

BACHELOR OF ARTS IN PHYSICS: CONCENTRATION IN ASTRONOMY – PHYS ASSOCIATE DEGREE FOR TRANSFER (ADT) ROADMAP

This is a sample pathway for students who transfer to San Francisco State University in the current Bulletin year with an AS-T in Physics. Twenty-four units in the major (MATH 226, MATH 227, MATH 228, PHYS 220, PHYS 222, PHYS 230, PHYS 232, PHYS 240, and PHYS 242) and all lower-division GE requirements have been satisfied. Additional units in the major may have been satisfied. Check with a major advisor about the most appropriate course sequence. **Degree completion guaranteed in 60 units; see the Associate Degree for Transfer (ADT) section for more information (<http://bulletin.sfsu.edu/undergraduate-admissions/transfer-students/>).**

To Do at SF State:

Enough total units to reach 120 minimum for graduation; 30 units minimum at the upper-division level; to include the following:

University-Wide Requirements: 9–15 Units

- American Institutions (0–6 units): US History, US Government, California State and Local Government requirements if not taken before transfer.
- Upper-Division GE (9 units): Courses required for the major may double-count if approved for UD GE.
- Students entering the major with the AS-T in Physics are not required to fulfill SF State Studies requirements.
- Complementary Studies is met in major with required mathematics.

Physics B.A. (Astronomy) Major: 30 Units

MATH 226, MATH 227, MATH 228, PHYS 220, PHYS 222, PHYS 230, PHYS 232, PHYS 240, and PHYS 242 met in transfer.

- Prerequisites (8-11 units). PHYS 200, and either MATH 245 or MATH 225 and MATH 376.
- Upper-Division Requirements (14 units).
- Upper-Division Electives (3-6 units).
- Culminating Experience (2 units).

University Electives: 12 or More Units

Depends on course choices made at the community college, how transferred units are applied to the requirements above, and course choices at SF State. Some courses may meet more than one requirement, e.g., both in UD GE and the major. Upper-division electives recommended in order to meet the minimum 30-unit requirement.

Course	Title	Units
First Semester		
ASTR 115 & ASTR 116	Introduction to Astronomy and Astronomy Laboratory (Major Lower- Division Prerequisite, B1)	4
Select One (Major Upper-Division Core):		3
CSC 309	Computer Programming	
MATH 209	Mathematical Computing	
MATH 245	Elementary Differential Equations and Linear Algebra (Major Prerequisite) ¹	3
PHYS 200	Planning for Success as a Physics & Astronomy Major (Major Prerequisite)	1
PHYS 320	Modern Physics I (Major Upper-Division Core)	3
	Units	14

Second Semester

ASTR 300	Stars, Planets, and the Milky Way (Major Upper-Division Core)	3
ASTR 340GW	The Big Bang - GWar (MAJOR Upper-Division Core)	3
Major Upper-Division Elective - Take Two ²		6
GE Area UD-B: Upper-Division Physical and/or Life Sciences		3
	Units	15

Third Semester

ASTR 301	Observational Astronomy Laboratory (Major Upper-Division Core)	2
Culminating Experience (Select 2 Units):		2
ASTR 685	Projects in the Teaching of Astronomy	
ASTR 697	Senior Project	
PHYS 686	Experiences in Teaching Physics	
GE Area UD-C: Upper-Division Arts and/or Humanities		3
GE Area UD-D: Upper-Division Social Sciences		3
U.S. and California Government (http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg) or University Elective if met in transfer		3
US History (http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#USHaGR) or University Elective if met in transfer		3
	Units	16

Fourth Semester

University Electives - Take Five		15
	Units	15
	Total Units	60

¹ Students may also fulfill this requirement with both MATH 225 and MATH 376. This option may increase time to graduation. Speak with an advisor.

² **Electives (3-6 units)**
Choose enough upper-division PHYS and/or ASTR courses to reach 54 units for the major, excluding 600-level PHYS or ASTR courses. Maximum of 3 units outside of ASTR or PHYS, with prior permission of a faculty advisor. With permission of a faculty advisor, extra units in 600-level courses not used to satisfy the culminating experience can be used as electives.