

Space Physics

Bachelor of Science

The Bachelor of Science in Space Physics is designed to produce graduates who want to pursue careers in space-related professions or who want to pursue advanced studies in diverse areas of science and engineering. 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."

As defined by NASA, "Space Physics is the scientific study of magnetic and electric phenomena that occur in outer space, in the upper atmosphere of planets, and on the Sun. Space physicists use ground-based instruments, balloons, rockets, satellites, and deep space probes to study these phenomena where they occur." Examples of such studies include space shuttle aurora observations, ground-based solar studies, ground-based ionospheric studies, balloon flights to the edge of the atmosphere, and sounding rocket flights into near space.

The Space Physics program focuses on Space Science with emphasis on solar system physics, planetary science, and astrophysics. The program shares its facilities and coursework with the highly successful Engineering Physics program, the largest of its kind in the United States.

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 Space Physics degree program requires 120 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 208, PS 215, and PS 219.

FRESHMAN YEAR

Course	Title	Credits
EP 101	Current Topics in Space Sciences	1
	Communication Theory and Skills*	6
	Lower-Level Humanities*	3
	Lower-Level Social Sciences*	3
MA 241	Calculus & Analytic Geometry I	4
MA 242	Calculus & 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
Total Credits		30

Academic Programs at the Daytona Beach Campus

SOPHOMORE YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Upper-Level Humanities*	3
EGR 115	Introduction to Computing for Engineers	3
MA 243	Calculus & Analytic Geometry III	
MA 345	Differential Equations and Matrix Methods.	4
PS 208	Physics II	3
PS 219	Physics III.	3
PS 220	Physics Laboratory III	1
	Open Electives.	6
Total Credits		30

JUNIOR YEAR

Course	Title	Credits
	Technical Elective	3
EP 393	Spaceflight Dynamics.	2
EP 400	Thermodynamics and Statistical Mechanics.	3
MA 441	Mathematical Methods for Engineering & Physics I	3
MA 442	Mathematical Methods for Engineering & Physics II	3
	Upper-Level Social Sciences*	3
PS 303	Modern Physics.	3
PS 305	Modern Physics Laboratory	1
PS 320	Classical Mechanics	3
PS 401	Astrophysics	3
	Open Elective	3
Total Credits		30

SENIOR YEAR

Course	Title	Credits
	Technical Electives	6
EP 410	Space Physics.	3
EP 420	Planetary Science	3
EP 440	Engineering Electricity and Magnetism . . .	3
EP 455	Quantum Physics	3
PS 400	Senior Physics Laboratory.	3
PS 405	Atomic/Nuclear Physics	3
PS 408	Astrophysics II	3
	Open Elective	3
Total Credits		30

TOTAL DEGREE CREDITS **120**

* Embry-Riddle courses in the general education categories of Communication Theory and Skills, Humanities and Social Sciences, and the Technical 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 in the Space 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 101, SS 110, 120, 130, 204, 210

UPPER-LEVEL:

HF 300

PSY 350

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

TECHNICAL ELECTIVES

AE/AEL/CEC/CIV/CS/CC/EGR/EL/EP/ES/
ME/SE/MA/PS 300-400 level

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