 360, 399, 499  
 HF 300  
 PSY 350

## PROFESSIONAL WRITING AND MEDIA RELATIONS

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### Course Title

COM 260 Introduction to Media  
 COM 265 Introduction to News Writing  
 COM 360 Media Relations I  
 COM 364 Layout and Design  
 COM 410 Advanced Professional Writing  
 COM 412 Seminar in Writing for Specific Audiences  
 COM 440 Senior Employment Practicum  
 COM 460 Media Relations II

**Total Credits** 22

## AVIATION SURVEY

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### Course Title

AS 120 Principles of Aeronautical Science

Three other aviation or technical survey courses in engineering, business, history, space, safety, legislation, flight, such as:

AS 131 Private Pilot Flight Laboratory  
 AS 254 Aviation Legislation  
 AS 309 Basic Aerodynamics  
 AS 320 Commuter Aviation  
 AT 300 Air Traffic Management  
 AVT 301 Introduction to Avionics  
 BA 322 Aviation Insurance  
 BA 324 Aviation Labor Relations  
 BA 390 Business Law  
 DET 111 Engineering Drawing  
 SF 210 Aerospace Safety  
 SP 110 Introduction to Space Flight  
 SS 130 History of Aviation  
 WX 201 Meteorology

**Total Credits** 12

## AVIATION/AEROSPACE AREA OF CONCENTRATION

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Students will choose a minor, or in consultation with the program chair, will take 15 hours in an aviation, science, or technology area. Examples: Flight, Air Traffic Control, Computer Science, Human Factors, Space Studies, Business Administration, Environmental Studies, Aviation Safety, Aviation Weather.

**Total Credits** 15

# Academic Programs at the Daytona Beach Campus

## COMMUNICATION ELECTIVES

Course	Title	
AS 385	Crew Resource Management	
BA 311	Marketing	
COM 351	Journalism	
COM 411	Publishing on the Internet	
DET 111	Engineering Drawing	
EGR 120	Graphical Communications	
HU 319	Advanced Speech	
HU 355	Creative Writing	
HU 361	Interpersonal Communication in the Work Group	
HU 370	Advanced English Grammar	
HU 375	The Nature of Language	
HU 420	Applied Cross Cultural Communication	
CE/COM 396, 397, 398	Cooperative Education	
<b>Total Credits</b>		<b>12</b>

## ARTISTIC EXPRESSION

Students will choose two upper-level courses that explore symbolic and metaphoric use of language. Such courses may include:

Course	Title	
HU 300	World Literature	
HU 305	Modern Literature	
HU 310	American Literature	
HU 315	Drama Seminar	
HU 320	Aesthetics of Visual and Musical Arts	
HU 325	Exploring Film	
<b>Total Credits</b>		<b>6</b>

## GLOBAL AND CULTURAL BACKGROUND

Students will choose two courses that cover interdisciplinary, global and cultural issues. Such courses may include:

Course	Title	
BA 335	International Business	
HU 330	Values and Ethics	
HU 335	Technology and Modern Civilization	
HU 341	World Philosophy	
HU 345	Comparative Religions	
HU 362	Communication and Organizational Culture	
HU 363	Communication and Society	
HU 420	Applied Cross-Cultural Communication	
PS 142	Introduction to Environmental Science	
SP 200	Planetary and Space Exploration	
SS 204	Geography	
SS 325	International Studies	
SS 327	Russian-American Relations	
WX 261	Aviation Climates of the World	

**Total Credits** 6

**OPEN ELECTIVES** 12

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**TOTAL DEGREE CREDITS** 121

# Academic Programs at the Daytona Beach Campus

## Engineering Physics

Bachelor of Science

The Bachelor of Science in Engineering Physics, offered only on the Daytona Beach campus, is designed to produce graduates who can operate at the interface between scientists and design engineers. Combining the skills of engineering and applied physics, this hybrid-engineering program focuses on the scientific challenges and planning associated with mission design and research related to the space environment. Because of the strong emphasis on fundamentals, the Engineering Physics program provides not only an excellent stepping stone into the space program, but also the flexibility to enter a broad variety of engineering applications and graduate programs.

The Engineering Physics degree program has a full engineering accreditation by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21204-4012, telephone: (410) 347-7700, and is administered by the Physical Sciences Department. This program supports the University's purpose "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." To achieve this, the following educational objectives are used to guide the program:

- *Mathematical, scientific and engineering methodologies.* Fundamental understanding and effective use of mathematical, scientific, and modern engineering tools in professional practice of engineering.
- *Engineering ethics and professional development.* Preparation for successful careers built upon

understanding of ethics and professionalism, good citizenship, and on the ability to be a life-long learner.

- *Communication and interdisciplinary teaming.* Demonstration of oral and written communication skills, and ability to work in teams across disciplines.
- *Technical skills and social responsibilities.* Development of the ability to identify, formulate and solve real-world technical problems, incorporating political, economic, and environmental considerations.

### ADMISSION REQUIREMENTS

To enter this program, students must have completed four years of high school science and mathematics, demonstrating a high level of competency. Successful candidates for this program will be prepared to enter Calculus I and Chemistry for Engineers.

### DEGREE REQUIREMENTS

The Bachelor of Science in Engineering Physics degree program requires 136 credit hours. The program can be completed in eight semesters and one summer term. The courses necessary to earn this degree are listed below.

Students should be aware that several courses in each academic year may have prerequisites and/or corequisites. Check the course descriptions at the back of this catalog before registering for classes to assure requisite sequencing.

#### FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills*	6
	Lower-level Humanities*	3
	Lower-level Social Science*	3

# Academic Programs at the Daytona Beach Campus

DET 111	Engineering Drawing	2
MA 241	Calculus and Analytic Geometry I	4
MA 242	Calculus and Analytic Geometry II	4
PS 109	Current Topics in Space Sciences	1
PS 140	Chemistry for Engineers	4
PS 141	Chemistry for Engineers Laboratory	1
PS 215	Physics I	3
PS 216	Physics Laboratory I	1
<b>Total Credits</b>		<b>32</b>

## SOPHOMORE YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
CS 223	Scientific Programming in C	3
ES 201	Statics	3
ES 202	Solid Mechanics	3
ES 204	Dynamics	3
HU	Humanities elective	3
MA 243	Calculus and Analytic Geometry III	4
MA 345	Differential Equations and Matrix Methods	4
PS 208	Physics II	3
PS 219	Physics III	3
PS 220	Physics Laboratory III	1
PS 290♦	Physics Laboratory Practicum	0
<b>Total Credits</b>		<b>33</b>

\*May be taken in the fourth or fifth semester.

## JUNIOR YEAR

Course	Title	Credits
EP 320	Electro Optical Engineering	3
EP 393	Spaceflight Dynamics	2
EP 394	Space Systems Engineering	3
EP 396	Introduction to Design I	1
EP 397	Introduction to Design II	1
ES 206	Fluid Mechanics	3
ES 305	Thermodynamics	3
ES 402	Electrical Engineering with Laboratory	3
MA 441	Advanced Engineering Mathematics I	3
MA 442	Advanced Engineering Mathematics II	3
PS 303	Modern Physics	3
PS 305	Modern Physics Laboratory	1
PS 320	Classical Mechanics	3
<b>Total Credits</b>		<b>32</b>

## SUMMER SESSION

(MUST be taken before seventh semester)

Course	Title	Credits
SS/PSY	Elective	3
ES 307	Engineering Materials Science with Laboratory	3
	Open elective	3
<b>Total Credits</b>		<b>9</b>

## SENIOR YEAR

Course	Title	Credits
	Engineering elective	3
HU	Upper-level Humanities elective	3
EP 391	Microcomputers and Electronic Instrumentation	3
EP 410	Space Physics	3
EP 440	Engineering Electricity and Magnetism	3
EP 455	Quantum Physics	3
EP 496	Space Systems Design I	2
EP 497	Space Systems Design II	3
MET 200	Machine Shop Laboratory	1
SS	Upper-level Social Sciences*	3
	Open elective	3
<b>Total Credits</b>		<b>30</b>
<b>TOTAL DEGREE CREDITS</b>		<b>136</b>

\*Embry-Riddle courses in the general education categories *Communication Theory and Skills*, *Humanities*, *Social Sciences* and *the Engineering Electives* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Engineering Physics vertical outline.

### COMMUNICATION THEORY AND SKILLS:

COM: 122, 219, 221, 222, 351, 360

### HUMANITIES:

LOWER-LEVEL: HU 140 - 146, 250

UPPER-LEVEL: HU 300-400 level

### SOCIAL SCIENCES:

LOWER-LEVEL: EC 200

PSY 220

SS 110, 120, 130, 204, 210

UPPER-LEVEL:

HF 300

PSY 350

SS 302, 305, 310, 320, 325, 331, 335, 340, 350, 352, 360

### ENGINEERING ELECTIVES:

AE/CEC/CIV 300-400 level

EP 395, 399, 400, 420, 495, 499

Students may take other HU/SS courses with the approval of the department chair/program coordinator.

# Academic Programs at the Daytona Beach Campus

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## *Human Factors Psychology*

Bachelor of Science

The Bachelor of Science degree in Human Factors Psychology emphasizes human behavior, ergonomics, and human capabilities. The program seeks to develop a student with the capacity to design, conduct, and apply human factors research to the design of simple and complex systems. The goal of the program is to educate and graduate professionals who are equipped for employment as human factors specialists or to continue their education in graduate school.

Human Factors Psychology is an applied discipline which develops knowledge concerning the abilities and limitations of humans to sense, store and process information, as well as to act. This knowledge is applied to the design, use, and maintenance of human/machine systems. Depending on its goals, the system is then optimized with respect to human performance. The environmental factors affecting system performance are recognized as important and are considered systematically. When relevant data are not available, it must be uncovered through research efforts. This requires considerable skill in experimental design and quantitative methodology. Students will receive training in the content and techniques of human factors - including statistical and quantitative procedures, experimental design, survey methods, computer techniques, and other research methodologies.

### DEGREE REQUIREMENTS

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The Bachelor of Science in Human Factors Psychology can be earned in eight semesters assuming appropriate background and full-time enrollment. Successful completion of a minimum of 122 credit hours is required.

Students are encouraged to choose a minor field of study. Minors that compliment Human Factors are Aviation Safety, Computer Science, Mathematics, Flight and Air Traffic Control. Most minors can be accommodated within 18 hours of open electives required in the program.

Students will be encouraged to have an applied practicum experience. This requirement may be fulfilled in several ways including Co-Ops, Internships, or working on an on-campus research team. Practicums provide opportunities to gain practical experience in "real world" settings. A practicum experience is highly regarded by employers and increases the student's employment potential once they have obtained their degree. Typically, students will engage in practical experience activities toward the end of the degree program so they can take maximum advantage of their undergraduate experience. In the event that a co-op or internship is not possible, this requirement can be filled by writing a senior thesis or taking one additional Human Factors or Psychology elective.

# Academic Programs at the Daytona Beach Campus

## GENERAL EDUCATION

Courses*	Credits
Communication Theory and Skills	9
Mathematics	6
Computer Science	3
Physical and Life Sciences (One course must include a laboratory)	6
Lower-level Humanities	3
Lower-level Social Sciences	6
HU/SS 300-400 level	3
<b>Total Credits</b>	<b>36</b>

Embry-Riddle courses in general education may be chosen from those listed below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories.

### COMMUNICATION THEORY AND SKILLS:

COM 122, 219, 221, 222, 351, 360, 364, 410, 411, 412

HU 143, 319, 351, 355, 361, 362, 363, 370, 375, 420

### MATHEMATICS:

MA 111, 112, 140, 142, 145, 211, 222, 241, 242, 243

### COMPUTER SCIENCE:

IT 109, CS 118, BA 120

### PHYSICAL AND LIFE SCIENCES:

PS 101 - 109, 142, 302, 304, 308, 309

### HUMANITIES:

LOWER-LEVEL: HU 140s series, 250

UPPER-LEVEL: HU 300 - 315, 320 - 345

### SOCIAL SCIENCES:

LOWER-LEVEL: PSY 220 (required) and 3 credits from the following: EC 200 - 211, SS 110 - 130, 204, 210

## CORE REQUIREMENTS \*\*

### ADVANCED COMMUNICATION

(For the Advanced Communication requirement, Human Factors majors are required to take two Advanced Communication classes for a total of six credits. This exists in addition to the nine credits (three classes) taken for the Communication General Education Requirement.)

UNIV 101

COM 360, 364, 410, 411, 415, 460

HU 361, 362, 363, 375, 420

**Total Credits** **7**

## COMPUTER SCIENCE/MATHEMATICS

(Six credit hours from MA or CS courses listed below. These courses are in addition to those taken as General Education)

MA 140, 142, 241 - 243, 320, 412

(other courses with approval of advisor), - or -

CEC 220, 222

CS 118, 125, 223, 225

IT All courses in the curriculum may be used.

**Total Credits** **6**

## PSYCHOLOGY AND HUMAN FACTORS

Course	Title	Credits
HF 300	Human Factors I: Principles and Fundamentals	3
HF 302	Human Factors II: Analytic Methods and Techniques	3
HF 305	Human Factors III: Ergonomics and Bioengineering	3
HF 400	Human Factors IV: System Design	3
PSY 225	Research Analysis in Psychology	4
PSY 300	Research Design in Psychology	3
PSY 305	Experimental Psychology	3
PSY 310	Sensation and Perception	3
PSY 315	Cognitive Psychology	3
PSY 335	Physiological Psychology	3
<b>Total Credits</b>		<b>31</b>

## AVIATION

Course	Title	Credits
AS 120	Principles of Aeronautical Science, - or -	
SP 110	Introduction to Space Flight, - or -	
FAA	Private Pilot Certificate	
<b>Total Credits</b>		<b>3</b>

## PRACTICUM

Course	Title	Credits
HF 490	Practicum in Human Factors Psychology	3
<b>TOTAL CORE CREDITS</b>		<b>49</b>

## SPECIFIED ELECTIVES

(18 Credit hours from the following:)

Course	Title	Credits
HF 310	Human-Computer Interaction	3
HF 315	Automation and Systems Issues in Aviation	3

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Daytona Beach Campus Academic Programs

HF 320	Processes Underlying Crew Resource Management	3
HF 325	Human Factors and System Safety	3
HF 330	Human Factors in Space	3
HF 335	Human Factors in Air Traffic Control	3
HF 405	System Performance Modeling	3
HF 410	Human Factors Engineering: Crew Station Design	3
HF 415	Human Factors in Simulation Systems	3
HF 420	Advanced Topics in Human-Computer Interaction	3
HF 425	Human Factors in Computer Systems Design	3
PSY 320	Aviation Psychology	3
PSY 325	Group Structure and Process	3
PSY 330	Learning and Motivation	3
PSY 340	Industrial-Organizational Psychology	3
PSY 345	Training and Development	3
PSY 350	Social Psychology	3
PSY 365	Abnormal Psychology	3
PSY 400	Introduction to Cognitive Science	3
PSY 405	History and Systems of Psychology	3
(Other courses with approval of advisor)		
<b>Open Elective Credits</b>		<b>18</b>
<b>Total Elective Credits</b>		<b>36</b>

**TOTAL DEGREE CREDITS 122**

## Suggested Program of Study

Students should be aware that several courses in each academic year may have pre-requisites and/or corequisites. Check the course descriptions at the back of this catalog before registering for classes to assure requisite sequencing.

### FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills*	6
	Computer Science*	3
	Lower-level Humanities*	3
	Mathematics*	6
	Physical and Life Sciences*	3
HF 300	Human Factors I: Principles and Fundamentals	3
HU	HU/PSY/SS 300-400 level*	3
PSY 220	Introduction to Psychology*	3
UNIV 101	College Success	1
<b>Total Credits</b>		<b>31</b>

### SOPHOMORE YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Social Sciences*	3
	Physical and Life Sciences*	3
CS/MA	Computer Science/Math**	3
HF 302	Human Factors II: Analytic Methods and Techniques	3
HU	Advanced Communication**	6
PSY 225	Research Analysis in Psychology	4
PSY 300	Research Design in Psychology	3
AS 120	Principles of Aeronautical Science, - or -	
SP 110	Introduction to Space Flight, - or -	
FAA	Private Pilot Certificate	3
<b>Total Credits</b>		<b>31</b>

### JUNIOR YEAR

Course	Title	Credits
CS/MA	Computer Science/Math**	3
HF 305	Human Factors III: Ergonomics and Bioengineering	3
HF/PSY	Specified electives	6
HF 490	Practicum	3
PSY 305	Experimental Psychology	3
PSY 310	Sensation and Perception	3
PSY 315	Cognitive Psychology	3
PSY 335	Physiological Psychology	3
	Open electives	3
<b>Total Credits</b>		<b>30</b>

### SENIOR YEAR

Course	Title	Credits
HF 400	Human Factors IV: System Design	3
HF/PSY	Specified electives	12
	Open electives	15
<b>Total Credits</b>		<b>30</b>
<b>TOTAL DEGREE CREDITS</b>		<b>122</b>

\* General Education Requirement

\*\* Degree Core Requirement

# Academic Programs at the Daytona Beach Campus

## *Human Factors and Systems Engineering*

Bachelor of Science  
Master of Human Factors and Systems Engineering

In conjunction with Bachelor of Science in Human Factors Psychology and the traditional Masters Degree in Human Factors and Systems Engineering, the Department of Human Factors and Systems also offers a Five-Year Masters Degree Program in Human Factors and Systems. The five-year Masters program offers upper-level undergraduates in the major a chance to begin their graduate work, while completing their Bachelor Degree program. The program is open to all undergraduate Human Factors students who meet eligibility requirements that include a CGPA of 3.2 and junior year standing. Student applications will be reviewed for the program and students accepted into the five-year Masters will be notified of such at the end of their junior year. During their senior undergraduate year, they will take two graduate classes (six credits) that will fulfill requirements for both Bachelors and Masters degree program. Five-year Masters students are required to complete 30 credits of graduate work to complete the degree program. Both the Bachelor of Science Degree in Human Factors Psychology and Masters Degree in Human Factors and Systems will be awarded when the student completes the Masters Degree program.

### GENERAL EDUCATION

Courses*	Credits
Communication Theory and Skills	9
Mathematics	6
Computer Science	3
Physical and Life Sciences (One course must include a laboratory)	6
Lower-level Humanities	3
Lower-level Social Sciences	6
HU/SS/PSY 300-400 level	3
<b>Total Credits</b>	<b>36</b>

Embry-Riddle courses in general education may be chosen from those listed below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories.

#### COMMUNICATION THEORY AND SKILLS:

COM 122, 219, 221, 222, 351, 360, 364, 410, 411, 412

HU 143, 319, 351, 355, 361, 362, 363, 370, 375, 420

#### MATHEMATICS:

MA 111, 112, 140, 142, 145, 211, 222, 241, 242, 243

#### COMPUTER SCIENCE:

IT 109, CS 118, BA 120

#### PHYSICAL AND LIFE SCIENCES:

PS 101 - 109, 142, 302, 304, 308, 309

#### HUMANITIES:

LOWER-LEVEL: HU 140s series, 250

UPPER-LEVEL: HU 300 - 315, 320 - 345

#### SOCIAL SCIENCES:

LOWER-LEVEL: PSY 220 (required) and 3 credits from the following: EC 200 - 211, SS 110 - 130, 204, 210

UPPER-LEVEL: SS 302 - 360

# Academic Programs at the Daytona Beach Campus

## CORE REQUIREMENTS \*\*

### ADVANCED COMMUNICATION

(For the Advanced Communication requirement, Human Factors majors are required to take two Advanced Communication classes for a total of six credits. This exists in addition to the nine credits (three classes) taken for the Communication General Education Requirement.)

COM 360, 364, 410, 411, 415, 460

HU 361, 362, 363, 375, 420

**Total Credits** 6

### COMPUTER SCIENCE/MATHEMATICS

(Six credit hours from MA or CS courses listed below. These courses are in addition to those taken as General Education)

MA 111 - 243

(other courses with approval of advisor), - or -

CS 115, 117, 118, 200 - 400 level. BA 120, 221

(Other courses with approval of advisor)

**Total Credits** 6

### PSYCHOLOGY AND HUMAN FACTORS

Course	Title	Credits
HF 300	Human Factors I: Principles and Fundamentals	3
HF 302	Human Factors II: Analytic Methods and Techniques	3
HF 305	Human Factors III: Ergonomics and Bioengineering	3
HF 400	Human Factors IV: System Design	3
PSY 225	Research Analysis in Psychology	4
PSY 300	Research Design in Psychology	3
PSY 305	Experimental Psychology	3
PSY 310	Sensation and Perception	3
PSY 315	Cognitive Psychology	3
PSY 335	Physiological Psychology	3
<b>Total Credits</b>		<b>31</b>

### AVIATION

Course	Title	Credits
AS 120	Principles of Aeronautical Science, - or -	
SP 110	Introduction to Space Flight, - or -	
FAA	Private Pilot Certificate	3

### PRACTICUM

Course	Title	Credits
HF 490	Practicum in Human Factors Psychology	3

## SPECIFIED ELECTIVES

Course	Title	Credits
HF 310	Human-Computer Interaction	3
HF 315	Automation and Systems Issues in Aviation	3
HF 320	Processes Underlying Crew Resource Management	3
HF 325	Human Factors and System Safety	3
HF 330	Human Factors in Space	3
HF 335	Human Factors in Air Traffic Control	3
HF 405	System Performance Modeling	3
HF 410	Human Factors Engineering: Crew Station Design	3
HF 415	Human Factors in Simulation Systems	3
HF 420	Advanced Topics in Human-Computer Interaction	3
HF 425	Human Factors in Computer Systems Design	3
PSY 320	Aviation Psychology	3
PSY 325	Group Structure and Process	3
PSY 330	Learning and Motivation	3
PSY 340	Industrial-Organizational Psychology	3
PSY 345	Training and Development	3
PSY 350	Social Psychology	3
PSY 365	Abnormal Psychology	3
PSY 400	Introduction to Cognitive Science	3
PSY 405	History and Systems of Psychology	3
(Other courses with approval of advisor)		
<b>Total Credits</b>		<b>15</b>

## GRADUATE SPECIFIED ELECTIVES

HFS 500	Systems Concepts	3
HFS 510	Research Design and Analysis I	3
HFS 610	Research Design and Analysis II	3
HFS 615	Sensation and Perception	3
HFS 620	Memory and Cognition	3
HFS 700	Thesis	6
HFS	Graduate elective***	12
	Open Electives	17
<b>Total Credits</b>		<b>50</b>
<b>TOTAL DEGREE CREDITS</b>		<b>150</b>

# Academic Programs at the Daytona Beach Campus

## Suggested Program of Study

Students should be aware that several courses in each academic year may have pre-requisites and/or corequisites. Check the course descriptions at the back of this catalog before registering for classes to assure requisite sequencing.

### FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills*	6
	Computer Science*	3
	Lower-level Humanities*	3
	HU/PSY/SS 300-400 level*	3
	Mathematics*	6
	Physical and Life Sciences*	3
HF 300	Human Factors I: Principles and Fundamentals	3
PSY 220	Introduction to Psychology*	3
UNIV 101	College Success	1
<b>Total Credits</b>		<b>31</b>

### SOPHOMORE YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Social Sciences*	3
	Physical and Life Sciences*	3
	Computer Science/Math**	3
HF 302	Human Factors II: Analytic Methods and Techniques	3
HU	Advanced Communication**	6
PSY 225	Research Analysis in Psychology	4
PSY 300	Research Design in Psychology	3
AS 120	Principles of Aeronautical Science, - or -	
SP 110	Introduction to Space Flight, - or -	
FAA	Private Pilot Certificate	3
<b>Total Credits</b>		<b>31</b>

### JUNIOR YEAR

Course	Title	Credits
	Computer Science/Math**	3
HF 305	Human Factors III: Ergonomics and Bioengineering	3
HF/PSY	Specified electives	9
PSY 305	Experimental Psychology	3
PSY 310	Sensation and Perception	3
PSY 315	Cognitive Psychology	3
PSY 335	Physiological Psychology	3
	Open elective	3
<b>Total Credits</b>		<b>30</b>

### SUMMER TERM

Course	Title	Credits
HF 490	Practicum♦	3

Student must spend the term performing co-op engaged in a human factors engineering activity (i.e., analysis, design, or test).

### SENIOR YEAR

Course	Title	Credits
HF 400	Human Factors IV: System Design	3
HFS 500	Systems Concepts	3
HFS 620	Memory and Cognition	3
HF/PSY	Specified electives	6
	Open electives	15
<b>Total Credits</b>		<b>30</b>

### GRADUATE-LEVEL STUDIES

Course	Title	Credits
HFS 510	Research Design and Analysis I	3
HFS 610	Research Design and Analysis II	3
HFS 615	Sensation and Perception	3
HFS 700	Thesis	6
HFS	Graduate elective***	12

**Total Credits** 27

**TOTAL DEGREE CREDITS** **152**

\* General Education Requirement

\*\* Degree Core Requirement

\*\*\* Please refer to the Graduate Catalog for a listing of available graduate-level electives.

♦The Practicum can be satisfied in three ways: internship/co-op, Senior Thesis, or a PSY/HF elective. This requirement should be completed prior to the student's final semester. The summer prior to the senior year is ideal for the internship/co-op.

# Academic Programs at the Daytona Beach Campus

## College of Aviation

*Dean:* Tim Brady

The College of Aviation integrates into one unit the departments of Aeronautical Science, Applied Aviation Sciences and the Flight Training Department, which is the flight laboratory component for the Aeronautical Science degree. This cohesive unit takes advantage of the various talents and expertise of faculty and staff within these related programs. By having these programs in one complex comprised of the Aviation Building, the Simulation Center, the Flight Laboratory, and the Maintenance complex, the College provides an atmosphere in which students are able to immerse themselves in an environment designed to provide them with the best resources available for the highest quality degree possible.

The Aviation Building, a strikingly beautiful state-of-the-art facility opened in 2002, houses the academic departments, classrooms, and laboratories including the Air Traffic Simulation laboratory, which provides a unique experience for students in various curricula. The Simulation Center contains the most advanced ab-initio aircraft simulation devices on the planet: aircraft-specific Cessna 172 and Piper Seminole Flight Training Devices, plus a CRJ FTD. Each of these devices exactly simulates the aircraft including the flying qualities and each has powerful, realistic visuals.

The College of Aviation complex also serves as a living laboratory that can research all elements of an air transportation system including dynamic modeling of air traffic control interfaces, security systems, and safety sys-

tems through its highly sophisticated aircraft and air traffic simulation. These simulations can then be incorporated into the real world where a fleet of airplanes can bring the simulation scenarios to life in an in-flight laboratory.

Academic degree programs offered through the College of Aviation include the following undergraduate degrees:

- Aeronautical Science (Professional Pilot)
- Aeronautics
- Aeronautical Systems Maintenance
- Aerospace Electronics
- Applied Meteorology
- Air Traffic Management
- Safety Science

In addition, the College offers the Master of Science degree in Aeronautics with specializations in Aerospace Education, Aerospace Management, Aviation Operations, Aviation Safety Systems, and Human Factors.

The College of Aviation has an enrollment of approximately 1,800 students, many of whom are in the Aeronautical Science degree which has the largest enrollment of any similar undergraduate degree program in the nation. The College has a fleet of 75 aircraft, including Cessna C-172s, Piper PA-28R Arrows, and Piper PA-44 Seminoles.

Embry-Riddle Aeronautical University has positioned the College of Aviation to serve its students with distinction while investigating and developing new education and programs for pilots, air traffic managers, meteorologists, and safety and security professionals of the new century.

# Academic Programs at the Daytona Beach Campus

## *Aeronautical Science (Professional Pilot)*

### *Associates Degree*

*Airway Science*

### *Bachelor of Science*

*Airline Pilot  
Commercial Pilot  
Military Pilot*

## *Aeronautical Science*

### **Bachelor of Science**

The Aeronautical Science degree program blends flight training with rigorous academic study in a unique manner that provides a strong foundation for a career as a leader in the aviation industry including airlines, corporate and commercial aviation, or the military. This approach to aviation education gives the students an added value over traditional flight training programs by focusing on the skills and knowledge required by today's industry. The curriculum provides for skills in mathematics, physics, communications and aeronautics, including FAA certification as a multi-engine instrument rated pilot. The last two years of matriculation include extensive professional level Aeronautical Science and flight courses that prepare the graduate for a career as a professional pilot, including airline flight crew operations in multi-crewmember jet transport aircraft. Critical thinking and problem solving skills are developed via computer simulations in aircraft performance, navigation, and aircraft systems operation. Effective resource management, human factors, and safety awareness are constantly emphasized throughout the curriculum

### **DEGREE REQUIREMENTS**

The Bachelor of Science degree in Aeronautical Science may be attained in eight semesters. To earn the degree, successful completion of a minimum of 120 credit hours is required. The purpose of the Aeronautical Science degree program is to prepare the graduate for a productive career as a professional pilot, and responsible citizenship in support of aviation and aerospace industries. Upon completion of the curriculum, the student will possess an FAA Commercial Pilot Certificate with multi-engine and instrument ratings. Optional advanced flight training includes upset training, certification as a flight instructor and instrument flight instructor, and training as a flight crewmember in a jet transport aircraft. Students pursuing the Aeronautical Science degree will select one of three specializations after matriculation. Students entering under this catalog may select from the Airline Pilot, Commercial Pilot, or Military Pilot specialization. Please see section concerning the restrictions imposed by the Aviation Transportation and Security Act. All students must complete the general education courses, Aeronautical Science core courses, and the courses required to complete one (1) specialization in order to complete the requirements for the Aeronautical Science degree.

# Academic Programs at the Daytona Beach Campus

## BACHELOR OF SCIENCE DEGREE IN AERONAUTICAL SCIENCE

	Hours
GENERAL EDUCATION	39
AERONAUTICAL SCIENCE CORE	55
SPECIALTY COURSES	<u>26</u>
<b>TOTAL DEGREE CREDITS</b>	<b>120</b>

## UNIVERSITY GENERAL EDUCATION

Course	Title	Credits
	Communication Theory and Skills*	9
	Lower-level Humanities*	3
	Lower-level Social Science*	6
	Upper-level Humanities or Social Sciences*	3
	Computer Science elective*	3
	Management elective*	3
MA 111	College Mathematics for Aviation I	3
MA 112	College Mathematics for Aviation II	3
PS 103	Technical Physics I with Laboratory	3
PS 104	Technical Physics II with Laboratory	3
<b>Total Credits</b>		<b>39</b>

## AERONAUTICAL SCIENCE CORE COURSES

Course	Title	Credits
AS 132	Basic Aeronautics I	3
AS 133	Basic Aeronautics II	3
AS 232	Intermediate Aeronautics	3
AS 272	Advanced Aeronautics	2
AS 309	Aerodynamics	3
AS 310	Aircraft Performance	3
AS 311	Aircraft Engines-Turbine	3
AS 340	Instructional Design in Aviation - or -	
FA 417	Flight Instructor Rating**	3
AS 356	Systems and Components	3
AS 357	Flight Physiology	3
AS 358	Advanced Avionics	3
AS 386	Domestic and International Navigation	4
AS 387	Crew Resource Management	3
AS 408	Flight Safety	3
AS 420	Flight Technique Analysis	3
FA 132	Commercial Pilot Flight I**	1

FA 133	Commercial Pilot Flight II**	1
FA 232	Commercial Pilot Flight III**	1
FA 272	Commercial Pilot Flight IV**	1
WX 201	Meteorology I	3
WX 352	Meteorology II	<u>3</u>
<b>Total Credits</b>		<b>55</b>

## AIRLINE PILOT SPECIALTY

Course	Title	Credits
AS 254	Aviation Legislations - or -	
AS 405	Aviation Law	3
AS 380	Pilot Career Planning and Interviewing	1
AS 402	Airline Pilot Operation - or -	
AS 410	Airline Dispatch Operations	3
AS 411	Jet Transport Systems	3
AS 426	Electronic Flight Management Systems	2
FA 420	Airline Flight Crew Techniques and Procedures	2
	Electives	<u>12</u>
<b>Total Credits</b>		<b>26</b>

## COMMERCIAL PILOT SPECIALTY

Course	Title	Credits
AS 254	Aviation Legislation - or -	
AS 405	Aviation Law	3
AS 380	Pilot Career Planning and Interviewing	1
BA/STG	300/400 level	3
	Minor	9-18
	Electives	<u>1-10</u>
<b>Total Credits</b>		<b>26</b>

## MILITARY PILOT SPECIALTY

Course	Title	Credits
AS 426	Electronic Flight Management Systems	2
SS 305	American Military History - or -	
SS 340	American Foreign Policy	3
	ROTC	16
	Electives	<u>5</u>
<b>Total Credits</b>		<b>26</b>

**TOTAL DEGREE CREDITS FOR ALL SPECIALTIES** 120

# Academic Programs at the Daytona Beach Campus

## Suggested Program of Study

### Airline Pilot Specialty

The Airline Pilot Specialty is designed for students whose goal is to fly for a scheduled airline. The academic and flight courses are designed to provide exposure to procedures and operations consistent with those found at air carriers. The upper-level AS courses are very technical and provide the foundation for the capstone flight courses that are designed to be consistent with current airline transport pilot requirements.

#### FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Computer Science elective*	3
	Lower-level Humanities*	3
AS 132	Basic Aeronautics I	3
AS 133	Basic Aeronautics II	3
FA 132	Commercial Pilot Flight I**	1
FA 133	Commercial Pilot Flight II**	1
MA 111	College Mathematics for Aviation I	3
MA 112	College Mathematics for Aviation II	3
PS 103	Technical Physics I with Laboratory	3
WX 201	Meteorology I	3
<b>Total Credits</b>		<b>29</b>

#### SOPHOMORE YEAR

Course	Title	Credits
	Communication Theory and Skills*	6
	Lower-level Social Science*	6
	Management elective*	3
AS 232	Intermediate Aeronautics	3
AS 309	Aerodynamics	3
AS 357	Flight Physiology	3
FA 232	Commercial Pilot Flight III**	1
PS 104	Technical Physics II with Laboratory	3
WX 352	Meteorology II	3
<b>Total Credits</b>		<b>31</b>

#### JUNIOR YEAR

Course	Title	Credits
	Upper-level HU/SS elective*	3
AS 254	Aviation Legislation - or -	3
AS 405	Aviation Law	3
AS 272	Advanced Aeronautics	2
AS 310	Aircraft Performance	3
AS 311	Aircraft Engines - Turbine	3

AS 356	Aircraft Systems and Components	3
AS 358	Advanced Avionics	3
AS 380	Pilot Career Planning and Interviewing Techniques	1
AS 386	Domestic and International Navigation	4
AS 387	Crew Resource Management	3
FA 272	Commercial Pilot Flight IV**	1
<b>Total Credits</b>		<b>29</b>

#### SENIOR YEAR

Course	Title	Credits
AS 340	Instructional Design in Aviation - or -	
FA 417	Flight Instructor Rating**	3
AS 402	Airline Pilot Operations - or -	
AS 410	Airline Dispatch Operations	3
AS 408	Flight Safety	3
AS 411	Jet Transport Systems	3
AS 420	Flight Technique Analysis	3
AS 426	Electronic Flight Management Systems	2
FA 420	Airline Flight Crew Techniques and Procedures	2
	Electives	12
<b>Total Credits</b>		<b>31</b>
<b>TOTAL DEGREE CREDITS</b>		<b>120</b>

### Commercial Pilot Specialty

The Commercial Pilot Specialty is designed for pilots with career interests requiring a more flexible degree program. The Aeronautical Science core course integrity is maintained, while allowing greater opportunity for the selection of courses to meet the needs of corporate and other segments of the aviation industry not specifically addressed by the Airline Pilot or Military Pilot specialties. One minor must be completed to meet the degree requirements of this specialization.

#### FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Computer Science elective*	3
	Lower-level Humanities*	3
AS 132	Basic Aeronautics I	3
AS 133	Basic Aeronautics II	3
FA 132	Commercial Pilot Flight I**	1
FA 133	Commercial Pilot Flight II**	1
MA 111	College Mathematics for Aviation I	3
MA 112	College Mathematics for Aviation II	3

# Academic Programs at the Daytona Beach Campus

PS 103	Technical Physics I with Laboratory	3
WX 201	Meteorology	3
<b>Total Credits</b>		<b>29</b>

## SOPHOMORE YEAR

Course	Title	Credits
	Communication Theory and Skills*	6
	Lower-level Social Sciences*	6
	Management elective*	3
AS 232	Intermediate Aeronautics	3
AS 309	Aerodynamics	3
AS 357	Flight Physiology	3
FA 232	Commercial Pilot Flight III**	1
PS 104	Technical Physics II with Laboratory	3
WX 352	Meteorology II	3
<b>Total Credits</b>		<b>31</b>

## JUNIOR YEAR

Course	Title	Credits
	Upper-level HU/SS elective*	3
AS 254	Aviation Legislation - or -	
AS 405	Aviation Law	3
AS 272	Advanced Aeronautics	2
AS 310	Aircraft Performance	3
AS 311	Aircraft Engines-Turbine	3
AS 356	Aircraft Systems and Components	3
AS 358	Advanced Avionics	3
AS 380	Pilot Career Planning and Interviewing Techniques	1
AS 386	Domestic and International Navigation	4
AS 387	Crew Resource Management	3
FA 272	Commercial Pilot IV**	1
<b>Total Credits</b>		<b>29</b>

## SENIOR YEAR

Course	Title	Credits
AS 340	Instructional Design in Aviation - or -	
FA 417	Flight Instructor Rating**	3
AS 408	Flight Safety	3
AS 420	Flight Technique Analysis	3
BA/STG	300/400 level	3
	Minor	9-18
	Electives	1-10
<b>Total Credits</b>		<b>31</b>
<b>TOTAL DEGREE CREDITS</b>		<b>120</b>

## Military Pilot Specialty

The Military Pilot Specialty is designed for pilots with career interests in the military. This specialty contains the core Aeronautical Science courses and includes other courses optimized for a career as a pilot with the mili-

tary. The Aeronautical Science degree, Military Pilot specialty is not a part of any ROTC program at Embry-Riddle but is designed for optimum utilization of the credit earned in ROTC.

## FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Computer Science elective*	3
	Lower-level Humanities*	3
AS 132	Basic Aeronautics I	3
AS 133	Basic Aeronautics II	3
FA 132	Commercial Pilot I**	1
FA 133	Commercial Pilot II**	1
MA 111	College Mathematics for Aviation I	3
MA 112	College Mathematics for Aviation II	3
PS 103	Technical Physics I with Laboratory	3
WX 201	Meteorology I	3
	ROTC	2
<b>Total Credits</b>		<b>31</b>

## SOPHOMORE YEAR

Course	Title	Credits
	Communication Theory and Skills*	6
	Lower-level Social Science*	6
AS 232	Intermediate Aeronautics	3
AS 309	Aerodynamics	3
AS 357	Flight Physiology	3
FA 232	Commercial Pilot Flight III**	1
PS 104	Technical Physics II with Laboratory	3
	ROTC	2
WX 352	Meteorology II	3
<b>Total Credits</b>		<b>30</b>

## JUNIOR YEAR

Course	Title	Credits
	Management elective*	3
AS 272	Advanced Aeronautics	2
AS 310	Aircraft Performance	3
AS 311	Aircraft Turbine Engines	3
AS 356	Aircraft Systems and Components	3
AS 358	Advanced Avionics	3
AS 386	Domestic and International Navigation	4
AS 387	Crew Resource Management	3
FA 272	Commercial Pilot IV**	1
	ROTC	6
<b>Total Credits</b>		<b>31</b>

# Academic Programs at the Daytona Beach Campus

## SENIOR YEAR

Course	Title	Credits
	Upper-level HU/SS elective*	3
AS 340	Instructional Design in Aviation - or -	
FA 417	Flight Instructor Rating**	3
AS 408	Flight Safety	3
AS 420	Flight Technique Analysis	3
AS 426	Electronic Flight Management Systems	2
SS 305	American Military History - or -	
SS 340	American Foreign Policy	3
	Elective	5
	ROTC	6
<b>Total Credits</b>		<b>28</b>
<b>TOTAL DEGREE CREDITS</b>		<b>120</b>

## AERONAUTICAL SCIENCE NOTES

\* Embry-Riddle courses in the general education category Communication Theory and Skills, Computer Science, Humanities, Social Sciences and Management may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified in the Aeronautical Science vertical outline.

### COMMUNICATION THEORY AND SKILLS:

COM: 122, 219, and 221, 222, or 410

### COMPUTER SCIENCE:

IT 109 or CS 117 or 118

### HUMANITIES/SOCIAL SCIENCE:

LOWER-LEVEL: HU 140, 141, 142, 143, 144, 145, 146

LOWER-LEVEL: PSY 220 and EC 200, SS 110, 120, 130, 204 or 210

UPPER-LEVEL: HU/SS 300-400 level or HF 300 or PSY 350

### MANAGEMENT:

BA 201

\*\* Flight education is a continuous process that normally begins sometime during the student's first year of attendance and will progress until culminating in a multi-engine commercial certificate with an instrument rating. The curriculum is designed to allow students to meet core objectives in a reasonable amount of time.

Various factors influence students' progress. These factors include student academic preparation, student availability, student determination and dedication, the availability of aircraft and instructor pilots and the cooperation of the weather. Consequently, some students will finish before others. After completing the core curriculum, students may take an additional semester or more to acquire additional, advanced certificates and ratings, including those for single-engine

commercial, certified flight instructor airplane and instrument and/or they may enroll in the Airline Flight Crew Simulation course.

After matriculating, all remaining FA courses required for the Aeronautical Science degree must be completed at Embry-Riddle or other CAA accredited college/university. Students who have begun training on an FAA certificate course prior to enrolling at Embry-Riddle may obtain written permission to complete that ONE course outside of Embry Riddle. Courses for all other FAA certificates required for the Aeronautical Science degree must be completed at Embry-Riddle or other CAA accredited college or university. All students enrolled in the Aeronautical Science degree program must complete at least one flight course successfully at Embry-Riddle. All Embry-Riddle students must obtain written permission in advance for flight training outside of Embry-Riddle. See the Aeronautical Science Department to obtain an Off Campus Flight Authorization Request form. All details regarding course and credit requirements and the approval process will be provided upon application. Students who have acquired FAA pilot certificates prior to enrolling at Embry-Riddle will receive credit for the appropriate courses and placed in the next sequential course in the degree program. See Aeronautical Science department concerning exact credit.

Cooperative Education credits may be used as open electives.

## Airway Science

Associate

(The Associate Degree in Airway Science is closed to new students.)

## DEGREE REQUIREMENTS

The Associate Degree in Airway Science is intended for those pursuing aviation careers where full professional preparation and a baccalaureate degree are not necessary. Normally, the required 63 credit hours can be completed in four semesters. This program includes qualification for the FAA multi-engine commercial pilot certificate with an instrument-airplane rating and the flight instructor certificate with airplane single-engine and instrument airplane ratings.

# Academic Programs at the Daytona Beach Campus

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## FIRST YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Computer Science elective*	3
AS 132	Basic Aeronautics I	3
AS 133	Basic Aeronautics II	3
AS 232	Intermediate Aeronautics	3
AS 254	Aviation Legislation	3
FA 132	Commercial Pilot Flight I	1
FA 133	Commercial Pilot Flight II	1
FA 232	Commercial Pilot Flight III	1
MA 111	College Mathematics for Aviation I	3
MA 112	College Mathematics for Aviation II	3
PS 103	Technical Physics I with Laboratory	3
WX 201	Meteorology	3
<b>Total Credits</b>		<b>33</b>

## SECOND YEAR

Course	Title	Credits
	Communication Theory and Skills*	6
	Lower-level Humanities*	3
	Lower-level Social Sciences*	6
AS 272	Advanced Aeronautics	2
AS 309	Aerodynamics	3
AS 357	Flight Physiology	3
FA 272	Commercial Pilot Flight IV	1
FA 417	Flight Instructor Rating**	3
PS 104	Technical Physics II with Laboratory	3
<b>Total Credits</b>		<b>30</b>
<b>TOTAL DEGREE CREDITS</b>		<b>63</b>

## AIRWAY SCIENCE NOTES:

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\*Embry-Riddle courses in the general education categories *Communication Theory and Skills*, *Computer Science*, *Humanities*, and *Social Sciences*, may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Airway Science vertical outline.

### COMMUNICATION THEORY AND SKILLS:

COM: 122, 219, 221, 222, 410

HU: 143, 362, 420

### COMPUTER SCIENCE:

CS 118, IT 109

### HUMANITIES:

LOWER-LEVEL:

HU 140, 141, 142, 143, 144, 145, 146, 250

### SOCIAL SCIENCES:

LOWER-LEVEL:

EC 200; PSY 220

\*\* Requires CASEL Certificate.

# Academic Programs at the Daytona Beach Campus

## AIRCRAFT DISPATCHER CERTIFICATION PROGRAM

For the student interested in airline flight operations management, Embry-Riddle offers a program to prepare the student for Aircraft Dispatcher certification testing. The FAA awards the Aircraft Dispatcher Airman Certificate to graduates of the approved program after the successful completion of a standardized written examination and a practical test.

Licensed dispatchers are employed by airlines to manage the ground-based tasks vital to a successful airline flight. Dispatchers share responsibility with the captain for preflight planning and preparation of the dispatch release, and they are included in the decision loop on equipment failures, weather variations, or traffic delays for monitoring the progress of the flight, issuing safety-of-flight information to the crew, and canceling or redispatching the flight.

To carry out these tasks properly, dispatchers must be knowledgeable in aircraft performance capabilities, meteorology, operating regulations, air traffic control, and instrument flight procedures. They must also be able to make sound decisions that incorporate the company's economic and scheduling considerations.

## CERTIFICATION REQUIREMENTS

The Aircraft Dispatcher certification program is available at the Daytona Beach campus. Dispatcher preparation is based on the successful completion of the following Aeronautical Science courses and the applicable prerequisites.

Course	Title	Credits
AS 232	Intermediate Aeronautics	3
AS 272	Advanced Aeronautics	2
AS 310	Aircraft Performance	3
AT 300	ATC in the National Aerospace System	3
WX 201	Meteorology I	3
WX 352	Meteorology II	3
AS 410*	Airline Dispatch Operations	3
<b>Total Credits</b>		<b>20</b>

\*AS 410 serves as the capstone course to the Aircraft Dispatcher program. Students cannot enroll in this class until they have completed and passed all other required Aeronautical Science courses for the Aircraft Dispatcher Program. Students must be 21 years of age to take this examination.

This program is offered in the pursuit of a degree and not as separate training. Qualification for FAA testing normally requires a minimum of six semesters of instruction.

To receive credit for any of the courses listed above toward the Aircraft Dispatcher certification program, the student must sign up in each required course, maintain a record of 100 percent attendance throughout each course and obtain a grade of at least 70 percent.

For more information, contact the Aeronautical Science Department.

# Academic Programs at the Daytona Beach Campus

## *Aeronautical Systems Maintenance*

Bachelor of Science

At the heart of every flight of every commercial, private, or military aircraft is the work of the professional aviation maintenance expert. Without the devotion of these very special people, the air travel system would cease to function. The demand for degreed aircraft maintenance specialists in the aviation/aerospace world has never been greater than it is today. The Aeronautical Systems Maintenance program (ASM) at Embry-Riddle produces these aviation professionals, the best in the world.

The Aeronautical Systems Maintenance degree is composed of 120 credit hours, which includes credit for the Airframe and Powerplant (A&P) certificate. The degree has several options called areas of concentration (AOC). You can choose AOC's in Maintenance

Management, Aerospace Electronics, Flight, or Information Technology. Here is a distribution of the credits for each of those AOC's:

The Maintenance Management AOC is optimized for those who wish to use their maintenance skills as a platform for progressing in an aviation business and management. The Flight AOC is for those students who wish to combine a maintenance background with those qualifications of a commercial pilot. The Information Technology AOC is designed for the student who is interested in the application of computer technology to aviation technical support operations. The Aerospace Electronics AOC is for students who have an interest in combining their aerospace electronics skills with the A&P certificate or a minor course of study that supports their career objectives.

	Maintenance Management	Aerospace Electronics	Flight	Information Technology
General Education Core	36	36	36	36
Common Core	12	12	12	12
Area of Concentration	42	47	42	42
A&P Certificate*	24	***	24	24
Open Electives**	6	****	6	6
Total	120	120	120	120

\* Forty-eight hours of credit will be awarded for the A&P certificate and entered on the student's transcript. Up to twenty-four of those credit hours may be applied toward this degree.

\*\* Open electives must be taken at the 300-400 level for some AOC's to met the upper-level requirement.

\*\*\* Any minor or the A&P certificate can be used to satisfy this requirement for the Aerospace Electronics track only.

\*\*\*\* The balance of the credit hours to be used as electives. A total of 40 upper-level credits are required to meet graduate requirements.

# Academic Programs at the Daytona Beach Campus

The A&P is required for graduation from the program. There are several methodologies for attaining the A&P:

1. You can acquire the A&P from any provider prior to entering the academic program.
2. You can begin the academic program, then take a leave of absence to acquire the A&P certificate from any provider, or attend Embry-Riddle's own Maintenance Training program, under the procedures established by the College of Aviation.

BA 312	Managerial Accounting	3
BA 317	Organizational Behavior	3
BA 320	Business Information Systems	3
BA 324	Aviation Labor Relations	3
BA 325	Social Responsibility and Ethics in Management	3
BA 390	Business Law	3
BA 419	Aviation Maintenance Management	3
BA 420	Management of Production and Operations	3
BA 422	Life Cycle Analysis for Systems and Programs in Aviation/Aerospace	3
BA 424	Project Management in Aviation Operations	3
MA 222	Business Statistics	3
<b>Total Credits</b>		<b>42</b>

## General Education Core

Course	Title	Credits
	Communications Theory and Skills	9
HU	Lower-level Humanities	3
SS	Lower-level Social Science	6
HU/SS	Upper-level Humanities or Social Science	3
CS	Computer Science elective	3
MA 111	College Mathematics for Aviation I	3
MA 112	College Mathematics for Aviation II	3
PS 103	Technical Physics I	3
PS 104	Technical Physics II	3
<b>Total Credits</b>		<b>36</b>

## Common Core Curriculum

Course	Title	Credits
BA 201	Principles of Management	3
BA 314	Human Resource Management	3
HF 300	Human Factors I: Principles and Fundamentals	3
SF 201	Introduction to Health, Occupational and Transportation Safety	3
<b>Total Credits</b>		<b>12</b>

## Maintenance Management Area of Concentration

Course	Title	Credits
BA 210	Financial Accounting	3
BA 221	Advanced Computer Based Systems	3
BA 311	Marketing	3

## Aerospace Electronics Area of Concentration

Course	Title	Credits
AEL 311	Airborne Pulse Systems	3
AEL 312	Airborne Communications and Navigation Systems	3
AEL 313	Airborne Electronics Maintenance Operations	2
AEL 401	Airborne Surveillance Systems	3
AEL 402	Airborne Electronics Systems Integration	3
AEL 403	Advanced Space and Airborne Electronics Systems	3
AEL 404	Airborne Electronics Maintenance Operations II	2
DET 111	Engineering Drawing	2
EL 107	Direct and Alternating Current Fundamentals and Circuit Analysis	4
EL 108	Direct and Alternating Current Laboratory	1
EL 203	Microelectronics Fundamentals and Circuit Analysis	4
EL 204	Microelectronics Laboratory	1
EL 212	Digital Circuit and Systems Analysis	4
EL 213	Digital Circuits Laboratory	1
EL 301	Electronic Communication Systems	3
EL 302	Electronic Communications Laboratory	1
EL 303	Pulse Components and Circuit Applications	2
EL 304	Pulse Circuits Laboratory	1
EL 307	Microprocessor Systems	3
EL 308	Microprocessor Systems Laboratory	1
<b>Total Credits</b>		<b>47</b>

# Academic Programs at the Daytona Beach Campus

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## Flight Area of Concentration

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Course	Title	Credits
AS 132	Basic Aeronautics I	3
AS 133	Basic Aeronautics II	3
AS 232	Intermediate Aeronautics	3
AS 254	Aviation Legislation	3
AS 272	Advanced Aeronautics	2
AS 309	Aerodynamics	3
AS 310	Aircraft Performance	3
AS 357	Flight Physiology	3
AS 387	Crew Resource Management	3
AT 300	Air Traffic Management	3
FA 132	Commercial Pilot Flight I	1
FA 133	Commercial Pilot Flight II	1
FA 232	Commercial Pilot Flight III	1
FA 272	Commercial Pilot Flight IV	1
SF 320	Human Factors in Aviation Safety	3
SF 445	System Safety in Aviation	3
WX 201	Meteorology I	3
<b>Total Credits</b>		<b>42</b>

## Information Technology Area of Concentration

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Course	Title	Credits
BA 221	Advanced Computer Based Systems	3
BA 317	Organizational Behavior	3
BA 320	Business Information Systems	3
COM 411	Publishing on the Internet	3
CS 118	Fundamentals of Computer Programming	3
CS 223	Scientific Programming in C	3
HF 310	Human-Computer Interaction	3
IT 210	Web Page Authoring and Design	3
IT 220	Introduction to Networking	3
IT 310	Web Site Management	3
IT 320	Network Configurations	3
IT 330	Programming for the Web	3
IT 340	WAN Theory and Design	3
	Upper-division elective	3
<b>Total Credits</b>		<b>42</b>

# Academic Programs at the Daytona Beach Campus

## Aeronautics (Non-Traditional Students)

### Associate of Science

(The Associate Degree in Aeronautics is closed to new students.)

### Bachelor of Science

The Aeronautics Degree was conceived and developed specifically for people who work or have worked in aviation careers. The curriculum was designed to build upon the aviation knowledge and skill students bring with them from their training and experience. The combination of a student's aviation learning, the required and elective courses in Aeronautical Science, Business, Computer Science, Economics, Communication, Humanities, Social Science, Mathematics, Physical Science, along with professional development prepare graduates for career growth and increased responsibility.

### AVIATION AREA OF CONCENTRATION

The Aviation Area of Concentration is the degree component where credit for prior aviation learning is housed. Minimum and maximum amounts of credit are established for the Associate and Baccalaureate degrees.

#### Associate Degree:

Minimum	12 semester hours
Maximum	18 semester hours

#### Bachelor Degree:

Minimum	18 semester hours
Maximum	36 semester hours

Shortages in the required minimum amount of credit can be made up by taking Embry-Riddle courses in aviation-related disciplines. Sources of prior learning credit include the following:

1. Transfer credit earned at regionally accredited colleges and universities.
2. The recommendations published by the American Council on Education for U.S. military training and experience and training conducted by other government agencies and private organizations.
3. The University has also established prior learning credit for certain aviation licenses and ratings.

### EVIDENCE OF PRIOR AVIATION LEARNING

Applicants who qualify for admission to and matriculate in the degree program may be eligible for credit for prior learning.

Applicants must be able to prove competence in an aviation occupation with authentic documentary evidence. Training and experience in closely related occupations can be combined.

Just as official transcripts are required to transfer credit from one university to another, original or authenticated documentation of prior learning from professional training and experience must be presented to qualify for award of Aviation Area of Concentration credit. Documentary evidence must be from objective third-party sources and clearly describe the applicant's professional training, duties, and achievements in detail.

# Academic Programs at the Daytona Beach Campus

## DUPLICATE CREDIT

Many Embry-Riddle courses are designed to teach the same skills and knowledge that Aeronautics students have acquired through experience and training. Students who complete courses in the same aviation specialty for which they were granted Aviation Area of Concentration credit would be duplicating coverage of the same subject matter. Credit for completion of such courses will not be applied to degree requirements.

Credit for prior learning granted in the Aeronautics degree program is not transferable to any other Embry-Riddle Degree program.

## AERONAUTICS CURRICULUM

The curriculum to be followed by each student depends on the amount of Aviation Area of Concentration credit granted and whether the objective is the associate or bachelors degree.

### CURRICULUM:

#### ASSOCIATE OF SCIENCE IN AERONAUTICS

**Aviation Area of Concentration** 12-18

Make up shortages with non-duplicating courses from the following disciplines: Aeronautical Science, Aviation Maintenance, Air Traffic Control, Safety, and SS 130.

**Communication Theory and Skills\*** 9

**Humanities/Social Sciences\*** 6

Lower-level Humanities 3

Lower-level Social Sciences 3

**Computer Science** 3

IT 109 Introduction to Computers and Applications, - or -

BA 120 Introduction to Computer Based Systems, - or -  
Computer Science elective 3

**Mathematics** 6

College Algebra or higher 3

MA 211 Statistics with Aviation Applications, - or -

MA 222 Business Statistics 3

**Physical Sciences** 3

PS 102 Explorations in Physics, - or -

PS 103 Technical Physics I 3

**Program Support** 9

AS 254 Aviation Legislation 3

BA 201 Principles of Management 3

EC 211 Macroeconomics♦ 3

**Open Electives (any discipline)** 6-12

**TOTAL DEGREE CREDITS** 60

♦ Either EC 210 or EC 211 satisfies the requirements of the associate degree curriculum.

#### BACHELOR OF SCIENCE IN AERONAUTICS

**Aviation Area of Concentration** 18-36

Make up shortages with non-duplicating courses from the following disciplines: Aeronautical Science, Aviation Maintenance, Air Traffic Control, Safety, and SS 130.

**Communication Theory and Skills\*** 9

**Humanities/Social Sciences\*** 9

Lower-level Humanities elective 3

Lower-level Social Science elective 3

Upper-level HU or SS elective 3

**Computer Science** 3

IT 109 Introduction to Computers and Applications, - or -

BA 120 Introduction to Computer Based Systems 3

**Mathematics** 6

College Algebra or higher 3

MA 211 Statistics with Aviation Applications, - or -

MA 222 Business Statistics 3

**Physical Sciences** 6

PS 102 Explorations in Physics, - or -

PS 103 Technical Physics I 3

PS Elective 3

(Physical Science, chemistry, physics, earth science, astronomy, geology, biology, zoology, or physiology courses)  
One course must include a laboratory.

**Program Support** 18

AS 254 Aviation Legislation 3

AS 405 Aviation Law 3

BA 201 Principles of Management 3

BA 210 Financial Accounting 3

EC 210 Microeconomics 3

EC 211 Macroeconomics 3

# Academic Programs at the Daytona Beach Campus

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**Professional Development Electives** 21

Select from the list of Upper-Division courses in: Aeronautical Science, Air Traffic Control, Business, Economics, Safety of Flight.

**Upper-Division Electives** 12

**Open Electives (any discipline)** 0-18

**TOTAL DEGREE CREDITS** 120

\*Embry-Riddle courses in the general education categories of *Communication Theory and Skills*, *Humanities*, and *Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified in the Aeronautics vertical outline. Other courses may also be used with permission of the Undergraduate Program Coordinator.

COMMUNICATION THEORY AND SKILLS:

COM 122, 219, 221, 222

HUMANITIES:

HU 140 to HU 146

SOCIAL SCIENCES:

LOWER-LEVEL: 100 - 200 level

UPPER-LEVEL: 300 - 400 level

HF 300, PSY 350

PROFESSIONAL DEVELOPMENT ELECTIVES:

AS 305, AS 309, AS 310, AS 311, AS 340, AS 357, AS 402, AS 409, AS 410, AS 412

AT 300

BA 308, BA 311, BA 312, BA 314, BA 317, BA 320, BA 322, BA 324, BA 325, BA 331, BA 332, BA 390, BA 405, BA 408, BA 410, BA 415, BA 419, BA 420, BA 421, BA 425, BA 426, BA 427

EC 315

SF 320, SF 330, SF 335, SF 345, SF 435, SF 445

WX 352

Dependent on the amount of upper-level Aviation Area of Concentration credit applied, some of the open or humanities/social science electives in the B.S. degree may have to be 300-400 level courses to satisfy the graduation requirement of 39 credits of upper-level courses.

Cooperative Education credits may be used as open electives; however, assignments may not be in the student's occupational specialty.

# Academic Programs at the Daytona Beach Campus

## Aerospace Electronics

Bachelor of Science

(The Bachelor's Degree in Aerospace Electronics is closed to new students.)

The Aerospace Electronics Degree program is designed to provide the requisite knowledge required to excel in the field of aerospace electronics in support of aerospace vehicles and systems. The general education requirements include mathematics, science, communications, and other applicable subjects. This balanced approach to education enables the graduate to apply techniques of critical thinking and problem solving to a logical result in challenging situations. The primary focus of the degree program is entry positions in Commercial Off-The-Shelf Systems (COTS) development, Test and Evaluation, and Integrated Logistics Support (ILS) with the aerospace electronics manufacturers, aircraft manufacturers, and related space industries.

### ADMISSIONS REQUIREMENTS

Students entering this program should have a basic background in math, physics, and chemistry. College Algebra and Trigonometry are the entry-level math courses. Students wishing to strengthen their background in math and the basic sciences before enrolling in the prescribed courses should contact the Department Chairman or the Program Coordinator for guidance.

Several courses in each academic year have pre-requisites and/or co-requisites. Check the course description section at the back of this catalog before registering for classes to assure requisite sequencing.

### DEGREE REQUIREMENTS

The Bachelor of Science in Aerospace Electronics requires successful completion of 120 credits as outlined in the following course list. A minimum cumulative grade point average of 2.00 is required of all aerospace electronic related courses.

#### Suggested Program of Study

##### FRESHMAN YEAR

Course	Title	Credits
COM 122	English Composition and Literature	3
DET 111	Engineering Drawing	2
EC 200	An Economic Survey	3
EL 107	Direct and Alternating Current Fundamentals and Circuit Analysis	4
EL 108	Direct and Alternating Current Laboratory	1
HU	Lower-level Humanities*	3
MA 145	College Algebra and Trigonometry	5
MA 241	Calculus and Analytic Geometry	4
PS 101	Basic Chemistry	3
PS 150	Physics I for Engineers	3
<b>Total Credits</b>		<b>31</b>

##### SOPHOMORE YEAR

Course	Title	Credits
CS 223	Scientific Programming in C	3
EL 203	Microelectronics Fundamentals and Circuit Analysis	4
EL 204	Microelectronics Laboratory	1
EL 212	Digital Circuit Systems Analysis	4
EL 213	Digital Circuits Laboratory	1
EL 307	Microprocessor Systems	3
EL 308	Microprocessor Systems Laboratory	1
MA 242	Calculus and Analytic Geometry	4
MA 245	Applied Differential Equations	3
PS 160	Physics II for Engineers	3
PS 250	Physics III for Engineers	3
PS 253	Physics Laboratory for Engineers	1
<b>Total Credits</b>		<b>31</b>

# Academic Programs at the Daytona Beach Campus

## JUNIOR YEAR

Course	Title	Credits
AEL 315	Linear Systems and Signals Analysis	3
AEL 316	Elements of Engineering Design and Laboratory Procedures	3
AEL 321	Advanced Communications Systems Analysis	4
AEL 322	Advanced Communications, Microwave and Control Laboratory Systems Analysis	1
AEL 323	Applied Control System Analysis	2
AEL 324	Microwave and Radar System Analysis	2
COM 219	Speech	3
COM 221	Technical Report Writing	3
HF 300	Human Factors I: Principles and Fundamentals	3
HU/SS	Upper-level elective	3
MET 200	Machine Shop Laboratory	1
PSY 220	Introduction to Psychology	3
<b>Total Credits</b>		<b>31</b>

## SENIOR YEAR

Course	Title	Credits
	Open elective (Upper-level)	3
AEL 411	Communications and Navigation Systems	3
AEL 412	Surveillance and Control Systems	3
AEL 413	Satellite Communications and Navigation Systems	4
AEL 414	System Test Evaluation Laboratory	1
AEL 421	Aerospace Electronic System Integration and Design	3
AEL 422	Integrated Logistics Support	3
AEL 423	Test System Development Laboratory	1
AEL 424	Senior Project	3
MA 412	Probability and Statistics	3
<b>Total Credits</b>		<b><u>27</u></b>
<b>TOTAL DEGREE CREDITS</b>		<b><u>120</u></b>

### \**HUMANITIES*

HU: 140, 141, 142, 143, 144, 145, 146

# Academic Programs at the Daytona Beach Campus

## *Air Traffic Management*

Bachelor of Science

The Applied Aviation Sciences Department offers a Bachelor of Science degree in Air Traffic Management (ATM). This degree is designed for students whose goal is to become an air traffic controller or seek employment in a related industry. The academic courses are designed to provide exposure to procedures and operations consistent with those found in Federal Aviation Administration air traffic control facilities. The ATM curriculum provides the knowledge and foundation designated by the FAA for eventual student entry into the FAA Academy where they will be integrated with graduates of other Collegiate Training Initiative (CTI) schools for additional air traffic control training.

### DEGREE REQUIREMENTS

The Bachelor of Science degree Air Traffic Management requires successful completion of a minimum of 120 credit hours, normally completed in eight semesters. This includes a minor in a course of study as approved by the Applied Aviation Sciences Department.

### SUGGESTED PROGRAM OF STUDY

Students should be aware that several courses in each academic year might have prerequisites and/or co-requisites. Please check the course descriptions at the back of this catalog before registering for classes to assure requisite sequencing.

<b>FRESHMAN YEAR</b>		
<b>Course</b>	<b>Title</b>	<b>Credits</b>
	Communication Theory and Skills*	6
	Computer Science elective*	3
	Physical Science with Laboratory*	3
	Lower-level Humanities*	3
AS 120	Principles of Aeronautical Science	3
MA 111	College Mathematics for Aviation I	3
MA 112	College Mathematics for Aviation II	3
WX 201	Meteorology I	3
	Open elective	3
<b>Total Credits</b>		<b>30</b>
<b>SOPHOMORE YEAR</b>		
<b>Course</b>	<b>Title</b>	<b>Credits</b>
	Communication Theory and Skills*	3
	Physical Science*	3
	Lower-level Humanities*	3
AS 254	Aviation Legislation	3
AT 300	Air Traffic Management I	3
AT 302	Air Traffic Management II	3
BA 201	Principles of Management	3
EC 200	An Economic Survey	3
PSY 220	Introduction to Psychology	3
SF 210	Introduction to Aerospace Safety	3
<b>Total Credits</b>		<b>30</b>
<b>JUNIOR YEAR</b>		
<b>Course</b>	<b>Title</b>	<b>Credits</b>
AT 305	Air Traffic Management III	3
AT 401	Air Traffic Management IV	3
AS 405	Aviation Law	3
BA 314	Human Resource Management	3
HF 300	Human Factors I: Principles and Fundamentals	3
HF 335	Human Factors in Air Traffic Control	3
HU/SS	Elective (300-400)	3
	Upper-level open elective	6
<b>Total Credits</b>		<b>30</b>

# Academic Programs at the Daytona Beach Campus

## SENIOR YEAR

Course	Title	Credits
AT 405	Air Traffic Management V	3
BA 406	Strategic Management of Technical Operations	3

Required courses necessary to complete one minor course of study approved by the Applied Aviation Sciences Department 15-21

- and -

Open electives to meet the requirement of 40 hours of upper-level courses and 120 total hours to complete the degree. 9-15

**Total Degree Credits 120**

\* Embry-Riddle courses in the general education categories Communication Theory and Skills, Computer Science, Humanities, Social Sciences, Mathematics, and Physical Science may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified in the Air Traffic Management vertical outline.

### COMMUNICATION THEORY AND SKILLS

COM: 122, 219, 221, 222, 410

### HUMANITIES

HU: 140, 141, 142, 143, 144, 145, 362

### SOCIAL SCIENCES

#### UPPER-LEVEL

SS: 310, 325, 350, 351, 352

### PHYSICAL SCIENCE

PS: 101, 102, 103, 104, 108, 208, 215, 219, 303 (1 laboratory)

### MATHEMATICS

MA: 111, 112, 140, 142, 241; MA 145, 241

Students enrolled in the Army or Air Force ROTC program may substitute MY or AF courses for open elective courses.

# Academic Programs at the Daytona Beach Campus

## *Applied Meteorology*

Bachelor of Science

The Applied Aviation Sciences Department offers a Bachelor of Science degree in Applied Meteorology. This program offers those students with a passion for weather the opportunity to study, observe, and explore atmospheric phenomena ranging from global climate to tornadoes in our new state-of-the-art Weather Center and computer-equipped classrooms. Besides mastering the essentials of meteorology, students will acquire those communication skills necessary to translate information about complex atmospheric features into the practical language of operational decision makers. The program aims to produce graduates with the necessary knowledge, analytical skills, and operational expertise to add value to any decision impacted by the weather. Graduates will be competitive for jobs ranging from the aviation and aerospace industry to radio and television to business and government /military operations of the 21st century.

### DEGREE REQUIREMENTS

The Bachelor of Science degree in Applied Meteorology requires successful completion of a minimum of 120 credit hours and can be attained in eight semesters. Students pursuing the Applied Meteorology degree will select one of four areas of concentration (AOC) from among Flight Weather, Media Weather, Commercial Weather, or the calculus-based Research AOC, generally by the end of their fourth semester. All students must complete

the general education courses, Applied Meteorology core courses, and the required courses for one (1) AOC in order to graduate with a Bachelor of Science in Applied Meteorology. Students wishing to become eligible for employment with the U.S. Government as a Meteorologist must complete the Research AOC in order to meet U.S. Office of Personnel Management Qualification Standards. All students entering the Applied Meteorology Program must take a Math placement test or show suitable advanced placement. Because many courses have prerequisites or co-requisites, students in the Research AOC should prepare to begin the required calculus sequence as soon as they are eligible.

### ***BACHELOR OF SCIENCE DEGREE IN APPLIED METEOROLOGY***

	<b>Hours</b>
GENERAL EDUCATION	36
	(37 Research AOC)
APPLIED METEOROLOGY CORE	48
AREA OF CONCENTRATION	28
	(27 Research AOC)
OPEN ELECTIVES	8
<b>TOTAL DEGREE CREDITS</b>	<b>120</b>

### UNIVERSITY GENERAL EDUCATION

Course	Title	Credits
	Communication Theory and Skills	9
	Computer Science elective	3
	Lower-level Humanities (HU)	3
	Lower-level Social Science (SS)	6
	Upper-level HU/SS elective	3

# Academic Programs at the Daytona Beach Campus

Course	Title	Credits
	Math (see specific AOC)	6 or 7
	Physics (see specific AOC)	6
<b>Total Credits</b>		<b>36 or 37</b>

## APPLIED METEOROLOGY CORE

Course	Title	Credits
AAS 120	College Success Seminar	1
AS 120	Principles of Aviation Science	3
CE AAS	Co-op/Internship or WX electives	6
MA 222	Business Statistics	3
WX 201	Meteorology I*	3
WX 261	Applied Climatology	3
WX 270	Weather Information Systems	3
WX 352	Meteorology II*	3
WX 353	Advanced Meteorology I	3
WX 354	Advanced Meteorology II	3
WX 355	Weather Analysis	5
WX 363	Thunderstorms	3
WX 365	Satellite and Radar Weather Interpretation	3
WX 427	Forecasting Techniques	3
WX 457	Weather Operations Seminar	3
<b>Total Credits</b>		<b>48</b>

\* Indicates courses comprising the Aircraft Dispatcher Certification Program.

## FLIGHT WEATHER AREA OF CONCENTRATION

Course	Title	Credits
AS 232	Intermediate Aeronautics*	3
AS 272	Advanced Aeronautics*	2
AS 309	Aerodynamics	3
AS 310	Aircraft Performance (AS 311 Co-req.)*	3
AS 311	Aircraft Engines – Turbine	3
AS 386	Domestic and International Aviation	4
AS 410	Air Dispatch Operations*	3
AT 300	Air Traffic Management I*	3
WX 364	Weather for Aircrews	3
	Applied Meteorology elective	1
<b>Total Credits</b>		<b>28</b>

\* Indicates courses comprising the Aircraft Dispatcher Certification Program.

## MEDIA WEATHER AREA OF CONCENTRATION

Course	Title	Credits
COM 260	Introduction to Media	3
COM 265	Introduction to News Writing	3
COM 360	Media Relations I	3
COM 410	Advanced Professional Writing	3
COM 460	Media Relations II	3
HU 250	Introduction to Logic	3
WX 202	Current Weather Discussion	1
WX 205	Reading the Clouds	1
WX 429	Severe Weather Seminar	2
	Applied Meteorology electives	6
<b>Total Credits</b>		<b>28</b>

## COMMERCIAL WEATHER AREA OF CONCENTRATION

Course	Title	Credits
BA 221	Advanced Computer Based Systems	3
BA 311	Marketing	3
BA 325	Social Responsibility and Ethics Management	3
EC 210	Microeconomics	3
EC 420	Economics of Air Transportation	3
	Applied Meteorology electives	7
	Business electives	6
<b>Total Credits</b>		<b>28</b>

## RESEARCH AREA OF CONCENTRATION

Course	Title	Credits
CS 223	Scientific Programming in C	3
MA 242	Calculus and Analytic Geometry II	4
MA 243	Calculus and Analytic Geometry III	4
MA 245	Applied Differential Equations	3
PS 216	Physics I Laboratory	1
WX 320	Atmospheric Thermodynamics	3
WX 390	Atmospheric Physics	3
WX 490	Dynamic Meteorology I	3
WX 491	Dynamic Meteorology II	3
<b>Total Credits</b>		<b>27</b>

# Academic Programs at the Daytona Beach Campus

## Suggested Program of Study

Students who are not in the Research AOC may follow a common Freshman and Sophomore program of study before branching out into their specific area of concentration in the Junior year.

### FRESHMAN YEAR

Course	Title	Credits
AAS 101	College Success Seminar	1
AS 120	Principles of Aeronautical Science	3
COM 122	English Composition and Literature	3
COM 219	Speech	3
CS 210	Scientific Programming	3
HU 14x	Lower-level Humanities	3
MA 111	College Mathematics for Aviation I	3
MA 112	College Mathematics for Aviation II	3
PS 103	Technical Physics I	3
PS 103L	Technical Physics I Laboratory	0
SS	Lower-level Social Science elective	3
WX 201	Meteorology I	3

**Total Credits** 31

### SOPHOMORE YEAR

COM 221	Technical Report Writing	3
EC 210	Microeconomics (Coml AOC), - or -	
HU/SS	Lower-level Humanities or Social Science elective	3
MA 222	Business Statistics	3
PS 104	Technical Physics II	3
PS 104L	Technical Physics II Laboratory	0
WX 202	Current Weather Discussion	1
WX 261	Applied Climatology	3
WX 270	Weather Information Systems	3
WX 352	Meteorology II	3
WX 353	Advanced Meteorology	3
WX 363	Thunderstorms	3
WX 365	Satellite and Radar Weather Interpretation	3

**Total Credits** 31

## FLIGHT WEATHER AREA OF CONCENTRATION

Students interested in providing weather services to the aviation/aerospace industry should follow this course of study during their last two years. The mix of courses will enhance the student's ability to communicate with people who build, fly, and control airplanes and flight activities. Courses designated with (\*) are those required for the Aircraft Dispatcher Certification Program.

### JUNIOR YEAR

Course	Title	Credits
AS 232	Intermediate Aeronautics*	3
AS 272	Advanced Aeronautics*	2
AS 309	Basic Aerodynamics	3
AT 300	Air Traffic Management	3
WX 354	Advanced Meteorology II	3
WX 355	Weather Analysis	5
	Open electives	8

**Total Credits** 27

### SENIOR YEAR

Course	Title	Credits
AS 310	Aircraft Performance*	3
AS 311	Aircraft Engines – Turbine	3
AS 386	Domestic and International Navigation	4
AS 410	Air Dispatch Operations*	3
CE AAS	Co-op/Internship	6
HU/SS	Upper-level Humanities or Social Science elective	3
WX 364	Weather for Aircrews	3
WX 427	Forecasting Techniques	3
WX 457	Weather Operations Seminar	3

**Total Credits** 31

# Academic Programs at the Daytona Beach Campus

## COMMERCIAL WEATHER AREA OF CONCENTRATION

To meet the growing demand for meteorologists by the private sector, students who select this option will be prepared to provide meteorological expertise to a wide-range of weather-dependent industries. By selecting appropriate courses within this highly flexible AOC, students can also complete a Minor in Business Administration.

### JUNIOR YEAR

Course	Title	Credits
BA 221	Advanced Computer Based Systems	3
BA 311	Marketing	3
HU/SS	Upper-level Humanities or Social Science elective	3
WX 354	Advanced Meteorology II	3
WX 355	Weather Analysis	5
	Applied Meteorology electives	6
	Business elective	3
	Open electives	4
<b>Total Credits</b>		<b>30</b>

### SENIOR YEAR

Course	Title	Credits
BA 325	Social Responsibility and Ethics in Management	3
CE AAS	Co-op/Internship	6
EC 420	Economics of Air Transportation	3
WX 427	Forecasting Techniques	3
WX 457	Weather Operations Seminar	3
	Applied Meteorology electives	5
	Business elective	3
	Open electives	4
<b>Total Credits</b>		<b>30</b>

## MEDIA WEATHER AREA OF CONCENTRATION

Students interested in journalism, radio, and television will combine meteorology with studies in verbal and written communications. Internships may be conducted with newspapers, radio stations, or network/cable television channels.

### JUNIOR YEAR

Course	Title	Credits
COM 260	Introduction to Media	3
COM 265	Introduction to News Writing	3
COM 360	Media Relations I	3
HU 330	Values and Ethics	3
WX 205	Reading the Clouds	1
WX 354	Advanced Meteorology II	3
WX 355	Weather Analysis	5
WX 429	Severe Weather Seminar	2
	Applied Meteorology electives	4
	Open electives	5
<b>Total Credits</b>		<b>32</b>

### SENIOR YEAR

Course	Title	Credits
CE AAS	Co-op/Internship	6
COM 410	Advanced Professional Writing	3
COM 460	Media Relations II	3
WX 427	Forecasting Techniques	3
WX 457	Weather Operations Seminar	3
	Applied Meteorology electives	7
	Open elective	3
<b>Total Credits</b>		<b>28</b>

# Academic Programs at the Daytona Beach Campus

## RESEARCH AREA OF CONCENTRATION

A word about math and physics requirements: meteorology is an application of math and physics to the sea of air in which we live. Students who wish to pursue graduate studies in the atmospheric sciences or who want to work for the federal government or who are on USAF ROTC scholarship should enroll in the Research AOC and complete the math sequence MA 140, MA 241, MA 242, MA 243, and MA 245 by their Junior year. Those students should also enroll in the physics sequence PS 215, PS 216, and PS 208. Students pursuing other AOCs should complete MA 111 and MA 112, and PS 103 and PS 104 with labs. Students who are undecided about their futures should begin with MA 140 and PS 215. Students who choose the Research Area of Concentration should follow the 4-year plan outlined below:

### FRESHMAN YEAR

Course	Title	Credits
AAS 101	College Success Seminar	1
AS 120	Principles of Aeronautical Science	3
COM 122	English Composition and Literature	3
COM 219	Speech	3
MA 142	Trigonometry	3
MA 241	Calculus and Analytical Geometry	4
MA 242	Calculus and Analytical Geometry II	4
PS 215	Physics I	3
PS 216	Physics I Laboratory	1
WX 201	Meteorology I	3
<b>Total Credits</b>		<b>28</b>

### SOPHOMORE YEAR

Course	Title	Credits
COM 221	Technical Report Writing	3
CS 118	Fundamentals of Computer Programming	3
HU 14x	Lower-level Humanities	3
HU/SS	Lower-level Humanities or Social Science elective	3
MA 243	Calculus and Analytical Geometry III	4
PS 208	Physics II	3
WX 352	Meteorology II	3
WX 353	Advanced Meteorology I	3
WX 363	Thunderstorms	3
WX 365	Satellite and Radar Weather Interpretation	3
<b>Total Credits</b>		<b>31</b>

### JUNIOR YEAR

Course	Title	Credits
CE AAS	Co-op/Internship	6
CS 223	Scientific Programming in C	3
MA 245	Applied Differential Equations	3
WX 270	Weather Information Systems	3
WX 320	Atmospheric Thermodynamics	3
WX 354	Advanced Meteorology II	3
WX 355	Weather Analysis	5
WX 390	Atmospheric Physics	3
<b>Total Credits</b>		<b>29</b>

### SENIOR YEAR

Course	Title	Credits
HU/SS	Upper-level elective	3
MA 222	Business Statistics	3
SS	Lower-level elective	3
WX 261	Applied Climatology	3
WX 427	Forecasting Techniques	3
WX 457	Weather Operations Seminar	3
WX 490	Dynamic Meteorology I	3
WX 491	Dynamic Meteorology II	3
	Open electives	8
<b>Total Credits</b>		<b>32</b>
<b>TOTAL DEGREE CREDITS</b>		<b>120</b>

# Academic Programs at the Daytona Beach Campus

## Safety Science

Bachelor of Science

The Applied Aviation Sciences Department offers a Bachelor of Science degree in Safety Science. The degree is based upon the needs of the market place. It combines a solid core designed to meet the Council On Aviation Accreditation (CAA) standards and the University's General Education requirements with a complete offering of Safety Science courses including those appropriate to the aerospace industry as well as non-aerospace industries.

The Safety Science degree is designed for students interested in obtaining a strong safety foundation. The goal of the degree is to produce graduates who are skilled in providing safety expertise in a variety of aviation, aerospace and other industrial settings. This program will produce safety professionals who are skilled in providing safety management expertise, and who can provide technical guidance in compliance issues involving EPA, OSHA, DOD, DOT, DOE, and state health, hygiene, and workplace standards.

### DEGREE REQUIREMENTS

The Bachelor of Science degree in Safety Science requires successful completion of a minimum of 120 credit hours, and is normally completed in eight semesters.

Students are required to complete 39 hours of General Education courses as well as 43 hours of a Safety Science core curriculum. Transportation related safety courses fill 24 hours of the degree program with the final 14 hours available as open electives. There are

numerous minor fields of study for the student to choose from in order to meet specific desires.

Students enrolled in the Air Force, Army, or Naval ROTC program may substitute AF, MY, or NSC courses for open elective courses.

	Hours
GENERAL EDUCATION	39
SAFETY SCIENCE CORE	43
AREA OF CONCENTRATION	24
OPEN ELECTIVES	14
<b>TOTAL DEGREE CREDITS</b>	<b>120</b>

## BACHELOR OF SCIENCE DEGREE IN SAFETY SCIENCE

### GENERAL EDUCATION

Course	Title	Credits
BA 201	Principles of Management	3
CS	Computer Science elective	3
EC 200	An Economic Survey	3
HU	English II (HU 141, 142, 143, 144, 145)	3
	Communications Skills (COM 122, 219, 221, 222, 410, HU 362, 420)	9
HU/SS	Upper-level elective	3
MA	Math Sequence (MA 111, 112, 140, 142, 241, MA 145, 241)	6
PS	Physics Sequence (One laboratory required)	6
PSY 220	Introduction to Psychology	3
<b>Total Credits</b>		<b>39</b>

# Academic Programs at the Daytona Beach Campus

## SAFETY SCIENCE CORE

Course	Title	Credits
AAS 101	Student Success Seminar	1
AS 120	Principles of Aeronautical Science	3
AT 300	Air Traffic Management I	3
HF 300	Human Factors I - Principles and Fundamentals	3
MA 222	Business Statistics	3
PS 101	Basic Chemistry	3
SF 201	Introduction to Health, Occupational and Transportation Safety	3
SF 315	Environmental Compliance and Safety	3
SF 345	Safety Program Management	3
SF 355	Industrial Hygiene and Toxicology	3
SF 365	Fire Protection	3
SF 410	Design of Engineering Hazard Controls	3
SF 462	Health, Safety and Aviation Law	3
SF 445	System Safety in Aviation	3
WX 201	Meteorology I	3
<b>Total Credits</b>		<b>43</b>

## TRANSPORTATION SAFETY (AIR) - AREA OF CONCENTRATION

Course	Title	Credits
AS 309	Aerodynamics	3
AS 310	Aircraft Performance - or -	
SF 350	Aircraft Crash and Emergency Management	3
AS 356	Aircraft Systems and Components	3
SF 320	Human Factors in Aviation	3
SF 330	Aircraft Accident Investigation	3
SF 335	Mechanical and Structural Factors in Aviation	3
SF 375	Power Plant Investigation	3
SF 435	Aircraft Crash Survival Analysis and Design Electives	3
		<u>14</u>
<b>Total Credits</b>		<b>38</b>
<b>Total Degree Credits</b>		<b>120</b>

### Suggested Program of Study

Students should be aware the several courses in each academic year might have pre-requisites and/or corequisites. Please check the course descriptions at the back of this catalog before registering for classes to assure requisite sequencing.

## FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Humanities*	3
AAS 101	Student Success Seminar	1
AS 120	Principles of Aeronautical Science	3
CS	Computer Science elective	3
MA 111	College Math for Aviation I	3
MA 112	College Math for Aviation II	3
PS 101	Basic Chemistry	3
PS 103	Technical Physics I	3
PSY 220	Introduction to Psychology	3
WX 201	Meteorology I	3

**Total Credits 31**

## SOPHOMORE YEAR

AT 300	Air Traffic Management I	3
BA 201	Principles of Management	3
COM 219	Speech	3
EC 200	An Economic Survey	3
HF 300	Human Factors I Principles and Fundamentals	3
HU 221	Technical Report Writing	3
MA 222	Business Statistics	3
PS 104	Technical Physics II	3
SF 201	Introduction to Health , Occupational and Transportation Safety	3
SF 315	Environmental Compliance and Safety	3

**Total Credits 30**

## JUNIOR YEAR

Course	Title	Credits
AS 309	Aerodynamics	3
AS 356	Aircraft Systems and Components	3
SF 345	Safety Program Management	3
SF 355	Industry Hygiene and Toxicology	3
SF 365	Fire Protection	3
SF 320	Human Factors in Aviation	3
SF 330	Aircraft Accident Investigation	3
	Electives	9

**Total Credits 30**

## SENIOR YEAR

AS 310	Aircraft Performance - or -	
SF 350	Aircraft Crash and Emergency Management	3
HU/SS	Upper-level elective**	3
SF 335	Mechanical and Structural Factors in Aviation	3
SF 375	Propulsion Plant Investigation	3
SF 410	Design of Engineering Hazard Controls	3
SF 435	Aircraft Crash Survival Analysis and Design	3
SF 445	System Safety in Aviation	3
SF 462	Health, Safety and Aviation Law	3
	Electives	5

**Total Credits 29**

\*\*Recommended elective - HU 330 Values and Ethics

# Academic Programs at the Daytona Beach Campus

## College of Business

*Dean:* Daniel Petree

Our aim is to provide a world-class business and management education in an aviation/aerospace context. That means we have assembled a community of faculty scholars with global reputations and reach. That means we have designed curricula at the graduate and undergraduate levels that set the standard in aviation/aerospace management education. That means that our faculty and students have the opportunity to focus on cutting edge solutions to real world problems and opportunities found in aviation, aerospace and transportation-related industries and organizations. Our dedication to excellence is manifest by our accreditation by ACBSP (the Association of Collegiate Business Programs and Schools) for all our degree programs and by CAA (Council on Aviation Accreditation) for our undergraduate degree programs in aviation business administration and management of technical operations.

The College of Arts and Sciences' primary responsibility is to provide a high quality educational opportunity to all adequately prepared students. It seeks to inculcate in its students a lifelong love of learning and an appreciation of the cultural, intellectual, and historical impact of the search for truth and knowledge. The College provides students an

opportunity for professional specialization; and emotional and social development through out-of-class experiences. All students are expected to master the skills that enable them to communicate clearly, to understand the logic of mathematics and the methods of scientific inquiry, and to understand their cultural heritage and that of others. The College seeks to develop in its students the ability to think independently, to accept responsibility, to interact with people different from themselves, to assess ideas, to challenge orthodoxies, and to criticize opinions in order to achieve the intellectual, ethical, and aesthetic maturity expected in educated citizens. The College affirms the right of all students to achieve an educational level limited only by their own commitment and ability.

We offer the bachelor of science in the management of technical operations which is targeted to individuals who have a background in one or more technical areas of expertise. This degree combines the same rigorous general business/management core with a more focused sequence of technical management courses and provides the opportunity for academic credit for previous technical training, education, experience and FAA licenses. It is intended to lever technical competence with management expertise. The bachelor of science in aviation management is designed to

# Academic Programs at the Daytona Beach Campus

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enhance the knowledge and expertise of those who have already earned the equivalent of an associates degree by providing the opportunity to add depth and breadth through upper level business and management courses. It is a good way to lever an associates degree into a bachelor degree with the rigor and strength desired by employers in the aviation industry.

We offer the only masters in business administration in aviation (MBA/A) in the United States. This degree is intended to provide individuals who already hold undergraduate degrees, often in technical areas like engineering, with the tools necessary to become a credible professional manager in aviation, aerospace or related industries. The program of study combines common general management courses with areas of concentration in Airport Management, Airline Management, Aviation Human Resources, Aviation System Management and Aviation Policy and Planning.

# Academic Programs at the Daytona Beach Campus

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## *Aviation Business and Management Programs*

Aviation Business Administration  
Management of Technical Operations  
Aviation Management

Embry-Riddle Aeronautical University's Aviation Business Administration programs at the Daytona Beach campus are accredited by:

- The Association of Collegiate Business Schools and Programs (ACBSP).
- The Council on Aviation (CAA) under CAA's Aviation Management option.

The department works with the National Business Aircraft Association (NBAA), in cooperation with the University Aviation Association (UAA) to establish minimum management certification requirements.

The degree programs offered by the Business Administration department meet the needs of the continually changing environment of education and business. The curriculum is designed to provide graduates with knowledge and skills essential to their entry into the workplace and society. Emphasis is placed on communication and quantitative skills, global awareness, social responsibility and ethics, information technology, critical thinking and teamwork, business functional skills, aviation/aerospace industry familiarity and experience, as well as development of an attitude of continual and lifelong learning.

Each degree program offers a unique educational experience for the student and serves as the appropriate foundation for entry into a specific business arena. The curriculum is frequently enriched by colloquia, forums, visiting speakers, and other programs. Classroom work incorporates computer applications, group as well as individual projects and presentations, and provides a blend of theory and applications that prepares students for a variety of positions in the workplace. Cooperative education experiences are encouraged, with faculty assigned to assist students in co-op placement. In addition, elective courses allow students to broaden their general education or pursue specific interests in aviation/aerospace-related topics. Active guidance on the needs of aviation management is provided by the Business Advisory Committee. Department-sponsored tutoring and labs are also provided.

Students should be aware that several courses in each academic year may require prerequisite subject knowledge and/or class standing. Check the course descriptions at the back of this catalog before registering for classes to assure appropriate placement.

# Academic Programs at the Daytona Beach Campus

## Aviation Business Administration

Bachelor of Science

### DEGREE REQUIREMENTS

The Bachelor of Science degree in Aviation Business Administration requires successful completion of a minimum of 120 credit hours, and is normally completed in eight semesters. Designed for students interested in obtaining a strong business foundation with emphasis on specific aviation applications, the student may select an Area of Concentration in Airport Management, Airline Management, Aviation Marketing Management, International Air Transportation Management, Flight Operations, or General Management. Students should declare their Area of Concentration at the beginning of their junior year. Students who want to specialize in more than one Area of Concentration may transfer up to 6 credit hours toward the second area of concentration. Students who participate in the Cooperative Education program may substitute up to 6 credit hours, if approved, toward the specified courses required in their Area of Concentration. Not all Areas of Concentration may be offered at all campuses.

Students enrolled in the Air Force, Army, or Naval ROTC program may substitute AF, MY, or NSC courses for the open elective courses.

	Hours
GENERAL EDUCATION	36
PROGRAM SUPPORT	12
BUSINESS CORE	48
AREA OF CONCENTRATION	15
OPEN ELECTIVES	<u>9</u>
TOTAL DEGREE CREDITS	120

### GENERAL EDUCATION:

Communication Theory and Skills*	9
Mathematics*	6
Computer Science*	3
Physical and Life Sciences* (One course must include a laboratory.)	6
At the Daytona Beach campus, one course must be either chemistry or physics.	
Humanities Lower-level course*	3
Social Sciences Lower-level course*	3
Humanities/Social Sciences Upper-level course	<u>3</u>
<b>Total Credits</b>	<b>33</b>

### PROGRAM SUPPORT:

AS 120 Principles of Aeronautical Science	3
EC 210 Microeconomics	3
EC 211 Macroeconomics	3
MA 211 Statistics with Aviation Applications, -or-	3
MA 222 Business Statistics	3
MA 320 Decision Math	<u>3</u>
<b>Total Credits</b>	<b>15</b>

### BUSINESS CORE:

BA 201 Principles of Management	3
BA 210 Financial Accounting	3
BA 212 Advanced Financial Accounting	3
BA 221 Advanced Computer Based Systems	3
BA 311 Marketing	3
BA 312 Managerial Accounting	3
BA 314 Human Resource Management	3
BA 317 Organizational Behavior	3
BA 320 Business Information Systems	3
BA 325 Social Responsibility and Ethics in Management	3
BA 332 Corporate Finance I	3
BA 335 International Business	3
BA 390 Business Law	3
BA 420 Management of Production and Operations	3
BA 436 Strategic Management	3
EC 315 Managerial Economics	<u>3</u>
<b>Total Credits</b>	<b>48</b>

### AREAS OF CONCENTRATION:

#### *International Air Transportation Management:*

The focus area is International Aviation. The culminating experience course is BA 426.

EC 420 Economics of Air Transportation	3
BA 426♦ International Aviation Management	3
BA 430 International Trade and Regulations	3

# Academic Programs at the Daytona Beach Campus

BA/EC Business electives (300-400 level)	6
<b>Total Credits</b>	<b>15</b>

### **Airport Management:**

BA 408 Airport Management	3
BA 412 Airport Planning and Design Standards	3
BA 418♦ Airport Administration and Finance	3
BA/EC Business electives (300-400 level)	6
<b>Total Credits</b>	<b>15</b>

### **Airline Management:**

EC 420 Economics of Air Transportation	3
BA 410 Management of Air Cargo	3
BA 415♦ Airline Management	3
BA/EC Business electives (300-400 level)	6
<b>Total Credits</b>	<b>15</b>

### **Aviation Marketing Management:**

The area of focus is Aviation Marketing. The culminating experience course is BA 449.

BA 405 General Aviation Marketing	3
BA 449 Strategic Marketing Management	3
BA 450♦ Airline/Airport Marketing	3
BA/EC Business electives (300-400 level)	6
<b>Total Credits</b>	<b>15</b>

### **Flight Operations:**

AS 132 Basic Aeronautics I	3
AS 133 Basic Aeronautics II	3
AS 232 Intermediate Aeronautics	3
AS 272 Advanced Aeronautics	2
FA 132 Commercial Pilot Flight I	1
FA 133 Commercial Pilot Flight II	1
FA 232 Commercial Pilot Flight III	1
FA 272 Commercial Pilot Flight IV	1
<b>Total Credits</b>	<b>15</b>

Note: Students selecting this option need to begin the coursework as soon as possible. Please see the Advance Standing section under University Academic Regulations and Procedures and the Aeronautical Science notes under the Aeronautical Science degree in this catalog for information relating to these courses.

### **General Management:**

The focus is to produce an aviation management generalist. The culminating focus course is BA 436.

Select any five BA/EC 300-400 level courses	15
<b>OPEN ELECTIVES</b>	<b>9</b>
<b>Total Degree Requirements</b>	<b>120</b>

♦ These classes are considered the capstone class for the area of concentration.

### Courses Available as BA 300-400 Business Electives:

BA 308	Public Administration
BA 331	Transportation Principles
BA 322	Aviation Insurance
BA 324	Aviation Labor Relations
BA 405	General Aviation Marketing
BA 408	Airport Management
BA 410	Management of Air Cargo
BA 412	Airport Planning and Design Standards
BA 415	Airline Management
BA 418	Airport Administration and Finance
BA 419	Aviation Maintenance Management
BA 421	Small Business Management
BA 424	Project Management in Aviation Operations
BA 426	International Aviation Management
BA 427	Management of the Multi-cultural Workforce
BA 430	International Trade and Regulations
BA 449	Strategic Marketing Management
BA 450	Airline/Airport Marketing
EC 420	Economics of Air Transportation

\*Embry-Riddle courses in the general education categories of *Communication Theory and Skills*, *Mathematics*, *Computer Science*, *Physical and Life Sciences*, *Humanities*, and *Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met with permission of advisor. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Aviation Business Administration vertical outline. Other courses may also be used with permission of the Undergraduate Program Coordinator.

### COMMUNICATION THEORY AND SKILLS:

COM 122, 219, 221 -or- 222

### COMPUTER SCIENCE:

BA120 - or - IT 109

### HUMANITIES:

LOWER-LEVEL: HU 140 series

UPPER-LEVEL: HU 300-400 level.

### MATHEMATICS:

MA 120, MA 220 - or - MA 111, MA 112

### PHYSICAL AND LIFE SCIENCES:

PS 101-109, PS 142, PS 302, PS 304, PS 308, PS 309

### SOCIAL SCIENCES:

LOWER-LEVEL:

PSY 220

SS 110-130, 204, 210

UPPER-LEVEL: HF 300; PSY 350; SS 302-360

# Academic Programs at the Daytona Beach Campus

## Suggested Program of Study

<b>FRESHMAN YEAR</b>		
	Communication Theory and Skills*	3
	Lower-level Humanities*	3
	Lower-level Social Science*	3
	Computer Science*	3
	Mathematics*	6
	Physical and Life Sciences*	3
BA 201	Principles of Management	3
BA 221	Advanced Computer Based Systems	3
EC 211	Macroeconomics	3
		<u>30</u>
<b>SOPHOMORE YEAR</b>		
	Communication Theory and Skills*	6
	Physical and Life Sciences*	3
AS 120	Principles of Aeronautical Science	3
BA 210	Financial Accounting	3
BA 212	Advanced Financial Accounting	3
BA 311	Marketing	3
EC 210	Microeconomics	3
MA 222	Business Statistics	3
MA 320	Decision Mathematics	3
		<u>30</u>
<b>JUNIOR YEAR</b>		
	Upper-level Humanities or Social Sciences*	3
BA 312	Managerial Accounting	3
BA 314	Human Resource Management	3
BA 317	Organizational Behavior	3
BA 320	Business Information Systems	3
BA 332	Corporate Finance I	3
BA 335	International Business	3
EC 315	Managerial Economics	3
	Concentration Courses	3
	Open elective	3
		<u>30</u>
<b>SENIOR YEAR</b>		
BA 325	Social Responsibility and Ethics in Management	3
BA 390	Business Law	3
BA 420	Management of Production and Operations	3
BA 436	Strategic Management	3
	Concentration Courses	12
	Open electives	6
		<u>30</u>
<b>Total Degree Credits</b>		<b>120</b>

## Aviation Business Administration

Associate of Science

### DEGREE REQUIREMENTS

The Associate of Science degree in Aviation Business Administration requires successful completion of 60 credit hours and is normally completed in four semesters. The degree provides courses in general education and an introduction to business coupled with some aviation business applications.

	<b>Hours</b>
<b>GENERAL EDUCATION</b>	<b>30</b>
<b>PROGRAM SUPPORT</b>	<b>9</b>
<b>BUSINESS CORE</b>	<b>18</b>
<b>OPEN ELECTIVE</b>	<b>3</b>
<b>Total Degree Requirements</b>	<b>60</b>

### GENERAL EDUCATION:

Communication Theory and Skills*	9
Computer Science*	3
Lower-level Humanities course*	3
Mathematics*	6
Physical and Life Sciences*	3
Lower-level Social Sciences course	3
<b>Total Credits</b>	<b>27</b>

### PROGRAM SUPPORT:

AS 120	Principles of Aeronautical Science ▲	3
EC 210	Microeconomics	3
EC 211	Macroeconomics	3
MA 211	Statistics with Aviation Applications, - or -	
MA 222	Business Statistics	3
<b>Total Credits</b>		<b>12</b>

### BUSINESS CORE:

BA 201	Principles of Management	3
BA 210	Financial Accounting	3
BA 221	Advanced Computer Based Systems	3
BA/EC	Business electives (200-300)	9
<b>Total Credits</b>		<b>18</b>

### OPEN ELECTIVE

(The open elective should be a non-Business course.) 3

**Total Degree Requirements** **60**

# Academic Programs at the Daytona Beach Campus

\*Embry-Riddle courses in the general education categories of *Communication Theory and Skills*, *Mathematics*, *Computer Science*, *Physical and Life Sciences*, *Humanities*, and *Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Business Administration vertical outline. Other courses may also be used with permission of the Undergraduate Program Coordinator.

COMMUNICATION THEORY AND SKILLS:

COM 122, 219, 221 - or - 222

COMPUTER SCIENCE:

BA 120 - or - IT 109

HUMANITIES:

LOWER-LEVEL: HU 140 series

MATHEMATICS:

MA 120, MA 220 - or - MA 111, MA 112

PHYSICAL AND LIFE SCIENCES:

PS 101-109, PS 142, PS 302, PS 304, PS 308, PS 309

SOCIAL SCIENCES

LOWER-LEVEL:

PSY 220

SS 110-130, SS 204, SS 210

## Suggested Program of Study

### FRESHMAN YEAR

	Communication Theory and Skills*	3
	Lower-level Humanities*	3
	Lower-level Social Science*	3
	Computer Science*	3
	Mathematics*	6
	Physical and Life Sciences*	3
AS 120	Principles of Aeronautical Science	3
BA 201	Principles of Management	3
EC 211	Macroeconomics	3
		<u>30</u>

### SOPHOMORE YEAR

	Communication Theory and Skills*	6
BA 210	Financial Accounting	3
BA 221	Advanced Computer Based Systems	3
EC 210	Microeconomics	3
MA 222	Business Statistics	3
	Business electives	9
	Open elective	3
		<u>30</u>
<b>Total Degree Credits</b>		<b>60</b>

## Management of Technical Operations

Bachelor of Science

### DEGREE REQUIREMENTS:

The Bachelor of Science in the Management of Technical Operations requires successful completion of 120 credit hours. Designed for the student who possesses some technical expertise either through previous course work, licensing or experience, this degree provides the student a flexible yet solid business program. The degree allows a minimum of 15 semester hours earned in a technical area or through CLEP, DANTES, or military or industrial education programs recognized by the American Council on Education. In addition, credit may be granted for aviation-related licenses such as A&P or flight ratings as well as equivalent supervisory experience.

The focus for this degree is the strategic management of technical operations. The culminating experience course is BA 406.

<b>TECHNICAL SPECIALTY</b>	<b>15</b>
<b>GENERAL EDUCATION</b>	<b>33</b>
<b>PROGRAM SUPPORT</b>	<b>9</b>
<b>BUSINESS CORE</b>	<b>33</b>
<b>TECHNICAL MANAGEMENT CORE*</b>	<b>12</b>
<b>SPECIFIED ELECTIVES</b>	<b>9</b>
<b>OPEN ELECTIVES</b>	<b>9</b>

**Total Degree Requirements 120**

**TECHNICAL SPECIALTY: 15**

### GENERAL EDUCATION:

Communication Theory and Skills*	9
Mathematics*	6
Computer Science*	3
Physical and Life Sciences* - One course must include a laboratory. At Daytona Beach, one course must be either chemistry or physics.	6
Lower-level Humanities course*	3

# Academic Programs at the Daytona Beach Campus

Lower-level Social Sciences courses*	3
Upper-level Humanities/Social Science course*	<u>3</u>
<b>Total Credits</b>	<b>33</b>
<b>PROGRAM SUPPORT:</b>	
<hr/>	
EC 210 Microeconomics	3
EC 211 Macroeconomics	3
MA 211 Statistics with Aviation Applications- <b>or-</b>	
MA 222 Business Statistics	<u>3</u>
<b>Total Credits</b>	<b>9</b>
<b>BUSINESS CORE:</b>	
<hr/>	
BA 201 Principles of Management	3
BA 210 Financial Accounting	3
BA 221 Advanced Computer Based Systems	3
BA 311 Marketing	3
BA 312 Managerial Accounting	3
BA 314 Human Resource Management	3
BA 317 Organizational Behavior	3
BA 320 Business Information Systems	3
BA 325 Social Responsibility and Ethics in Management	<u>3</u>
BA 335 International Business	3
BA 390 Business Law	<u>3</u>
<b>Total Credits</b>	<b>33</b>
<b>TECHNICAL MANAGEMENT CORE</b>	
<hr/>	
BA 406 Strategic Management of Technical Operations	3
BA 419 Aviation Maintenance Management	3
BA 420 Management of Production and Operations	3
BA 424 Project Management in Aviation Operations	<u>3</u>
<b>Total Credits</b>	<b>12</b>
<b>SPECIFIED ELECTIVES:</b>	<b>9</b>
<b>OPEN ELECTIVES:</b>	<b>9</b>
<hr/>	
<b>Total Degree Requirements</b>	<b>120</b>

Courses Available as Specified Electives:

300-400 level courses in the following disciplines:

- Aeronautical Science
- Business Administration
- Economics
- Engineering
- Engineering Technology
- Safety
- Flight

- or -

Approved Cooperative Education Experience or Internship

**Note:** Prerequisite courses, knowledge or class standing may be required for taking upper-level courses in some disciplines. Check the course descriptions at the back of this catalog before registering for classes to assure appropriate placement.

\*Embry-Riddle courses in the general education categories of *Communication Theory and Skills*, *Mathematics*, *Computer Science*, *Physical and Life Sciences*, *Humanities*, and *Social Sciences* may be chosen from the following list, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Management of Technical Operations vertical outline. Other courses may also be used with permission of the Undergraduate Program Coordinator.

COMMUNICATION THEORY AND SKILLS:

COM 122, 219, 221 - or - 222

COMPUTER SCIENCE:

BA 120 - or - IT 109

HUMANITIES:

LOWER-LEVEL: HU 140 series  
UPPER-LEVEL: HU 300-400 level

MATHEMATICS:

MA 120, MA 220 - or - MA 111, MA 112

PHYSICAL AND LIFE SCIENCES:

101-109, PS 142, PS 302, PS 304, PS 308, PS 309

SOCIAL SCIENCES: (ONE COURSE MUST BE ECONOMICS)

LOWER-LEVEL:  
EC 210-211  
SS 110-130, 204, 210  
PSY 220  
UPPER-LEVEL:  
HF 300  
PSY 350  
SS 302-360

# Academic Programs at the Daytona Beach Campus

## Suggested Program of Study

<b>TECHNICAL SPECIALTY</b>	<b>15</b>
<b>FRESHMAN YEAR</b>	
Communication Theory and Skills*	3
Lower-level Humanities*	3
Lower-level Social Science*	3
Computer Science*	3
Mathematics*	6
Physical and Life Sciences*	3
BA 201 Principles of Management	3
BA 221 Advanced Computer Based Systems	3
EC 211 Macroeconomics	<u>3</u>
<b>Total Credits</b>	<b>30</b>
<b>SOPHOMORE YEAR</b>	
Communication Theory and Skills*	6
Physical and Life Sciences*	3
BA 210 Financial Accounting	3
BA 311 Marketing	3
EC 210 Microeconomics	3
MA 222 Business Statistics	3
Open electives	<u>3</u>
<b>Total Credits</b>	<b>24</b>
<b>JUNIOR YEAR</b>	
Upper-level Humanities or Social Sciences*	3
BA 312 Managerial Accounting	3
BA 314 Human Resource Management	3
BA 317 Organizational Behavior	3
BA 320 Business Information Systems	3
BA 335 International Business	3
BA 390 Business Law	3
Specified electives	3
Open elective	<u>3</u>
<b>Total Credits</b>	<b>27</b>
<b>SENIOR YEAR</b>	
BA 325 Social Responsibility and Ethics in Management	3
BA 406 Strategic Management of Technical Operations♦	3
BA 419 Aviation Maintenance Management	3
BA 420 Management of Production and Operations	3
BA 424 Project Management in Aviation Operations	3
Specified electives	6
Open Electives	<u>3</u>
<b>Total Credits</b>	<b>24</b>
<b>Total Degree Requirements</b>	<b>120</b>

♦A senior-level experience emphasizing strategic management and program synthesis may be accomplished by the successful completion of BA406, BA436, or Senior Thesis as determined by the campus MTO Degree Program Coordinator.

## Aviation Management

Bachelor of Science

### DEGREE REQUIREMENTS:

The Bachelor of Science degree in Aviation Management requires successful completion of a minimum of 120 credit hours, and is normally completed in four semesters, pending total credits transferred into the University. This degree is designed to accommodate the transfer student who has either completed an appropriate Associate Degree at an accredited regional college or university (generally 60 semester credit hours) or a minimum of 60 credit hours which must be comprised of courses from the following broad areas: Communication Skills, Mathematics, Physical Sciences, Computers, Business, Economics, Management, Humanities, and/or Social Sciences. In the business core courses, prerequisites not previously met may be taken from open elective credit hours. The curriculum for the degree provides a sound business foundation in all disciplines of business, enhanced by aviation business applications. Courses include accounting and finance, law, ethics, human resources, production and strategic management.

<b>ASSOCIATE DEGREE CREDIT♦♦ or MINIMUM OF 60 CREDIT HOURS IN COURSE WORK</b>	<b>60</b>
<b>BUSINESS CORE</b>	<b>36</b>
<b>AVIATION MANAGEMENT CORE</b>	<b>15</b>
<b>OPEN ELECTIVES</b>	<u><b>9</b></u>
<b>Total Degree Requirements</b>	<b>120</b>

♦♦ Assumes University general education requirements have been met and no further credit hours are required in this area.

<b>ASSOCIATE DEGREE CREDIT</b>	<b>60</b>
<b>- or -</b>	

Minimum of 60 credit hours in course work which must be comprised of courses from the following broad areas: Communication Skills, Mathematics, Physical Sciences, Computers, Business, Economics, Management, Humanities, and/or Social Sciences.



# Academic Programs at the Daytona Beach Campus

## College of Engineering

*Dean:* Reda Mankbadi

The College of Engineering at ERAU offers Bachelor of Science degrees in Computer Engineering, Software Engineering, Civil Engineering and Aerospace Engineering. Enrollment in the Aerospace Engineering program is the largest in the country and has been ranked by the U.S. News and World Report as the # 1 program among non-PhD granting institutions. In addition, the College of Engineering offers Master Degrees in Aerospace Engineering and in Software Engineering. Degree programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

The College of Engineering emphasizes high-quality education and research activities that bring to the students the latest developments in the field. Students are continually encouraged and supported by faculty to strive for ingenious and creative solutions to today's technological problems through research projects on their own as well as joint projects with faculty.

Students acquire valuable hands-on experience using cutting-edge technology in the Design, Composites, and Wind Tunnel labs among others. The College also holds many seminars and workshops for engineering students with both academic and industry speakers. This interaction with industry enables students to stay abreast of current industry conditions and advancements. College of Engineering graduates are regarded as some of the most knowledgeable and best-trained professionals entering their chosen fields.

# Academic Programs at the Daytona Beach Campus

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## *Aerospace Engineering*

Bachelor of Science

The Aerospace Engineering program exists in partial fulfillment of the University's purpose "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's focus is primarily on the engineering of mission-oriented vehicles for atmospheric and space flight. The goal of the Aerospace Engineering program is to produce graduates who are ready for constructive roles in society, who qualify for entry-level engineering jobs in the aerospace industry or aviation-related fields, who qualify for admission to graduate programs in Aerospace Engineering (or related engineering fields), and who are prepared to continue learning throughout their lives.

In order to achieve these objectives, the following are the expected outcomes:

*1 Engineering responsibilities and methodology.*

From their first semester onward, students will be made aware of what engineering is and what will be expected of them as engineers, including a commitment to continuing education and to engineering ethics. This will be accomplished through interdisciplinary team activities and design projects, workshops and seminars, and the consistent assignment of open-ended problems throughout the curriculum.

*2 Professional activity and development.* Students will be encouraged throughout their Embry-Riddle careers to actively participate in professional organizations, stay abreast of industry activity, and to continue their professional development.

*3 Technical communication.* Throughout the curriculum, wherever appropriate, student teams will make professional quality oral and written presentations.

*4 General Education.* Students will satisfy the University's general education requirements to broaden the student's education, develop effective communication skills, and obtain awareness of social and ethical issues.

*5 Basic science and mathematics.* Students will demonstrate a knowledge of chemistry fundamentals (including oxidation/reduction, the essentials of physical chemistry and the basics of organic compounds as related to composite materials), basic physics (mechanics, heat, sound, electricity, and optics) and mathematics (differential and integral calculus, differential equations, matrix algebra and vector calculus) to use as tools in support of their studies of engineering topics and beyond.

*6 Engineering mechanics.* Students will demonstrate a knowledge of the fundamentals of classical engineering mechanics (as applied to rigid, elastic and fluid media) to provide a foundation for the professional component of the curriculum as well as to become familiar with basic engineering problem solving techniques, including team approaches.

# Academic Programs at the Daytona Beach Campus

**7 Aerodynamics and aeronautics.** Students will demonstrate a knowledge of topics in aerodynamics, to include a majority of the following: the aerospace environment; applications of mass, momentum, energy and entropy principles to one and two dimensional flows; potential flow; viscous flow and boundary layers; aerodynamics of airfoils in incompressible and compressible flows; steady state aircraft performance; static stability; propeller and rotary wing fundamentals; applications of the concept of panel methods; supersonic flow and aerodynamic heating.

**8 Thermal sciences.** Students will demonstrate knowledge of a sequence of topics in thermodynamics, heat transfer, and propulsion so as to be able to assess the operational capabilities and analyze the performance of air breathing and rocket engines.

**9 Structures.** Students will demonstrate a knowledge of topics in aerospace structures and materials, to include as a minimum: the equilibrium of forces and moments in three dimensions; shear and bending moment diagrams; stresses and deflections due to elastic tension, compression, shear and torsion on stable cross sections; compression and shear buckling; composite materials; basics of the finite element method; and vibration, fatigue and fracture mechanics concepts.

**10 Electronics.** Students will demonstrate a knowledge of topics in electric circuits, analog and digital electronic fundamentals, electro-mechanical devices, and instrumentation fundamentals.

**11 Astronautics.** Students will demonstrate a knowledge of topics in orbital mechanics, gyroscopic motion and control systems with aerospace applications.

**12 Laboratories and data interpretation.** Students will demonstrate an ability to perform laboratory work, including statistical processing of data and error analysis, in materials, structures, aerodynamics, power and energy systems, electronics, and instrumentation.

**13 Design.** Students will carry out and defend the conceptual design of an aircraft or a spacecraft in an industry-like environment, in teams, using realistic constraints and considerations of cost, safety, manufacturability and maintainability, and the needs of the public. Students will likewise also carry out the detail design of an aircraft or a spacecraft system.

**14 Support hardware and software.** The program will be supported throughout by the use of modern equipment and the most relevant modern tools and techniques of engineering analysis, design and production, including student experience with industry-level solid modeling (CAD/CAM), finite element and computational fluid mechanics software.

To enter this program, students should have demonstrated competence in mathematics, physics, and chemistry in high school.

## DEGREE REQUIREMENTS

The Bachelor of Science in Aerospace Engineering program requires successful completion of a minimum of 134 credit hours. The program may be completed in eight semesters assuming appropriate background and full-time enrollment. A minimum cumulative grade point average of 2.00 is needed for all required AE, EGR and ES courses, excluding technical electives. The courses necessary to earn this degree are listed below.

Students should be aware that many courses have prerequisites and/or corequisites. Check the course descriptions at the back of this catalog before registering for classes to assure required sequencing.

### FRESHMAN YEAR

Course	Title	Credits
	Lower-level Social Sciences*	3
AE 101	Introduction to Aerospace Engineering	2

# Academic Programs at the Daytona Beach Campus

COM 122	English Composition and Literature	3
CS 223	Scientific Programming in C	3
EGR 120	Graphical Communications	2
HU 14x	Lower-level Humanities*	3
MA 241	Calculus and Analytic Geometry I	4
MA 242	Calculus and Analytic Geometry II	4
PS 105	General Chemistry	4
PS 150	Physics I for Engineers	3
PS 160	Physics II for Engineers	3
<b>Total Credits</b>		<b>34</b>

## SOPHOMORE YEAR

Course	Title	Credits
	Lower-level Social Sciences*	3
COM 219	Speech	3
COM 221	Technical Report Writing	3
ES 201	Statics	3
ES 202	Solid Mechanics	3
ES 204	Dynamics	3
ES 206	Fluid Mechanics	3
MA 243	Calculus and Analytic Geometry III	4
MA 345	Differential Equations and Matrix Methods	4
PS 250	Physics III for Engineers	3
PS 253	Physics Laboratory for Engineers	1
<b>Total Credits</b>		<b>33</b>

## JUNIOR YEAR (Aeronautics and Propulsion Options)

Course	Title	Credits
	Humanities or Social Sciences*	3
AE 301	Aerodynamics I	3
AE 302	Aerodynamics II	3
AE 304	Aircraft Structures I	3
AE 309	Experimental Aerodynamics with Laboratory	2
AE 313	Space Mechanics	3
AE 404	Aircraft Structures II	3
AE 413	Airplane Stability and Control	3
ES 305	Thermodynamics	3
ES 307	Engineering Materials Science with Laboratory	3
ES 402	Electrical Engineering I with Laboratory	3
MA 441	Advanced Engineering Mathematics I	3
<b>Total Credits</b>		<b>35</b>

## JUNIOR YEAR (Astronautics Option)

Course	Title	Credits
	Humanities or Social Sciences*	3
AE 301	Aerodynamics I	3
AE 302	Aerodynamics II	3

AE 304	Aircraft Structures I	3
	AE or ES Laboratory	2
AE 313	Space Mechanics	3
AE 404	Aircraft Structures II	3
ES 305	Thermodynamics	3
ES 307	Engineering Materials Science with Laboratory	3
ES 402	Electrical Engineering I with Laboratory	3
ES 405	Electrical Engineering II (DB)	3
MA 441	Advanced Engineering Mathematics I	3
<b>Total Credits</b>		<b>35</b>

## SENIOR YEAR (Aeronautics Option)

Course	Title	Credits
	Upper-level Humanities or Social Sciences*	6
	Technical electives	6
	Open elective	3
AE 408	Turbine and Rocket Engines	3
AE 420	Aircraft Preliminary Design	3
AE 421	Aircraft Detail Design	3
AE 430	Control Systems Analysis and Design	3
ES 405	Electrical Engineering II	3
ES 410	Structures and Instrumentation Laboratory	2
<b>Total Credits</b>		<b>32</b>

## SENIOR YEAR (Astronautics Option)

Course	Title	Credits
	Upper-level Humanities or Social Sciences*	6
	Technical electives	6
	Open elective	3
AE 408	Turbine and Rocket Engines	3
AE 426	Spacecraft Attitude Dynamics and Control	3
AE 427	Spacecraft Preliminary Design	3
AE 430	Control Systems Analysis and Design	3
AE 445	Spacecraft Detail Design	3
	AE or ES Laboratory	2
<b>Total Credits</b>		<b>32</b>

## SENIOR YEAR (Propulsion Option)

Course	Title	Credits
	Upper-level Humanities or Social Sciences*	6
	Technical electives	6

# Academic Programs at the Daytona Beach Campus

	Open elective	3
AE 408	Turbine and Rocket Engines	3
AE 430	Control Systems Analysis and Design	3
AE 435	Air-Breathing Propulsion Preliminary Design	3
AE 440	Air-Breathing Propulsion Component Design	3
ES 405	Electrical Engineering	3
ES 410	Structures and Instrumentation Laboratory	2
<b>Total Credits</b>		<b>32</b>
<b>TOTAL DEGREE CREDITS</b>		<b>134</b>

UPPER-LEVEL:  
COM 412, 460  
HU 300, 305, 310, 320, 325, 330, 335, 341, 345, 363, 399<sup>†</sup>, 499<sup>††</sup>

SOCIAL SCIENCES:

LOWER-LEVEL:  
EC 200 (not acceptable together with EC 210 or EC 211 or their equivalent), 210, 211  
PSY 220  
SS 110, 120, 130, 204, 210, 220

UPPER-LEVEL:  
EC 310, 312, 315, 420, 399<sup>†</sup>, 499<sup>††</sup>  
HF 300  
PSY 350, 365  
SS 302, 305, 320, 325, 331, 340, 350, 352, 360, 361, 399<sup>†</sup>, 499<sup>††</sup>

## TECHNICAL ELECTIVES:

- AE: 350, 395, 399<sup>††</sup>, 401, 407, 409, 411, 415, 425, 433, 495, 499<sup>††</sup>, 5XXU  
CEAE: With prior approval of the Aerospace Engineering Department.  
CS: 325, 335, 344, 350, 372  
EP: 320, 394  
ES: 306, 315, 395, 399<sup>††</sup>, 403, 412, 495, 499<sup>††</sup>  
MA: 412, 432, 438, 442, 443, 5XXU  
MET: 303  
PS: 301, 303, 320, 401

Students may substitute upper-level AF and MY courses or aeronautical certificates for the 6 credits of technical electives.

## GENERAL EDUCATION ELECTIVES

\*Embry-Riddle courses in the general education categories *Communication Theory and Skills*, *Humanities*, and *Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Aerospace Engineering vertical outline.

COMMUNICATION THEORY AND SKILLS:

Aerospace Engineering students take COM 122, COM 219, and COM 221.

HUMANITIES:

LOWER-LEVEL:

HU 130<sup>†</sup>, 135<sup>†</sup>, 140, 141, 142, 143, 144, 145, 146, 150<sup>†</sup>, 151<sup>†</sup>, 152<sup>†</sup>, 153<sup>†</sup>, 154, 155<sup>†</sup>, 156, 157<sup>†</sup>, 158, 159<sup>†</sup>, 160, 161, 250, 260, 270, 271

<sup>†</sup> May not be the student's native language.

<sup>††</sup> Must be approved by the Aerospace Engineering department **before** taking this course.

# Academic Programs at the Daytona Beach Campus

## *Accelerated Program in Aerospace Engineering*

Bachelor of Science  
Master of Aerospace Engineering

The accelerated program allows students with strong academic background to complete both B.S. and M.A.E. degrees in aerospace engineering. The goal of the program is to produce graduates who are prepared for careers in aerospace industry, and research and development. The program augments the students' undergraduate background with graduate-level study, with course offerings in the areas of aerodynamics, structures, propulsion and astronautics.

### DEGREE REQUIREMENTS

Students enrolled in the Bachelor of Science program in Aerospace Engineering may apply for entry into the accelerated program when they have completed about 90 hours of coursework. Students should have a CGPA of 3.2 (out of a possible 4.0) in AE/ES courses, at a minimum, for selection. For continued enrollment, a CGPA of 3.0 must be maintained. Each student is required to conduct an independent study in a topic of current interest in aerospace engineering under the guidance of an advisor, with a formal report due at the end. Three to six graduate credits, depending upon the rigor and extent of the work, are earned through this work.

#### FRESHMAN YEAR

Course	Title	Credits
	Lower-level Social Sciences*	3
AE 101	Introduction to Aerospace Engineering	2
COM 122	English Composition and Literature	3
CS 223	Scientific Programming in C	3
EGR 120	Graphical Communications	2

HU 14x	Lower-level Humanities*	3
MA 241	Calculus and Analytic Geometry I	4
MA 242	Calculus and Analytic Geometry II	4
PS 105	General Chemistry	4
PS 150	Physics I for Engineers	3
PS 160	Physics II for Engineers	3
<b>Total Credits</b>		<b>34</b>

#### SOPHOMORE YEAR

Course	Title	Credits
	Lower-level Social Sciences*	3
COM 219	Speech	3
COM 221	Technical Report Writing	3
ES 201	Statics	3
ES 202	Solid Mechanics	3
ES 204	Dynamics	3
ES 206	Fluid Mechanics	3
MA 243	Calculus and Analytic Geometry III	4
MA 345	Differential Equations and Matrix Methods	4
PS 250	Physics III for Engineers	3
PS 253	Physics Laboratory for Engineers	1
<b>Total Credits</b>		<b>33</b>

#### JUNIOR YEAR (Aeronautics and Propulsion Options)

Course	Title	Credits
	Humanities or Social Sciences*	3
AE 301	Aerodynamics I	3
AE 302	Aerodynamics II	3
AE 304	Aircraft Structures I	3
AE 309	Experimental Aerodynamics with Laboratory	2
AE 313	Space Mechanics	3
AE 404	Aircraft Structures II	3
AE 413	Airplane Stability and Control	3
ES 305	Thermodynamics	3
ES 307	Engineering Materials Science with Laboratory	3
ES 402	Electrical Engineering I with Laboratory	3
MA 441	Advanced Engineering Mathematics I	3
<b>Total Credits</b>		<b>35</b>

# Academic Programs at the Daytona Beach Campus

## JUNIOR YEAR (Astronautics Option)

Course	Title	Credits
	Humanities or Social Sciences*	3
AE 301	Aerodynamics I	3
AE 302	Aerodynamics II	3
AE 304	Aircraft Structures I	3
AE 313	Space Mechanics	3
AE 404	Aircraft Structures II	3
	AE or ES Laboratory	2
ES 305	Thermodynamics	3
ES 307	Engineering Materials Science with Laboratory	3
ES 402	Electrical Engineering I with Laboratory	3
ES 405	Electrical Engineering II (DB)	3
MA 441	Advanced Engineering Mathematics I	3
<b>Total Credits</b>		<b>35</b>

## SENIOR YEAR (Aeronautics Option)

Course	Title	Credits
	Upper-level Humanities or Social Sciences*	6
	Technical electives ▶	6
AE 408	Turbine and Rocket Engines	3
AE 420	Aircraft Preliminary Design	3
AE 421	Aircraft Detail Design	3
AE 430	Control Systems Analysis and Design	3
ES 405	Electrical Engineering II	3
ES 410	Structures and Instrumentation Laboratory	2
<b>Total Credits</b>		<b>29</b>

## SENIOR YEAR (Propulsion Option)

Course	Title	Credits
	Upper-level Humanities or Social Sciences*	6
	Technical electives ▶	6
AE 408	Turbine and Rocket Engines	3
AE 430	Control Systems Analysis and Design	3
AE 435	Air-breathing Propulsion Preliminary Design	3
AE 440	Air-breathing Propulsion Component Design	3
ES 405	Electrical Engineering II	3
ES 410	Structures and Instrumentation Laboratory	2
<b>Total Credits</b>		<b>29</b>

## SENIOR YEAR (Astronautics Option)

Course	Title	Credits
	Upper-level Humanities or Social Sciences*	6
	Technical electives ▶	6
AE 408	Turbine and Rocket Engines	3
AE 426	Spacecraft Attitude Dynamics and Control	3
AE 427	Spacecraft Preliminary Design	3
AE 430	Control Systems Analysis and Design	3
AE 445	Spacecraft Detail Design AE or ES Laboratory	2
<b>Total Credits</b>		<b>29</b>
<b>TOTAL UNDERGRADUATE CREDITS</b>		<b>125</b>

## GRADUATE-LEVEL STUDY

Course	Title	Credits
	Engineering Analysis	3
AE 696/699	Special Topics Electives ▶▶ (at least 9 hours at 600-level)	3/6 15/12
<b>Total Credits</b>		<b>21</b>

## TOTAL DEGREE CREDITS 152

▶ Technical Electives: Students may satisfy this requirement by selecting from the 500-level graduate courses listed in this section.

▶▶ Electives: The following may be selected as electives at the graduate level. The elective list has been grouped into areas of concentration.

### Areas of Concentration:

#### Structures:

This area includes Structural Analysis, Vibration, Nondestructive Testing, Composite Materials, Elasticity, Flight Dynamics, Controls, and Design Optimization.

#### Electives for Structures Concentration:

AE 502	Strength and Fatigue of Materials
AE 506	Airplane Dynamic Stability
AE 514	Introduction to the Finite Element Method
AE 518	Acoustic Emission Nondestructive Testing
AE 520	Perturbation Methods in Engineering
AE 522	Analysis of Aircraft Composite Materials

# Academic Programs at the Daytona Beach Campus

- AE 612 Analysis of Aircraft Plate and Shell Structures
- AE 616 Advanced Aircraft Structural Dynamics
- AE 699 Special Topics in Aerospace Engineering

## Aerodynamics and Propulsion

This area includes: Aerodynamics, Propulsion, Computational Aero and Fluid Dynamics, Transition and Turbulence, Aeroacoustics, Heat Transfer and Combustion.

### **Electives for Aerodynamics and Propulsion Concentration:**

- AE 504 Advanced Compressible Flow
- AE 508 Heat Transfer
- AE 512 Combustion I
- AE 516 Computational Aeronautical Fluid Dynamics
- AE 528 Advanced Incompressible Aerodynamics
- AE 530 Aeroacoustics
- AE 610 Advanced Computational Fluid Dynamics
- AE 620 Boundary Layer Theory
- AE 640 Turbine Engine Propulsion Systems
- AE 648 Thermal Stresses in Aerospace Engineering
- AE 650 Special Topics in Aerodynamics and Propulsion Engineering
- AE 652 Turbulent Flows

## Astronautics and Control

This area includes: Space Vehicles, Space Power, and Systems Control.

### **Electives for Astronautics Concentration:**

- AE 508 Heat Transfer
- AE 524 Rocket Engine Propulsion Systems
- AE 526 Engineering Optimization
- AE 606 Finite Element Aerospace Applications
- AE 620 Boundary Layer Theory
- AE 646 Nonlinear Dynamical Systems and Chaos

## HUMANITIES:

### LOWER-LEVEL:

HU 130<sup>†</sup>, 135<sup>†</sup>, 140, 141, 142, 143, 144, 145, 146, 150<sup>†</sup>, 151<sup>†</sup>, 152<sup>†</sup>, 153<sup>†</sup>, 154, 155<sup>†</sup>, 156, 157<sup>†</sup>, 158, 159<sup>†</sup>, 160, 161, 250, 260, 270, 271

### UPPER-LEVEL:

COM 412, 460

HU 300, 305, 310, 320, 325, 330, 335, 341, 345, 363, 399<sup>††</sup>, 499<sup>††</sup>

## SOCIAL SCIENCES:

### LOWER-LEVEL:

EC 200 (not acceptable together with EC 210 or EC 211 or their equivalent), 210, 211

PSY 220

SS 110, 120, 130, 204, 210, 220

### UPPER-LEVEL:

EC 310, 312, 315, 420, 399<sup>††</sup>, 499<sup>††</sup>

HF 300

PSY 350, 365

SS 302, 305, 320, 325, 331, 340, 350, 352, 360, 361, 399<sup>††</sup>, 499<sup>††</sup>

<sup>†</sup> May not be the student's native language.

<sup>††</sup> Must be approved by the Aerospace Engineering department **before** taking this course.

## GENERAL EDUCATION ELECTIVES

\*Embry-Riddle courses in the general education categories *Communication Theory and Skills*, *Humanities*, and *Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Aerospace Engineering vertical outline.

### COMMUNICATION THEORY AND SKILLS:

Aerospace Engineering students take COM 122, COM 219, and COM 221.

# Academic Programs at the Daytona Beach Campus

## Aircraft Engineering Technology

Bachelor of Science

(The Bachelor's Degree in Aircraft Engineering Technology is closed to new students.)

Embry-Riddle offers the Bachelor of Science degree in Aircraft Engineering Technology (ACET) at the Daytona Beach campus. The ACET program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202. It is designed to give the student a solid foundation in mathematics and the natural sciences as well as broad exposure to technical courses. These technical courses address the application of scientific and engineering knowledge combined with technical skills in support of aircraft engineering activities. The program provides the strong background in basic engineering, aerodynamics, structures, propulsion, and integrated logistics support required for a wide range of careers in the aviation industry.

### ADMISSION REQUIREMENTS

Students entering this program should have a basic background in math, physics, and chemistry. College Calculus is the entry-level math course. Students wishing to strengthen their background in math and the basic sciences before enrolling in the prescribed course sequence should consult the Department Chair for guidance in course selection.

Students should be aware that several courses in each academic year may have prerequisites and/or corequisites. Check the course descriptions at the back of this catalog before registering for classes to assure requisite sequencing.

### DEGREE REQUIREMENTS

The Bachelor of Science in Aircraft Engineering Technology requires successful completion of 126 semester hours, as outlined in the following course list. A minimum cumulative grade point average of 2.00 is needed for all required engineering technology courses.

#### FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills*	6
	Lower-level Humanities*	3
CS 223	Scientific Programming in C	3
DET 101	University Success**	1
DET 111	Engineering Drawing	2
MA 241	Calculus and Analytic Geometry I	4
MA 242	Calculus and Analytic Geometry II	4
PS 101	Basic Chemistry and laboratory	3
PS 150	Physics I for Engineers	3
PS 160	Physics II for Engineers	3
<b>Total Credits</b>		<b>32</b>

#### SOPHOMORE YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Social Science*	3
EET 225	Applied Electrical Science with Laboratory	4
MET 201	Applied Statics and Dynamics	4
MET 210	Applied Thermodynamics	3
MET 211	Applied Strength of Materials with Laboratory	4
MET 212	Applied Hydraulics	2
MA 245	Applied Differential Equations	3
PS 250	Physics III for Engineers	3
PS 253	Physics Laboratory for Engineers	1
<b>Total Credits</b>		<b>30</b>

# Academic Programs at the Daytona Beach Campus

## JUNIOR YEAR

Course	Title	Credits
	Upper-level Humanities or Social Science*	6
ACET 301	Manufacturing Processes, Materials and Testing with Laboratory	4
ACET 302	Applied Aerodynamics I	3
ACET 311	Aircraft Drafting and Design	3
ACET 312	Applied Aerodynamics II with Laboratory	3
ACET 314	Aircraft Structural Analysis	4
LET 304	Applied Reliability and Maintainability Engineering	3
MET 303	Mechanical Design	3
	Open elective	<u>3</u>
<b>Total credits</b>		<b>32</b>

## SENIOR YEAR

Course	Title	Credits
	Lower-level Social Sciences*	3
ACET 402	Applied Instrumentation	3
ACET 403	Applied Performance and Design	3
ACET 404	Aircraft Composites with Laboratory	2
ACET 405	Aircraft Internal Combustion Engines	2
ACET 406	Introduction to Systems Analysis and Design	3
ACET 407	Aircraft Engines and Gas Turbines	3
ACET 410	Applied Structural Dynamics	3
ACET 412	Aircraft Structures Test Laboratory	1
ACET 415	Aircraft Detail Design	3
LET 413	Integrated Aviation Logistics Support, - or -	3
MET 405	Non-Destructive Testing and Quality Assurance with Laboratory	3
	Open elective	<u>3</u>
<b>Total Credits</b>		<b>32</b>
<b>TOTAL DEGREE CREDITS</b>		<b>126</b>

\*Embry-Riddle courses in the general education categories *Communication Theory and Skills, Humanities and Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Aircraft Engineering Technology vertical outline.

\*\*DET 101 is not required but is highly encouraged, particularly for first time college students.

### COMMUNICATION THEORY AND SKILLS:

COM: 122, 219, 221

### HUMANITIES:

LOWER-LEVEL: Any course in the HU 140's series.

UPPER-LEVEL: HU 300, 305, 310, 320, 325, 330, 335, 341, 345, 399, 499

### SOCIAL SCIENCES:

LOWER-LEVEL: EC 200, 210, 211

(EC 200 is not acceptable together with EC 210 or EC 211 or their equivalent),

PSY 220

SS 110, 120, 130, 204, 210

UPPER-LEVEL: EC 310, 312, 315, 420

SS 302, 305, 310, 320, 325, 331, 335, 340, 350, 352, 399, 499

HF 300

PSY 350

Students should enroll in Cooperative Education or Intern programs as early as possible in their program.

Cooperative Education credits may be used as open electives.

# Academic Programs at the Daytona Beach Campus

## Avionics Engineering Technology

Bachelor of Science

(The Bachelor's Degree in Avionics Engineering Technology is closed to new students.)

Avionics Engineering Technology, located within the Engineering Technology Department, is designed to give the student a solid foundation in mathematics and the natural sciences as well as a broad exposure to technical courses that address the application of scientific and engineering knowledge combined with technical skills in support of engineering activities. The program provides a strong technical background in electronics, applied electronics engineering, applied avionics engineering, applied engineering mechanics, and integrated logistics support required for a wide range of careers in the aviation industry. This program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC of ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202. Telephone: (410) 347-7700.

### ADMISSIONS REQUIREMENTS

Students entering this program should have a basic background in math, physics, and chemistry. College Calculus is the entry-level math course. Students wishing to strengthen their background in math and the basic sciences before enrolling in the prescribed courses should contact the Department Chair for guidance in course selection.

Students should be aware that several courses in each academic year may have prerequisites and/or co-requisites. Check the course description at the back of this catalog before registering for classes to assure requisite sequencing.

### DEGREE REQUIREMENTS

The Bachelor of Science in Avionics Engineering Technology requires successful completion of 128 semester hours, as outlined in the following course list. A minimum cumulative grade point average of 2.00 is needed for all required engineering technology courses.

#### FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Humanities*	3
CS 223	Scientific Programming in C	3
DET 111	Engineering Drawing	2
EET 105	Direct and Alternating Current Fundamentals and Circuit Analysis	4
EET 106	Direct and Alternating Current Laboratory	1
EET 205	Microelectronics Fundamentals and Circuit Analysis	4
EET 206	Microelectronics Laboratory	1
MA 241	Calculus and Analytical Geometry I	4
PS 101	Basic Chemistry and laboratory	3
PS 150	Engineering Physics I	3
<b>Total Credits</b>		<b>31</b>

#### SOPHOMORE YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
AVT 308	Pulse Components and Circuit Applications	2
AVT 309	Pulse Circuits Laboratory	1
EET 210	Digital Circuit and Systems Analysis	4
EET 211	Digital Circuits Laboratory	1
EET 303	Microprocessor Systems	3
EET 304	Microprocessor Systems Laboratory	1
MA 242	Calculus and Analytical Geometry II	4
MA 245	Applied Differential Equations	3
MET 201	Applied Statics and Dynamics	4
PS 160	Physics II for Engineers	3
PS 250	Physics III For Engineers	3
PS 253	Physics Laboratory for Engineers	1
<b>Total Credits</b>		<b>33</b>

# Academic Programs at the Daytona Beach Campus

## JUNIOR YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Social Science*	3
AET 301	Linear Systems Analysis	3
AET 302	Elements of Engineering Design and Laboratory Procedures	3
AET 311	Advanced Communications Systems Analysis with Lab	5
AET 312	Applied Control Systems Analysis	2
AET 313	Microwave and Radar Systems Analysis	2
LET 304	Applied Reliability and Maintainability Engineering	3
MET 210	Applied Thermodynamics	3
MET 211	Applied Strength of Materials with Lab	4
<b>Total Credits</b>		<b>31</b>

## SENIOR YEAR

Course	Title	Credits
	Upper-level Humanities or Social Science*	3
ACET 301	Manufacturing Processes Materials and Testing with Lab	4
AET 406	Avionics Analog Systems Design Considerations with Lab	4
AET 407	Avionics Digital Systems Design Considerations with Lab	4
AET 417	Avionics System Integration and Design	3
EC	Elective	3
HF 300	Human Factors	3
LET 413	Integrated Aviation Logistics Support	3
OPEN	Electives	6
<b>Total Credits</b>		<b>33</b>
<b>TOTAL DEGREE CREDITS</b>		<b>128</b>

Early participation in Intern or Cooperative Education positions is encouraged.

\*Embry-Riddle courses in the general education categories *Communication Theory and Skills, Humanities and Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Avionics Engineering Technology vertical outline.

\*\*DET 101 is not required but is highly encouraged, particularly for first time college students.

### COMMUNICATION THEORY AND SKILLS:

COM: 122, 219, 221

### HUMANITIES:

LOWER-LEVEL: Any course in the HU 140's series.  
UPPER-LEVEL: HU 300, 305, 310, 320, 325, 330, 335, 341, 345, 399, 499

### SOCIAL SCIENCES:

LOWER-LEVEL: EC 200, 210, 211  
(EC 200 is not acceptable together with EC 210 or EC 211 or their equivalent),  
PSY 220  
SS 110, 120, 130, 204, 210

UPPER-LEVEL: EC 310, 312, 315, 420  
SS 302, 305, 310, 320, 325, 331, 335, 340, 350, 352, 399, 499  
HF 300  
PSY 350

# Academic Programs at the Daytona Beach Campus

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## *Civil Engineering*

Bachelor of Science

The demand for civil engineers educated to apply their problem-solving skills in the fields of airports, transportation, aviation and aerospace planning, analysis and design is strong and expected to grow rapidly in the future. Air and ground transportation have substantially expanded in the last few years and are expected to continue to grow at an increasing pace. Space utilization and exploration initiatives are certain to produce further demand for civil engineers. Our program is uniquely designed to produce graduates with the types of skills and experiences which employers in these lucrative fields find highly desirable. Embry-Riddle's undergraduate civil engineering program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700.

Graduates of the civil engineering program will leave the University with an understanding of the classical areas of civil engineering with an emphasis on the transportation, aviation and aerospace fields developed through a carefully planned series of courses and laboratories. Small class size and personal attention allows for the interjection of practical interdisciplinary design projects throughout the curriculum. Students develop individual problem-solving skills while, at the same time, practicing the fundamental team-building skills needed for success as a professional engineer. Embry-Riddle civil engineering graduates will have the knowledge and confidence to handle any situation that may arise

and will welcome challenges by carrying an appreciation for learning that will last throughout their professional careers. Our students have the necessary background to further their formal education through graduate school.

### ADMISSION REQUIREMENTS

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To enter this program, students should have demonstrated competence in mathematics, physics, and chemistry in high school. They should be prepared to enter Calculus I, having demonstrated proficiency in algebra and trigonometry. Students who wish to strengthen their background in mathematics and physical science should consult the program chair for guidance before enrolling in the prescribed courses.

Students should be aware that several courses in each academic year may have prerequisites and/or corequisites. Check the course descriptions at the back of this catalog before registering for classes to assure requisite sequencing.

### DEGREE REQUIREMENTS

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The bachelor of science in Civil Engineering program requires successful completion of a minimum of 128 semester hours. The program may be completed in eight regular semesters, assuming appropriate background and full-time enrollment. A minimum cumulative grade point average of 2.00 is needed for all required CIV, AE, EE, EGR and ES courses, including engineering electives.

# Academic Programs at the Daytona Beach Campus

## FIRST SEMESTER

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Social Science*	3
CIV 101	Topics in Civil Engineering	2
MA 241	Calculus and Analytic Geometry I	4
PS 101	Basic Chemistry	3
<b>Total Credits</b>		<b>15</b>

## SECOND SEMESTER

Course	Title	Credits
CIV 140	Engineering Measurements with Laboratory	2
CS 223	Scientific Computing in C	3
EGR 120	Graphical Communications	2
MA 242	Calculus and Analytic Geometry II	4
PS 150	Physics I for Engineers	3
<b>Total Credits</b>		<b>14</b>

## THIRD SEMESTER

Course	Title	Credits
	Communication Theory and Skills*	3
CIV 311	Introduction to Transportation Engineering	3
ES 201	Statics	3
MA 243	Calculus and Analytic Geometry III	4
PS 160	Physics II for Engineers	3
<b>Total Credits</b>		<b>16</b>

## FOURTH SEMESTER

Course	Title	Credits
ES 202	Solid Mechanics	3
ES 204	Dynamics	3
MA 345	Differential Equations and Matrix Methods	4
PS 250	Physics III for Engineers	3
PS 253	Physics Laboratory for Engineers	1
	Transportation elective	3
<b>Total Credits</b>		<b>17</b>

## FIFTH SEMESTER

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Humanities*	3
CIV 304	Structural Analysis	3
CIV 307	Civil Engineering Materials I with Laboratory	4
CIV 316	Hydraulics	3
<b>Total Credits</b>		<b>16</b>

## SIXTH SEMESTER

Course	Title	Credits
	Materials elective	3
	Structures elective	3
CIV 320	Soil Mechanics	4

CIV 370	Computational Methods in Civil Engineering	3
EE 306	Introduction to Electrical Systems	2
ES 305	Thermodynamics	3
<b>Total Credits</b>		<b>18</b>

## SEVENTH SEMESTER

Course	Title	Credits
	Upper-level Humanities/Social Science*	6
CIV 330	Computer Applications in Transportation	2
MA 412	Probability and Statistics	3
	Engineering/Technical elective	3
	Geotechnical elective	3
<b>Total Credits</b>		<b>17</b>

## EIGHTH SEMESTER

Course	Title	Credits
	Upper-level Humanities/Social Science*	3
CIV 460	Senior Design Project	3
	Engineering/Technical electives	6
	Open elective	3
<b>Total Credits</b>		<b>15</b>
<b>TOTAL DEGREE CREDITS</b>		<b>128</b>

## GENERAL EDUCATION ELECTIVES

\*Embry-Riddle courses in the general education categories *Communication Theory and Skills*, *Humanities and Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Civil Engineering vertical outline. Course substitutions may be made upon approval of the program chairman.

### COMMUNICATION THEORY AND SKILLS:

COM 122, 219, 221, 222, 351, 360, 410  
 HU 315, 319, 351, 355, 360, 361, 362, 410, 420

### HUMANITIES:

#### LOWER-LEVEL:

HU 130\*\*, 135\*\*, 140-145, 146, 150\*\*, 151\*\*, 153\*\*, 155\*\*, 157\*\*, 159\*\*, 250

\*\*Must not be the student's native language

UPPER-LEVEL: HU 300, 305, 310, 320, 325, 330, 335, 341, 345, 399, 499.

# Academic Programs at the Daytona Beach Campus

## SOCIAL SCIENCES:

### LOWER-LEVEL:

EC 200, 210, 211 (EC 200 is not acceptable together with EC 210 or EC 211 or their equivalent)  
 PSY 220  
 SS 110, 120,130, 204, 210

### UPPER-LEVEL:

EC 310, 312, 315, 420  
 SS 302, 305, 310, 320, 325, 331, 340, 350, 352, 399, 499  
 HF 300; PSY 350

## CIVIL ENGINEERING ELECTIVES

Course	Title	Credits
CIV 310	Intermodal Transportation Engineering	3
CIV 340	Construction Engineering	3
CIV 362	Engineering and Construction Operations in Space	3
CIV 380	Federal Aviation Regulations/ Environmental Impact	3
CIV 413	Geometric Design of Highway Facilities	3
CIV 421	Geotechnical and Foundation Engineering	3
CIV 422	Design of Pavement Structures	3
CIV 423	Stabilization of Soil Aggregate System	3
CIV 424	Rehabilitation of Pavement Structures	3
CIV 431	Reinforced Concrete Design	3
CIV 432	Structural Steel Design	3
CIV 433	Timber Design	3
CIV 435	Wind Engineering	1
CIV 441	Civil Engineering Materials II	3
CIV 445	Airport Pavement Design	3
CIV 447	Airport Design I	3
CIV 457	Airport Design II	3
CIV 490	The Civil Engineering Profession	1
CIV 499	Directed Design Project	1-3
CIV 199, 299,399	Special Topics in Civil Engineering	1-3

# Academic Programs at the Daytona Beach Campus

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## *Computer Engineering*

Bachelor of Science

The Bachelor of Science in Computer Engineering degree provides the student the opportunity to acquire a broad background in computer design, including embedded control systems, real-time systems, telecommunication systems, and software engineering. The curriculum includes courses in general education, computer science, software engineering, electrical engineering, and features a capstone senior design. The program's emphasis on real-time embedded control systems and hardware / software interfaces provides program graduates employment opportunities beyond graduates of traditional computer engineering programs, including positions in the aerospace and defense industries.

The goal of the Computer Engineering program is to produce graduates who are successful practitioners of computer engineering. The detailed objectives of the program are that our graduates:

- Effectively analyze, design, and implement computer systems, including embedded, real-time, and safety-critical computer systems.
- Demonstrate professionalism in their work and grow professionally through continued learning and involvement in professional activities.
- Contribute to society by behaving ethically and responsibly.
- Communicate effectively in oral, written, and newly developing modes and media.
- Assume a variety of roles in teams of diverse membership.

The program curriculum is designed to facilitate accomplishment of these objectives by program graduates. The program includes significant project work designed to prepare students to work as part of a team on the development of complex systems involving both software and hardware. It allows the student opportunities to develop capabilities in teamwork, "designing to requirements," and quality assurance techniques.

### DEGREE REQUIREMENTS

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The Bachelor of Science in Computer Engineering can be earned in eight semesters assuming appropriate background and full-time enrollment. Successful completion of a minimum of 128 credit hours is required. To enter this program, students should have demonstrated competence in mathematics, physics, and computer programming in high school, and they should be prepared to enter Calculus and Analytical Geometry I and Computer Science I. If necessary, students can prepare for the program by taking College Algebra (MA 140) and/or Trigonometry (MA 142) before taking Calculus and Analytic Geometry (MA 241), and by taking Fundamentals of Computer Programming (CS 118) before taking Computer Science I (CS 125). Students should check the course descriptions at the back of this catalog before registering for classes to assure requisite sequencing.

# Academic Programs at the Daytona Beach Campus

## CONCENTRATION IN AVIONIC SYSTEMS

In addition to the Bachelor of Science in Computer Engineering degree offered at both Daytona Beach and Prescott campuses, the Bachelor of Science in Computer Engineering with Concentration in Avionics Systems is offered at the Daytona Beach campus. Students in the Avionics Systems concentration take a required sequence of courses in avionics, communication theory, and satellite communication in place of the technical electives of the Computer Engineering program without specified concentration.

### *Suggested Program of Study*

#### FRESHMAN YEAR

Course	Title	Credits
	Lower-level Humanities*	3
CEC 100	Introduction to Computer Engineering	1
COM 122	English Composition and Literature	3
CS 125	Computer Science I	4
CS 222	Introduction to Discrete Structures	3
CS 225	Computer Science II	4
MA 241	Calculus and Analytic Geometry I	4
MA 242	Calculus and Analytic Geometry II	4
PS 150	Physics I for Engineers	3
PS 160	Physics II for Engineers	3
<b>Total Credits</b>		<b>32</b>

#### SOPHOMORE YEAR

Course	Title	Credits
CEC 220	Digital Circuit Design	3
CEC 222	Digital Circuit Design Laboratory	1
CEC 320	Microprocessor Systems	3
CEC 322	Microprocessor Systems Laboratory	1
COM 219	Speech	3
COM 221	Technical Report Writing	3
EC 225	Engineering Economics	3
EE 223	Linear Circuit Analysis I	3
EE 224	Electrical Engineering Laboratory I	1
MA 243	Calculus and Analytic Geometry III	4
MA 345	Differential Equations and Matrix Methods	4
PS 250	Physics III for Engineers	3
PS 253	Physics III Laboratory for Engineers	1
<b>Total Credits</b>		<b>33</b>

#### JUNIOR YEAR

Course	Title	Credits
	Lower-level Humanities or Social Science*	3
	Upper-level Humanities or Social Science*	3
CEC 460	Telecommunications Systems	3
CS 420	Operating Systems	3
EE 300	Linear Circuits Analysis	3
EE 301	Electrical Engineering Laboratory II	1
EE 302	Electronic Devices and Circuits	3
EE 303	Signals and Filters	3
MA 412	Probability and Statistics	3
SE 300	Software Engineering	4
	Open elective	3
<b>Total Credits</b>		<b>32</b>

#### JUNIOR YEAR

##### (Avionics Systems Concentration)

Course	Title	Credits
	Lower-level Humanities or Social Science*	3
	Upper-level Humanities or Social Science*	3
CS 420	Operating Systems	3
EE 300	Linear Circuits Analysis	3
EE 301	Electrical Engineering Laboratory II	1
EE 302	Electronic Devices and Circuits	3
EE 303	Signals and Filters	3
EE 307	Avionics Systems I	4
EE 310	Avionics Systems II	3
MA 412	Probability and Statistics	3
	Open elective	3
<b>Total Credits</b>		<b>32</b>

#### SENIOR YEAR

Course	Title	Credits
	Upper-level Humanities or Social Science*	3
CEC 420	Computer Systems Design I	3
CEC 421	Computer Systems Design II	3
CS 450	Real Time Systems	3
CS 470	Computer Architecture	3
EE 401	Control Systems Analysis and Design	3
EE 402	Control Systems Laboratory	1
	Open elective	3
	Technical elective**	2
<b>Total Credits</b>		<b>31</b>

# Academic Programs at the Daytona Beach Campus

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<b>SENIOR YEAR</b>		
<b>(Avionics Systems Concentration)</b>		
<b>Course</b>	<b>Title</b>	<b>Credits</b>
	Upper-level Humanities or Social Science*	3
CEC 420	Computer Systems Design I	3
CEC 421	Computer Systems Design II	3
CS 450	Real Time Systems	3
CS 470	Computer Architecture	3
EE 401	Control Systems Analysis and Design	3
EE 402	Control Systems Laboratory	1
EE 403	Avionics Communication Systems	3
EE 408	Data Communications	3
EE 415	Satellite Communications	3
	Open elective	3
<b>Total Credits</b>		<b>31</b>

**TOTAL DEGREE CREDITS 128**

\*Embry-Riddle courses in the general education categories *Humanities*, and *Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Computer Engineering vertical outline.

**HUMANITIES:**

LOWER-LEVEL: Any course in the HU 140's series, 250

UPPER-LEVEL:

HU 300, 305, 310, 320, 325, 330, 335, 341, 345, 399, 499

**SOCIAL SCIENCES:**

LOWER-LEVEL:

PSY 220

SS 110, 120, 130, 204, 210

UPPER-LEVEL:

EC 310, 312, 315, 420,

SS 302, 305, 310, 320, 325, 331, 335, 340, 350, 352,

360,399, 499

HF 300,

PSY 350

\*\* Technical electives must be approved by the program coordinator.

# Academic Programs at the Daytona Beach Campus

## Computer Science

### Bachelor of Science

The curriculum for the Bachelor of Science degree in Computer Science includes courses in software development, computer organization, database systems, real-time systems, and software engineering. The program provides a blend of theory and applications that prepares students for a variety of computer science and software engineering positions in scientific and business fields, and lays the foundation for graduate studies in computer science and software engineering. Upper-level courses involve students in team projects that emphasize industrial processes and practices. The elective courses in the program let students broaden their general education or pursue specific interests.

### DEGREE REQUIREMENTS

The Bachelor of Science degree can be earned in eight semesters assuming appropriate background and full-time enrollment. Successful completion of a minimum of 120 credit hours is required.

Students entering this program should have demonstrated a competence in mathematics and science (preferably physics). They should be prepared to enter Calculus I, having demonstrated proficiency in algebra and trigonometry. Students can prepare for this program by taking MA 140 College Algebra and MA 142 Trigonometry prior to taking MA 241. For those students who have not taken physics in high school, it is recommended that

PS 103 Technical Physics I be taken prior to PS 150. For those students who have not taken a course in computer programming in high school, it is strongly recommended that CS 118, Fundamentals of Computer Programming, be taken before CS 125.

The Computer Science program is designed to prepare students to work as part of a team on the development of software systems. Software engineering concepts are integrated through the curriculum. The curriculum includes courses in general education, math science, and computing. The latter is divided into computing fundamentals, advanced concepts, applied computing, and software engineering. In addition, a student can acquire a minor or a concentration in a domain area of interest.

Students should be aware that several courses in each academic year may have prerequisites and/or corequisites. Check the course descriptions at the back of this catalog before registering for classes to assure requisite sequencing.

#### FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
CS 100	Introduction to Computing	1
CS 125	Computer Science I	4
CS 222	Introduction to Discrete Structures	3
CS 225	Computer Science II	4
MA 241	Calculus and Analytic Geometry I	4
MA 242	Calculus and Analytic Geometry II	4
PS 150	Physics I for Engineers	3
PS 160	Physics II for Engineers	3
<b>Total Credits</b>		<b>29</b>

# Academic Programs at the Daytona Beach Campus

## SOPHOMORE YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Humanities*	3
AS 120	Principles of Aeronautical Science	3
CEC 220	Digital Circuit Design	3
CEC 222	Digital Circuit Design Laboratory	1
CEC 320	Microprocessor Systems	3
CEC 322	Microprocessor Systems Laboratory	1
CS 315	Data Structures and Algorithms	3
MA 412	Probability and Statistics	3
PS 250	Physics III for Engineers	3
PS 253	Physics Laboratory for Engineers	1
SE 300	Software Engineering	4
<b>Total Credits</b>		<b>31</b>

\*Embry-Riddle courses in the general education categories *Communication Theory and Skills*, *Humanities*, and *Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the Computer Science vertical outline.

COMMUNICATION THEORY AND SKILLS:  
COM 122, 219, 221, 222

HUMANITIES:

LOWER-LEVEL:

Any course in the HU 140 series.

UPPER-LEVEL:

HU 300, 305, 310, 320, 325, 330, 335, 341, 345

SOCIAL SCIENCES:

LOWER-LEVEL:

EC 200, 210, 211 (EC 200 is not acceptable together with EC 210 or EC 211 or their equivalent),  
PSY 220

SS 110, 120, 130, 204, 210

UPPER-LEVEL:

EC 310, 312, 315, 420

SS 302, 305, 310, 320, 325, 331, 335, 340, 350, 352, 360

HF 300

PSY 350

\*\*MA 245, MA 243, or a 300/400 level math course.

## JUNIOR YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Social Sciences*	6
CS 317	Files and Database Systems	3
CS 332	Organization of Programming Languages	3
CS 420	Operating Systems	3
CS 470	Computer Architecture	3
SE 310	Analysis and Design of Software Systems	3
	Math elective**	3
	Specified elective▲	3
<b>Total Credits</b>		<b>30</b>

## SENIOR YEAR

Course	Title	Credits
	Upper-level Humanities or Social Sciences*	6
CS/SE/CEC	Elective (300/400 level)	6
CS 450	Real-Time Systems	3
SE 450	Software Team Project	3
	Specified elective▲	9
	Humanities/ Social Science elective	3
<b>Total Credits</b>		<b>30</b>
<b>TOTAL DEGREE CREDITS</b>		<b>120</b>

▲ Courses will be selected, with the approval of the student's advisor, to support acquiring a minor or an identified concentration of domain knowledge (for example: aviation, business, communications, human factors, math, etc.).

# Academic Programs at the Daytona Beach Campus

## Computer Science/Master of Software Engineering

Bachelor of Science  
Master of Software Engineering

This is a five-year program that allows exceptional students to complete both a B.S. in Computer Science and a Master of Software Engineering degree. The objective of this five-year program is to produce professional software engineers with skill and knowledge in:

- The program includes a requirement for two summer internships in industry. Typically, one internship will be completed between the junior and senior years, and one will be completed between the senior and Graduate years.

- Fundamentals of Computer Science (e.g., Data Structures and Algorithms, Organization of Programming Languages, Operating Systems and Databases)
- Software systems development for Real-Time embedded applications
- Personal and Team Software Processes
- Software engineering Methods, Tools, and Techniques
- Use of Requirements Engineering and Software Architecture and Design
- Modern software development methodologies (e.g., Object-Oriented Analysis and Design)
- Software development in a "real" work environment

### DEGREE REQUIREMENTS

Students interested in pursuing this program must meet the following requirements:

- Maintain at least a 3.2 GPA cumulative throughout the academic program.
- Maintain at least a 3.0 cumulative GPA for the graduate credits.
- Complete a total of 144 credit hours (listed in a subsequent section). There will be 117 credit hours of undergraduate requirements and 27 credit hours of graduate requirements.

#### FIRST YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
CS 100	Introduction to Computing	1
CS 125	Computer Science I	4
CS 222	Introduction to Discrete Structures	3
CS 225	Computer Science II	4
MA 241	Calculus and Analytic Geometry I	4
MA 242	Calculus and Analytic Geometry II	4
PS 150	Physics I for Engineers	3
PS 160	Physics II for Engineers	3
<b>Total Credits</b>		<b>29</b>

#### SECOND YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Humanities*	3
AS 120	Principles of Aeronautical Science	3
CEC 220	Digital Circuit Design	3
CEC 222	Digital Circuit Design Laboratory	1
CEC 320	Microprocessor Systems	3
CEC 322	Microprocessor Systems Laboratory	1
CS 315	Data Structures and Algorithms	3
MA 412	Probability and Statistics	3
PS 250	Physics III for Engineers	3
PS 253	Physics Laboratory for Engineers	1
SE 300	Software Engineering	4
<b>Total Credits</b>		<b>31</b>

#### THIRD YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Social Sciences*	6
CS 317	Files and Database Systems	3

# Academic Programs at the Daytona Beach Campus

CS 332	Organization of Programming Languages	3
CS 420	Operating Systems	3
CS 470	Computer Architecture	3
MA	Elective (243, 245, or 300/400 level)	3
SE 310	Analysis and Design of Software Systems Specified elective**	3 3
<b>Total Credits</b>		<b>30</b>

## SUMMER TERM

Co-Op elective (400)  
Student must spend the term performing co-op in a software industry and be engaged in a software engineering activity (e.g., analysis, design, code or test). 3

## FOURTH YEAR

Course	Title	Credits
	Upper-level Humanities or Social Sciences*	6
CS 450	Real-Time Systems	3
HU/SS	Elective*	3
MSE 500	Software Engineering Concepts	3
MSE 530	Software Requirements Engineering	3
SE 450	Software Team Project Specified elective**	3 2
<b>Total Credits</b>		<b>30</b>

## SUMMER TERM

Co-Op Elective (500)  
Student must spend the term performing co-op in a software industry and be engaged in a software engineering activity (e.g., analysis, design, code or test). 3

## GRADUATE-LEVEL STUDIES

Course	Title	Credits
MSE 510	Software Project Management	3
MSE 555	Object-Oriented Software Construction	3
MSE 610	Software Architecture and Design	3
MSE	Elective*	9
<b>Total Credits</b>		<b>18</b>
<b>TOTAL DEGREE CREDITS</b>		<b>144</b>

## \*The following may be selected for an MSE Elective:

MSE 545	Specification and Design of Real-Time Systems
MSE 585	Metrics and Statistical Methods of Software Engineering
MSE 640	Concurrent and Distributed Systems
MSE 655	Performance Analysis of Real-Time Systems
MSE 660	Formal Methods for Concurrent and Real-Time Systems

While other MSE elective courses may be selected, the student's advisor and the program coordinator must approve the selection.

\*Embry-Riddle courses in the general education categories *Communication Theory and Skills*, *Humanities*, and *Social Sciences* may be chosen from those listed below, assuming prerequisite requirements are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the level specified above in the CS/MSE vertical outline.

### COMMUNICATION THEORY AND SKILLS:

COM 122, 219, 221, 222

### HUMANITIES:

LOWER-LEVEL: HU 140, 141, 142, 144, 145, 250

UPPER-LEVEL:

HU 300, 305, 310, 320, 325, 330, 335, 341, 345

### SOCIAL SCIENCES:

LOWER-LEVEL:

EC 200, 210, 211 (EC 200 is not acceptable together with EC 210 or EC 211 or their equivalent.)

PSY 220

SS 110, 120, 130, 204, 210

UPPER-LEVEL:

EC 310, 312, 315, 420, SS 302, 305, 310, 320, 325, 331, 335, 340, 350, 352, 360

HF 300

PSY 350

\*\*Courses will be selected, with the approval of the student's advisor, to support acquiring a minor or an identified concentration of domain knowledge (for example: aviation, business, communications, human factors, math, etc.).

# Academic Programs at the Daytona Beach Campus

## Software Engineering

Bachelor of Science in Software Engineering

The Bachelor of Science degree in Software Engineering is designed to prepare students for an entry-level software engineering position in industry that supports design and implementation of software systems with focus on real-time, embedded, and safety-critical applications. Such systems are critical in aviation, space, medicine, and other disciplines that rely on high quality, dependable software. The objectives of the Software Engineering program are that our graduates:

- Effectively analyze, design, and implement software systems, including embedded, real-time, and safety-critical systems.
- Demonstrate professionalism in their work and grow professionally through continued learning and involvement in professional activities.
- Contribute to society by behaving ethically and responsibly.
- Communicate effectively in oral, written, and newly developing modes and media.
- Successfully assume a variety of roles in teams of diverse membership.

The curriculum is designed to facilitate accomplishment of these objectives by program graduates. It provides a broad education, including fundamental knowledge about computer software and hardware; it allows graduates to work in a team environment and recognize the value of collaborative effort. The program lays a foundation for life-long learning, professional growth, and ethical and responsible behavior in the society.

## DEGREE REQUIREMENTS

The Bachelor of Science degree can be earned in eight semesters assuming appropriate background and full-time enrollment. Successful completion of a minimum of 126 credit hours is required.

Students entering this program should have demonstrated a competence in mathematics and science (preferably physics). They should be prepared to enter Calculus I, having demonstrated proficiency in algebra and trigonometry. Students can prepare for this program by taking MA 140 College Algebra and MA 142 Trigonometry prior to taking MA 241. For those students who have not taken physics in high school, it is recommended that PS 103 Technical Physics I be taken prior to PS 150. For those students who have no computer programming experience, it is strongly recommended that CS 118, Fundamentals of Computer Programming, be taken before CS 125.

The Software Engineering program is designed to prepare students to work as part of a team on the development of software systems. Software engineering concepts, methods, and techniques are integrated through the curriculum. The curriculum includes courses in general education, math and science, and computing. The latter is divided into computing fundamentals, advanced concepts, applied computing, and software engineering. In addition, a student can acquire a minor or a concentration in a domain area of interest. Students should be aware that several courses in each

# Academic Programs at the Daytona Beach Campus

academic year may have pre-requisites and/or corequisites. Check the course descriptions at the back of this catalog before registering for classes to assure requisite sequencing.

## FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
CS 100	Introduction to Computing	1
CS 125	Computer Science I	4
CS 222	Introduction to Discrete Structures	3
CS 225	Computer Science II	4
MA 241	Calculus and Analytic Geometry I	4
MA 242	Calculus and Analytic Geometry II	4
PS 150	Physics I for Engineers	3
PS 160	Physics II for Engineers	3
<b>Total Credits</b>		<b>29</b>

## SOPHOMORE YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Lower-level Humanities*	3
AS 120	Principles of Aeronautical Science	3
CEC 220	Digital Circuit Design	3
CEC 222	Digital Circuit Design Laboratory	1
CEC 320	Microprocessor Systems	3
CEC 322	Microprocessor Systems Laboratory	1
CS 315	Data Structures and Algorithms	3
MA 412	Probability and Statistics	3
PS 250	Physics III for Engineers	3
PS 253	Physics Laboratory for Engineers	1
SE 300	Software Engineering	4
<b>Total Credits</b>		<b>31</b>

## JUNIOR YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
CS 317	Files and Database Systems	3
CS 332	Organization of Programming Languages	3
CS 420	Operating Systems	3
CS 470	Computer Architecture	3
ES/SS	Lower-level Social Sciences*	6
MA	Math elective**	3
SE 310	Analysis and Design of Software Systems	3
SE 320	Advanced Programming Practices Specified elective▲	3
<b>Total Credits</b>		<b>33</b>

## SENIOR YEAR

Course	Title	Credits
CS/SE/CEC	Elective (300/400 level)	6
CS 450	Real-Time Systems	3
HU/SS	Humanities or Social Sciences elective*	3
HU/SS	Humanities/ Social Science Upper-level elective	6
SE 450	Software Team Project	3
	Open Upper-level elective (300/400)	3
	Specified elective▲	2

**Total Credits** **33**

**TOTAL DEGREE CREDITS** **126**

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### COMMUNICATION THEORY AND SKILLS:

COM 122, 219, 221, 222

### HUMANITIES:

LOWER-LEVEL:

HU 140, 141, 142, 144, 145, 250

UPPER-LEVEL:

HU 300, 305, 310, 320, 325, 330, 335, 341, 345

### SOCIAL SCIENCES:

LOWER-LEVEL:

EC 200, 210, 211 (EC 200 is not acceptable together with EC 210 or EC 211 or their equivalent),

PSY 220

SS 110, 120, 130, 204, 210

UPPER-LEVEL:

EC 310, 312, 315, 420

SS 302, 305, 310, 320, 325, 331, 335, 340, 350, 352, 360

HF 300

PSY 350

\*\*MA 245, MA 243, or an upper division math course.

▲ Courses will be selected, with the approval of the student's advisor, to support acquiring a minor or an identified concentration of domain knowledge (for example: applied math, aviation, hardware systems, human factors, etc.).