

PHYSICS - BS, ASTROPHYSICS TRACK

The BS Physics, Astrophysics track will provide students with a solid foundation in basic physics combined with knowledge of fascinating astrophysical objects and phenomena. It will prepare students for graduate studies in Astronomy, Astrophysics, and related fields. Students will also learn quantitative problem-solving skills, experimental research skills, and expertise in computer simulations that are highly valued in any field and any industry.

Program Requirements

First Year

Fall		Semester Credit Hours
ENGL 104 or ENGL 103	Composition and Rhetoric or Introduction to Rhetoric and Composition	3
MATH 171	Calculus I ¹	4
PHYS 101	Freshman Physics Orientation ¹	1
PHYS 150	Introduction for Programming for Physics ¹	3
American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) ²		3

Semester Credit Hours 14

Spring

ASTR 102	Observational Astronomy	1
MATH 172	Calculus II ¹	4
PHYS 206 & PHYS 226	Newtonian Mechanics for Engineering and Science and Physics of Motion Laboratory for the Sciences ¹	4
American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) ²		3
Language, philosophy and culture (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture) ²		3

Semester Credit Hours 15

Second Year

Fall		
MATH 221	Several Variable Calculus ¹	4
MATH 308	Differential Equations ¹	3
PHYS 207 & PHYS 227	Electricity and Magnetism for Engineering and Science and Electricity and Magnetism Laboratory for the Sciences ¹	4
PHYS 221	Optics and Thermal Physics ¹	3

Semester Credit Hours 14

Spring

ASTR 314	Survey of Astronomy	3
PHYS 225	Electronic Circuits and Applications	3
PHYS 309	Modern Physics ¹	3

PHYS 331	Theoretical Methods for Physicists I ¹	3
Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication) ³		3

Semester Credit Hours 15

Third Year

Fall

ASTR 320	Astrophysical Research Methods	3
PHYS 302	Advanced Mechanics I	3
PHYS 304	Advanced Electricity and Magnetism I	3
PHYS 332	Theoretical Methods for Physicists II	3
POLS 206	American National Government	3

Semester Credit Hours 15

Spring

ASTR 420	Advanced Astrophysical Research Methods	3
PHYS 303 or PHYS 305	Advanced Mechanics II or Advanced Electricity and Magnetism II	3
PHYS 327	Experimental Physics I ⁴	2
PHYS 328	Experimental Physics II ⁴	1
PHYS 412	Quantum Mechanics I	3
POLS 207	State and Local Government	3

Semester Credit Hours 15

Fourth Year

Fall

ASTR 291 or ASTR 491	Research ⁵ or Research	3
ASTR 401	Stars and Extrasolar Planets	3
PHYS 408	Thermodynamics and Statistical Mechanics	4
Creative arts (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts) ²		3
General elective ⁶		3

Semester Credit Hours 16

Spring

ASTR 403	Extragalactic Astronomy and Cosmology	3
Social and behavioral science (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences) ²		3
Science or technical elective ⁷		3
General electives ⁶		7

Semester Credit Hours 16

Total Semester Credit Hours 120

¹ A Physics major must complete the foundation courses (PHYS 101, PHYS 150, ASTR 102, PHYS 206/PHYS 226, PHYS 207/PHYS 227, PHYS 221, PHYS 309, PHYS 331, MATH 171, MATH 172, MATH 221, MATH 308) with a grade of C or better and have a 2.0 cumulative GPA before taking non-foundation upper-level Physics courses.

² Any course in this category from the approved University Core Curriculum list of courses.

³ Any approved Communication course, except PERF 407.

⁴ PHYS 327 is an approved W course. PHYS 328 is an approved C course.

⁵ A combination of ASTR 291 and ASTR 491 must equal 3 hours.

Students with a U1 or U2 classification should take ASTR 291.

Students with a U3 or U4 classification should take ASTR 491.

⁶ Electives should be chosen in consultation with the student's advisor.

Three hours must be in the area of International and Cultural Diversity, and three hours must be in the area of Cultural Discourse. These may be in addition to other University Core Curriculum courses, or, if a course in this category satisfies another area of the Core, it can be used to meet both requirements. Electives may be selected from any 100-499 course not used elsewhere, except ENGL 103; MATH 100-148, 165-166, 365-366 (<http://catalog.tamu.edu/undergraduate/course-descriptions/math/>); PHYS 201, PHYS 202.

⁷ Any upper-division course in geo/life/physical sciences, mathematics/statistics, or engineering (except 485/491).