

Academic Programs at the Prescott Campus

Space Physics

Bachelor of Science in Space Physics

The Space Physics degree program is administered by the College of Arts and Sciences. The Bachelor of Science in Physics, offered only on the Prescott campus, is an applied physics program designed to prepare graduates to work in space- and aerospace-related industries. Students will explore the fundamental forces of nature through experimental investigation of atomic, nuclear, and elementary particle systems. They will study the “micro” and “macro” universe through the use of high-precision detectors. The Space Physics program currently has two areas of concentration: Astrophysics and Particle Physics and Cosmology, with two more areas of concentration (Remote Sensing and Exotic Propulsion systems) planned for the future. Physics is the study of forces, space, and time at their most basic level and provides the foundation for all physical sciences. The combination of laboratory skills and fundamental scientific knowledge will prepare students to make discoveries that will promote the exploration of space and add to the body of knowledge in science. Because of the strong emphasis on experimental physics, the student will be well situated to enter a variety of fields including graduate programs.

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 General Chemistry.

DEGREE REQUIREMENTS

The Bachelor of Science in Physics is a 120 credit hour program. The degree 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 that these requirements are met.

FRESHMAN YEAR

Course	Title	Credits
	Communication Theory and Skills*	6
	Lower-Level Humanities*	3
	Lower-Level Social Sciences*	3
CS 223	Scientific Programming in C	3
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
PS 210	Physics II Laboratory	1
PS 216	Physics I Laboratory	1
UNIV 101	College Success	(1)+
Total Credits		31

+ Meets open elective or credit in excess of degree requirements.

SOPHOMORE YEAR

Course	Title	Credits
	Communication Theory and Skills*	3
	Open Electives*	6
MA 243	Calculus and Analytic Geometry III	4
MA 345	Differential Equations and Matrix Methods	4
PS 105	General Chemistry	4
PS 220	Physics III Laboratory	1
PS 250	Physics III for Engineers	3
PS 303	Modern Physics	3
PS 305	Modern Physics Laboratory	1
Total Credits		29

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JUNIOR YEAR

Course	Title	Credits
	Technical Elective*	3
	Open Electives*	6
EP 440	Engineering Electricity and Magnetism . . .	3
EP 455	Quantum Physics	3
MA 441	Advanced Engineering Mathematics I . . .	3
MA 442	Advanced Engineering Mathematics II . . .	3
PS 320	Classical Mechanics	3
PS 401	Astrophysics I	3
PS 408	Astrophysics II**	3

Total Credits **30**

SENIOR YEAR

Course	Title	Credits
	Technical Elective*	9
EP 400	Thermodynamics and Statistical Mechanics	3
EP 420	Planetary Science	3
HU	Upper-Level Humanities Elective	3
PS 400	Senior Physics Laboratory	3
PS 405	Atomic/Nuclear Physics	3
PS 410	Senior Physics Laboratory IIa**	3
SS	Upper-Level Social Sciences*	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 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 Space Physics vertical outline.

COMMUNICATION THEORY AND SKILLS

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

HUMANITIES

LOWER-LEVEL:

HU 140-146

UPPER-LEVEL:

HU 300-400 level

SOCIAL SCIENCES

LOWER-LEVEL:

EC 200

PSY 220

SS 110, 120, 130, 204, 210

UPPER-LEVEL:

HU 300

PSY 350

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

TECHNICAL ELECTIVES

EP 410

MA 412, 432, 443

Any upper-division PS courses including:

PS 301, 308, 399, 499

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

** The above vertical outline is for the Astrophysics option. Students wishing to take the Particle Physics and Cosmology option should substitute PS 412 (Particle Physics and Cosmology) for the PS 408 (Astrophysics II) course and substitute PS 414 (Senior Physics Laboratory IIb) for PS 410 (Senior Physics Laboratory IIa).