

## Academic Programs at the Daytona Beach Campus

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### *Engineering Physics*

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Bachelor of Science

The Bachelor of Science in Engineering Physics is designed to produce graduates with the knowledge and skills of both scientists and engineers. Combining the fields of space systems engineering and space physics, this program focuses on the scientific challenges and planning associated with mission design and research related to the exploration of 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 and physics applications and graduate programs.

The Engineering Physics degree program has a full engineering accreditation by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology (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." The educational objectives of the Engineering Physics program ensure that our graduates:

- Effectively use mathematical, scientific, and modern engineering tools in the professional practice of engineering.
- Pursue successful careers built upon understanding of ethical and professional

responsibility, good citizenship, and on the ability to be a life-long learner.

- Demonstrate oral and written communication skills, and the ability to work in teams across disciplines.
- Demonstrate 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 130 credit hours. The program can be completed in eight semesters. 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 ensure requisite sequencing.

A grade of C or better is required in MA 241, MA 242, MA 243, PS 215, PS 208, and PS 219.

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## FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills* . . . . .	6
	Lower-Level Humanities* . . . . .	3
	Lower-Level Social Sciences* . . . . .	3
EGR 111	Engineering Drawing . . . . .	2
EP 101	Current Topics in Space Sciences . . . . .	1
MA 241	Calculus and Analytic Geometry I . . . . .	4
MA 242	Calculus and Analytic Geometry II . . . . .	4
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
EGR 115	Intro to Computing for Engineers . . . . .	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
EE 335	Electrical Engineering I . . . . .	2
EE 336	Electrical Engineering Laboratory I . . . . .	1
EP 320	Electro Optical Engineering . . . . .	3
EP 340	Introduction to Space Systems Design . . . . .	2
EP 393	Spaceflight Dynamics . . . . .	2
EP 394	Space Systems Engineering . . . . .	3
ES 206	Fluid Mechanics . . . . .	3
ES 305	Thermodynamics . . . . .	3
MA 441	Mathematical Methods for Engineering & Physics I . . . . .	3
MA 442	Mathematical Methods for Engineering & Physics II . . . . .	3
ME 200	Machine Shop Laboratory . . . . .	1
PS 303	Modern Physics . . . . .	3
PS 305	Modern Physics Laboratory . . . . .	1
PS 320	Classical Mechanics . . . . .	3
<b>Total Credits</b>		<b>33</b>

## SENIOR YEAR

Course	Title	Credits
	Engineering Elective . . . . .	3
HU/SS	Upper-Level HU/SS 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
ES 320	Engineering Materials Science . . . . .	2
ES 321	Engineering Materials Science Laboratory . . . . .	1
	Open Electives . . . . .	6
<b>Total Credits</b>		<b>32</b>

**TOTAL DEGREE CREDITS** **130**

\* Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities and 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

### Social Sciences

**LOWER-LEVEL:**  
EC 200, PSY 101, SS 110, 120, 130, 204, 210  
**UPPER-LEVEL:**  
HF 300, PSY 350, 365, SS 300 level

### Engineering Electives

AE/AEL/CEC/CIV/CS/EE/EGR/EL/EP/ES/  
ME/SE 300-400 LEVEL