

Academic Programs at the Prescott Campus

Space Physics

Bachelor of Science

The Bachelor of Science in Space Physics is an applied physics program designed to prepare students for graduate studies in physics and astrophysics, as well as for work in space-related, and aerospace-related industries. Physics is the study of the forces of nature, space and time at the most fundamental level, and provides the foundation on which all physical sciences rest. Students will study the structure of the universe on all scales from the smallest (elementary particles) to the largest (cosmology) and will gain hands-on experience with research-quality equipment and modern sensing techniques.

In their senior year, students satisfying course and GPA requirements have the option of completing a senior thesis project in an area of interest that overlaps with the research interests of a supervising faculty member. Current faculty interests include: astrophysics, particle physics and cosmology, gravitational waves, general relativity, and exotic propulsion.

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, Physics I, and General Chemistry and must have a good command of written English.

Degree Requirements

The Bachelor of Science in Space Physics is a 120 credit hour program that can be completed in eight semesters. The list of courses below comprises the complete requirements for the degree of Bachelor of Science in Space Physics. The list is organized as a "vertical outline" according to the year in which the courses would normally be taken. While it is not a requirement that the courses be taken during the year shown, students should be aware that several courses in each academic year may have prerequisites and/or corequisites. Therefore, it is recommended that students keep their schedule as close as possible to the one shown below. Before registering for a course, check the course descriptions at the back of this catalog to ensure that all prerequisites and/or corequisites are met. Note that prerequisites for a course are only considered met if the student obtained a grade of "C" or better in the prerequisite courses.

FRESHMAN YEAR

Course	Title	Credits
COM	Elective*	3
MA 241	Calculus and Analytic Geometry I	4
MA 242	Calculus and Analytic Geometry II	4
PS 105	General Chemistry	4
PS 204	Astronomy	3
PS 208	Physics II	3
PS 215	Physics I	3
PS 216	Physics I Laboratory	1
PS 221	Intermediate Physics Laboratory	2
SS	Lower-Level Elective*	3
UNIV 101	College Success**	1
Total Credits		31

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SOPHOMORE YEAR

Course	Title	Credits
COM	Elective*	3
HU	Lower-Level Elective*	3
MA 243	Calculus and Analytic Geometry III	4
MA 341	Introduction to Mathematical Analysis	3
MA 345	Differential Equations and Matrix Methods	4
MA 432	Linear Algebra	3
PS 232	Computational Methods in Physical Sciences	3
PS 219	Physics III	3
PS 303	Modern Physics	3
PS 315	Modern Physics Laboratory	2
Total Credits		31

JUNIOR YEAR

Course	Title	Credits
COM	Elective*	3
MA 441	Mathematical Methods for Engineering and Physics I	3
MA 442	Mathematical Methods for Engineering and Physics II	3
PS 321	Classical Mechanics I	3
PS 330	Electricity and Magnetism I	3
PS 340	Astrophysics I	3
PS 350	Quantum Mechanics I	3
PS 380	Optics Laboratory	3
	Open Electives	3
	Technical Elective	3
Total Credits		30

SENIOR YEAR

Course	Title	Credits
PS 405	Atomic and Nuclear Physics	3
PS 430	Thermodynamics and Statistical Mechanics	3
PS 490	AOC Research Thesis, Part I***	3
PS 491	AOC Research Thesis, Part II***	3
	Technical Electives	6
HU	Upper-Level Elective	3
SS	Upper-Level Elective	3
	Open Electives	4
Total Credits		28
TOTAL DEGREE CREDITS		120

* Embry-Riddle courses in the general education categories of Communication, Humanities, and Social Sciences may be chosen from those listed below, assuming prerequisites are met. Courses from other institutions are acceptable if they fall into these broad categories and are at the appropriate level.

**Open elective or in excess of degree requirement.

*** In their senior year, eligible students will choose a thesis project in association with a supervising faculty member. Students who are not eligible to take PS 490 and PS 491 will instead take 6 credits of technical electives selected from the list below. Eligibility for taking PS 490 is described in the prerequisites for the course in the course description section of the catalog.

Communications Electives

COM 122, COM 219, COM 221, COM 222, COM 225, or any COM 3XX or COM 4XX course.

Lower-Level Social Sciences Electives

EC 200, EC 210, EC 211
Any Lower-Level SS, RS, or SIS course.

Lower-Level Humanities Electives

Any HU 140 series.

Upper-Level Humanities Electives

Any Upper-Level HU course.

Upper-Level Social Sciences Electives

Any Upper-Level SS course.

Technical Electives

PS 322 Classical Mechanics II
 PS 331 Electricity and Magnetism II
 PS 375 Planetary Science
 PS 408 Astrophysics II
 PS 412 Particle Physics and Cosmology I
 PS 413 Particle Physics and Cosmology II
 PS 420 Remote Sensing
 PS 422 Space Propulsion
 PS 451 Quantum Mechanics II
 PS 299/399/499 Special Topics in Physics
 MA 412 Probability and Statistics
 MA 443 Complex Variables
 MA 299/399/499 Special Topics in Mathematics

Any other upper-division technical course with approval of the Physics Department Chair.